Imperfect Competition

People Respond to incentives

- [http://www.youtube.com/watch?v=rt8LTN0zm3k](http://www.youtube.com/watch?v=rt8LTN0zm3k)
- Just a review as to why this class!
- Shortest law in economics
  - Incentives matter!

Topics

- Review perfect competition
- Imperfect Competition
  - Monopoly
  - Monopolistic Competition
  - Oligopoly
  - Monopsony
  - Government Intervention
Conditions for Perfect Competition

- Conditions from earlier lectures
  - Homogeneous products
  - Freely mobile resources
  - Large number of buyers and sellers
  - Perfect information
- Added for welfare analysis
  - No exchange barriers
  - No externalities

Efficiency

- Society’s net benefits are maximized from the use of the resources
- Can not do better from society’s viewpoint
- Perfect competition assumptions
  + no externalities
  + no exchange barriers

Surplus – Review

Total surplus = consumer surplus + producer surplus
Inefficient Allocation I

What if at price = $4.75 / bushel?

Deadweight loss

Inefficient Allocation II

What if at price = $3 / bushel?

Deadweight loss

Efficient Allocation
Imperfect Competition

- Conditions of perfect competition are not met
- Examine different types of imperfect competition input and output side
- Simultaneous idea
  - Joan V. Robinson
  - Edward H. Chamberlin

J. Robinson in the 1920’s

Firm is a “Price Taker” Under Perfect Competition - Review

Monopoly

- Single Seller – no competition
- Exist because of barriers to entry
  - Physical
  - Government
- Price is no longer fixed to the firm
  - Face downward sloping demand curve and MR curve
- Assume linear demand and supply – previous slide
**Perfect Competition**

- Equilibrium point: $S = D$
- Price: $9.29$
- Quantity: $157$

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**Monopoly Example**

<table>
<thead>
<tr>
<th>Price</th>
<th>Quantity Demanded</th>
<th>Total Revenue $P \times Q$</th>
<th>Marginal Revenue $\Delta TR / \Delta Output$</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.00</td>
<td>0</td>
<td>0.00</td>
<td>-</td>
</tr>
<tr>
<td>22.50</td>
<td>25</td>
<td>562.50</td>
<td>22.50</td>
</tr>
<tr>
<td>20.00</td>
<td>50</td>
<td>1000.00</td>
<td>17.50</td>
</tr>
<tr>
<td>17.50</td>
<td>75</td>
<td>1312.50</td>
<td>12.50</td>
</tr>
<tr>
<td>15.00</td>
<td>100</td>
<td>1500.00</td>
<td>7.50</td>
</tr>
<tr>
<td>12.50</td>
<td>125</td>
<td>1562.50</td>
<td>2.50</td>
</tr>
<tr>
<td>10.00</td>
<td>150</td>
<td>1500.00</td>
<td>-2.50</td>
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<tr>
<td>7.50</td>
<td>175</td>
<td>1312.50</td>
<td>-7.50</td>
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<tr>
<td>5.00</td>
<td>200</td>
<td>1000.00</td>
<td>-12.50</td>
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<tr>
<td>2.50</td>
<td>225</td>
<td>562.50</td>
<td>-17.50</td>
</tr>
<tr>
<td>0.00</td>
<td>250</td>
<td>0.00</td>
<td>-22.50</td>
</tr>
</tbody>
</table>

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**Monopoly Total Revenue**

- Unitary elasticity portion
- Elastic portion
- Inelastic portion

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Monopoly Example MR

Unitary elasticity

Elastic

Inelastic

Key point
MR is less than demand
Demand = AR not MR

Monopoly

As with all firms produce at MR = MC
Price from demand curve
Quantity given by point
MR = MC = S

S = MC

Monopoly

Monopoly Price = 15.46
Monopoly Quantity = 95.6
Monopoly

- Consumer Surplus
- Producer Surplus
- Deadweight Loss
- $D = S$ (Demand equals Supply)
- Consumer Surplus - loss
- Producer Surplus - gain

Monopoly vs. Perfect Competition

- Monopoly - price is higher
- Monopoly - quantity is lower
- Monopoly - deadweight loss
Monopolistic Competition

• Realistic situation
• Numerous sellers
• Key – differentiated products
  – No barriers to entry or exit unlike “true” monopoly
  • Entry if profits / exit if loses
  • Advertising / sale promotion
  • Modification of particular product
• Some flexibility in pricing – price maker
  – Better at product differentiation the higher the price
  – Increase price too high drive consumers to other sellers

Starbucks Coffee Inc.

