Overview

I. Market Structure
   – Measures of Industry Concentration

II. Conduct
   – Pricing Behavior
   – Integration and Merger Activity

III. Performance
   – Dansby-Willig Index
   – Structure-Conduct-Performance Paradigm

IV. Preview of Coming Attractions
Industry Analysis

- **Market Structure**
  - Number and size of firms.
  - Industry concentration.
  - Technological and cost conditions.
  - Demand conditions.
  - Ease of entry and exit.

- **Conduct**
  - Pricing.
  - Advertising.
  - R&D.
  - Merger activity.

- **Performance**
  - Profitability.
  - Social welfare.
Approaches to Studying Industry

- *The Structure- Conduct- Performance (SCP) Paradigm: Causal View*
  
  Market Structure → Conduct → Performance

- The *Feedback Critique*:
  - No one-way causal link.
  - Conduct can affect market structure.
  - Market performance can affect conduct as well as market structure.
Relating the Five Forces to the SCP Paradigm and the Feedback Critique

- **Entry Costs**
- **Speed of Adjustment**
- **Sunk Costs**
- **Economies of Scale**

- **Network Effects**
- **Reputation**
- **Switching Costs**
- **Government Restraints**

**Power of Input Suppliers**
- **Supplier Concentration**
- **Price/Productivity of Alternative Inputs**
- **Relationship-Specific Investments**
- **Supplier Switching Costs**
- **Government Restraints**

**Power of Buyers**
- **Buyer Concentration**
- **Price/Value of Substitute Products or Services**
- **Relationship-Specific Investments**
- **Customer Switching Costs**
- **Government Restraints**

**Industry Rivalry**
- **Concentration**
- **Price, Quantity, Quality, or Service Competition**
- **Degree of Differentiation**
- **Switching Costs**
- **Timing of Decisions**
- **Information**
- **Government Restraints**

**Substitutes & Complements**
- **Price/Value of Surrogate Products or Services**
- **Price/Value of Complementary Products or Services**
- **Network Effects**
- **Government Restraints**

**Level, Growth, and Sustainability Of Industry Profits**
Industry Concentration

- **Four-Firm Concentration Ratio**
  - The sum of the market shares of the top four firms in the defined industry. Letting $S_i$ denote sales for firm $i$ and $S_T$ denote total industry sales
    \[ C_4 = w_1 + w_2 + w_3 + w_4, \text{ where } w_1 = \frac{S_i}{S_T} \]

- **Herfindahl-Hirschman Index (HHI)**
  - The sum of the squared market shares of firms in a given industry, multiplied by 10,000: $\text{HHI} = 10,000 \times \sum w_i^2$, where $w_i = \frac{S_i}{S_T}$. 
Example

- There are five banks competing in a local market. Each of the five banks have a 20 percent market share.
- What is the four-firm concentration ratio?
  \[ C_4 = 0.2 + 0.2 + 0.2 + 0.2 = 0.8 \]
- What is the HHI?
  \[ HHI = 10,000\left(0.2^2 + 0.2^2 + 0.2^2 + 0.2^2 + 0.2^2\right) = 2,000 \]
Limitation of Concentration Measures

- Market Definition: National, regional, or local?
- Global Market: Foreign producers excluded.
- Industry definition and product classes.
Technology

- Industries differ regarding the technology used to produce goods and services.
  - Some industries are labor intensive;
  - Some industries are capital intensive;
  - Other industries use a combination of labor and capital.
Measuring Demand and Market Conditions

- The Rothschild Index \((R)\) measures the elasticity of industry demand for a product relative to that of an individual firm:

\[
R = \frac{E_T}{E_F}.
\]

- \(E_T\) = elasticity of demand for the total market.
- \(E_F\) = elasticity of demand for the product of an individual firm.
- The Rothschild Index is a value between 0 (perfect competition) and 1 (monopoly).