• Started as a single store in 1971 in Seattle
• Sold in 1987 and first houses outside of Seattle
• 1996 first location outside U.S. (Japan)
• Key – differentiated products
  – Gourmet coffee
  – Rapid growth – a new store every day in the 1990 into the 2000’s
  – Over 22,519 stores in 65 countries – June 2015
  – Over 30,000 store in 80 markets – June 2019

Other Gourmet Coffee

• Incomplete list showed 124 coffee house chains in 2019 most started in the 1990’s and 2000’s
• Caribou Coffee – started 1992
  – One of the largest in U.S. 458 locations 21 U.S. states and 267 franchise locations worldwide in 11 countries
• McDonald’s gourmet coffee
• Local gourmet coffee houses
  – Texas A&M
• Restaurants / café / food service with premium coffee
  – Donkin’ Donuts – next largest to Starbucks
  – Tim Hortons’ Canadian
• Etc.
Starbucks Growth 1987-2018

![Graph showing Starbucks growth from 1987 to 2018](https://www.statista.com/statistics/266465/number-of-starbucks-stores-worldwide/)

Starbucks Response

- End of period of growth since 2008
  - Closed approximately 1,000 stores in the U.S. and Worldwide (closed 61 of 84 stores in Australia)
- Cut 8,000 jobs
- Growth again starting 2012
- Expansion of products
  - Ethos Water
  - Via ready brew
  - Debranding – change name of some stores
- “Green” issues

Monopolistic Competition

![Monopolistic Competition Conclusions table](image)

<table>
<thead>
<tr>
<th></th>
<th>Perfect Competition</th>
<th>Monopolistic Competition</th>
<th>Monopoly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>Lowest</td>
<td>Middle</td>
<td>Largest</td>
</tr>
<tr>
<td>Quantity</td>
<td>Largest</td>
<td>Middle</td>
<td>Smallest</td>
</tr>
<tr>
<td>Deadweight loss</td>
<td>None</td>
<td>Some</td>
<td>Largest</td>
</tr>
<tr>
<td>Product</td>
<td>Homogeneous</td>
<td>Differentiated</td>
<td>Unique</td>
</tr>
</tbody>
</table>
Monopolistic Competition

- Most agricultural related retail products
  - Soft drinks
    - Coca cola, Pepsi, Dr. Pepper / 7 Up, Gatorade, Hires, Big Red, Shasta, Fruit Drinks, etc.
  - Clothing / Jeans

Prisoner’s Dilemma

Two students have stolen AGEC 105 Exam 1, possible outcomes are given below, what should each student do? Students cannot communicate with each other.

<table>
<thead>
<tr>
<th></th>
<th>Confess</th>
<th>Don’t Confess</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confess</td>
<td>One – D</td>
<td>One – B</td>
</tr>
<tr>
<td></td>
<td>Two – D</td>
<td>Two – F Dismissed</td>
</tr>
<tr>
<td>Don’t Confess</td>
<td>One – F Dismissed</td>
<td>One C</td>
</tr>
<tr>
<td></td>
<td>Two – B</td>
<td>Two C</td>
</tr>
</tbody>
</table>

Oligopoly

- Lies between pure monopoly and perfect competition
- Few sellers with similar products
- Each seller can influence market price and volume
  - Not independent in their decision making
- Can give rise to a wide range of market outcomes
  - Depends on company goals, trust, legal, collusion, competition
Oligopoly Dilemma

Two firms, what should they do, no collusion?

<table>
<thead>
<tr>
<th>Firm A</th>
<th>Lower Prices</th>
<th>Higher Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Price</td>
<td>A – low profits, same market share</td>
<td>A – low profits, high market share</td>
</tr>
<tr>
<td></td>
<td>B – low profits, same market share</td>
<td>B – loss, low market share</td>
</tr>
<tr>
<td>Higher Price</td>
<td>A – loss, low market share</td>
<td>A – high profits, same market share</td>
</tr>
<tr>
<td></td>
<td>B – low profits, high market share</td>
<td>B – high profits, same market share</td>
</tr>
</tbody>
</table>

Oligopoly Two Diverse Outcomes

• No collusion / interaction
  – Best outcome a priori for both firms is low prices
  – Competition – leads to outcomes approaching perfect competition

• Collusion
  – Raise prices and restrict production
  – Approaching monopoly outcome

• Why don’t firms collude?
  – Costs of collusion high
    • Illegal
    • Different goals and objectives

Oligopoly - Ag

• Agricultural Sector in the input markets
  – Equipment – John Deere, CNH Industrial (Case IH, New Holland), AGCO (Massey Ferguson), Kobuta (nonUS)

The world’s largest farm machinery manufacturers in 2016, based on revenue (in million U.S. dollars)

• Animal Slaughter
Oligopoly - Other

- Computers – operating systems
  - MacOS (12%), Windows (83%), Linux / Others (3%)
- Gasoline Sector
  - Chevron, Exxon, Conoco-Phillips and others smaller

Ten largest American oil and gas companies based on market value in 2017 (in billion U.S. dollars)

Oligopoly - Other

- Automotive Sector – may not as much
  - Ford, GM, Toyota, Nissan, Honda, Chrysler

Oligopoly - Conclusions

- Common in “real world”
- Wide range of outcomes
  - Equilibrium prices and quantities lie between monopoly and perfect competition
  - Collude – more like monopoly
  - No collusion more like perfect competition
Monopsony

- Perfect competition
  - Numerous buyers and sellers – price takers
  - Firm’s purchases do not affect input price
- Monopsony – single buyer on the input side
- Similar to monopoly, but on the input side
  - Monopoly downward sloping demand curve
  - Unlike perfect competition firm’s actions affect price
- Monopsony faces a upward sloping market input supply curve
  - To increase input use, most pay a higher price

Monopsony

- Perfect competition – input market
  - Firms set MVP = MIC
- Monopsony
  - Firms’ set MVP = MIC but now MIC is not fixed as in perfect competition
  - MIC cost not fixed increasing as use more of the input

Price Taker – Does Not Hold
**Monopsony**

Price

$P_{pc}^*$

$P_m^*$

Supply of input

MIC

$Q_m^*$

$Q_{pc}^*$

Quantity

**Degrees of Imperfect - Input**

- **Oligopsony**
  - Relatively few firms engaged in purchase of resources

- **Monopsonistic Competition**
  - Composed of many firms buying resources with the capacity of differentiating services
    - Differentiating services to producers by buyers

**Government Actions**

- **Imperfect competition – not efficient**
  - Implies govt. action may improve welfare
  - Govt. action appropriate if benefits of action greater than the costs
  - More later

- **Government actions may also lead to inefficient allocations**
  - Inappropriate intervention
Price Ceiling

- Maximum price that can be charged
  - To be relevant price ceiling must be below market price

Why $P_{\text{max}} < P^*$ to be binding

Maximum price at $P_{\text{max}}$ but market price at $P^*$
Equilibrium price an quantity $P^*Q^*$

Price Ceiling Welfare

- Welfare implications - inefficient

Deadweight Loss
Price Floor

- Minimum price that can be charged
  - To be relevant price must be above market price

Why $P_{\text{min}} > P^*$ to be binding
Minimum price at $P_{\text{min}}$ but market price at $P^*$
Equilibrium price at quantity $P^*Q^*$

Price Floor Welfare

- Welfare implications

Deadweight loss
Lump Sum Tax

Fixed amount regardless of output
Equilibrium $P^*Q^*$
Tax increases $\text{ATC}$

Profits / total costs before tax

Profits / total costs after tax

Taxes Paid
Production Costs
**Lump Sum Impact**

- Equilibrium price and quantity
  - No impact
  - Treated as a fixed cost no impact on marginal costs
- Profits decrease
- Cost increase
- Tax revenues = cost increase

**Per Unit Tax**

Tax per unit on amount produced
Equilibrium $P^*Q^*$ before tax
Per unit tax increases MC

**Per Unit Tax**

Profits / total cost before per unit tax
Per Unit Tax

Profits / total cost before per unit tax

Per Unit Tax Impact

- Equilibrium price and quantity
  - Increases price
  - Decreases quantity
- Profits decrease
- Cost increase
- Tax revenues = cost increase

Summary

- Unlike perfect competition, imperfect competitors have ability to influence price.
- Monopolistic competitors try to differentiate their product.
- Monopolists are the only seller in their product market.
- Monopsonists are the only buyer.
- Oligopolies are a few number of sellers while oligopsonies are a few number of buyers.
- Know the economic welfare implications of imperfect competition.