- When an industry is composed of many firms, each producing similar products, the Rothschild index will be close to zero.
## Own-Price Elasticities of Demand and Rothschild Indices

<table>
<thead>
<tr>
<th>Industry</th>
<th>Elasticity of Market Demand</th>
<th>Elasticity of Firm’s Demand</th>
<th>Rothschild Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>-1.0</td>
<td>-3.8</td>
<td>0.26</td>
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<tr>
<td>Tobacco</td>
<td>-1.3</td>
<td>-1.3</td>
<td>1.00</td>
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<tr>
<td>Textiles</td>
<td>-1.5</td>
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<td>0.32</td>
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<tr>
<td>Apparel</td>
<td>-1.1</td>
<td>-4.1</td>
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<tr>
<td>Paper</td>
<td>-1.5</td>
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<td>0.88</td>
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<tr>
<td>Chemicals</td>
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<td>1.00</td>
</tr>
<tr>
<td>Rubber</td>
<td>-1.8</td>
<td>-2.3</td>
<td>0.78</td>
</tr>
</tbody>
</table>
Market Entry and Exit Conditions

- Barriers to entry
  - Capital requirements.
  - Patents and copyrights.
  - Economies of scale.
  - Economies of scope.
Conduct: Pricing Behavior

- The Lerner Index
  \[ L = \frac{(P - MC)}{P} \]
  - A measure of the difference between price and marginal cost as a fraction of the product’s price.
  - The index ranges from 0 to 1.
    - When \( P = MC \), the Lerner Index is zero; the firm has no market power.
    - A Lerner Index closer to 1 indicates relatively weak price competition; the firm has market power.
Markup Factor

- From the Lerner Index, the firm can determine the factor by which it should over MC. Rearranging the Lerner Index

\[ P = \left( \frac{1}{1-L} \right) MC \]

- The markup factor is \(1/(1-L)\).
  - When the Lerner Index is zero (\( L = 0 \)), the markup factor is 1 and \( P = MC \).
  - When the Lerner Index is 0.20 (\( L = 0.20 \)), the markup factor is 1.25 and the firm charges a price that is 1.25 times marginal cost.
## Lerner Indices & Markup Factors

<table>
<thead>
<tr>
<th>Industry</th>
<th>Lerner Index</th>
<th>Markup Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>0.26</td>
<td>1.35</td>
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<tr>
<td>Tobacco</td>
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<td>Apparel</td>
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<tr>
<td>Chemicals</td>
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<tr>
<td>Petroleum</td>
<td>0.59</td>
<td>2.44</td>
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</table>
Integration and Merger Activity

- **Vertical Integration**
  - Where various stages in the production of a single product are carried out by one firm.

- **Horizontal Integration**
  - The merging of the production of similar products into a single firm.

- **Conglomerate Mergers**
  - The integration of different product lines into a single firm.
DOJ/FTC Horizontal Merger Guidelines

- Based on $\text{HHI} = 10,000 \sum w_i^2$, where
  
  $$w_i = \frac{S_i}{S_T}.$$

- Merger may be challenged if
  - $\text{HHI}$ exceeds 1800, or would be after merger, and
  - Merger increases the $\text{HHI}$ by more than 100.

- But...
  - Recognizes efficiencies: “The primary benefit of mergers to the economy is their efficiency potential...which can result in lower prices to consumers...In the majority of cases the Guidelines will allow firms to achieve efficiencies through mergers without interference...”
Performance

- Performance refers to the profits and social welfare that result in a given industry.

- Social Welfare = CS + PS
  - Dansby-Willig Performance Index measure by how much social welfare would improve if firms in an industry expanded output in a socially efficient manner.
## Dansby-Willig Performance Index

<table>
<thead>
<tr>
<th>Industry</th>
<th>Dansby-Willig Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>0.51</td>
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<tr>
<td>Textiles</td>
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<tr>
<td>Paper</td>
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<tr>
<td>Chemicals</td>
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<tr>
<td>Petroleum</td>
<td>0.63</td>
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<tr>
<td>Rubber</td>
<td>0.49</td>
</tr>
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</table>
Preview of Coming Attractions

- Discussion of optimal managerial decisions under various market structures, including:
  - Perfect competition
  - Monopoly
  - Monopolistic competition
  - Oligopoly
Conclusion

- Modern approach to studying industries involves examining the interrelationship between structure, conduct, and performance.
- Industries dramatically vary with respect to concentration levels.
  - The four-firm concentration ratio and Herfindahl-Hirschman index measure industry concentration.
- The Lerner index measures the degree to which firms can markup price above marginal cost; it is a measure of a firm’s market power.
- Industry performance is measured by industry profitability and social welfare.