제 7 장
산업 및 시장의 조직이론
## Theory of Industrial Organization

산업분석
Industry Analysis

- Market Structure (S) 구조
  - Number of firms.
  - Industry concentration.
  - Technological and cost conditions.
  - Demand conditions.
  - Ease of entry and exit.
- Conduct (C) 행태
  - Pricing.
  - Advertising.
  - R&D.
  - Merger activity.
- Performance (P) 성과
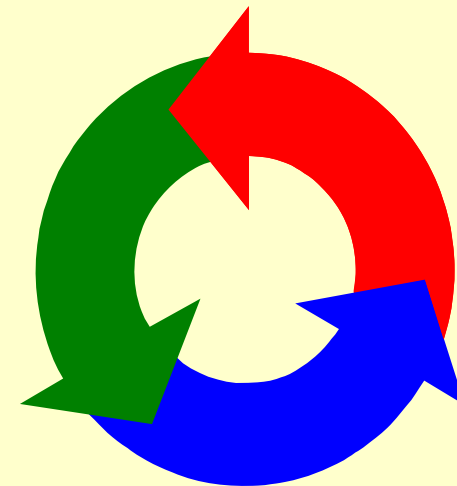 - Profitability.
  - Social welfare.

Approaches to Studying Industry

- The *Structure-Conduct-Performance (SCP)* Paradigm: Causal View (인과관계 준거)

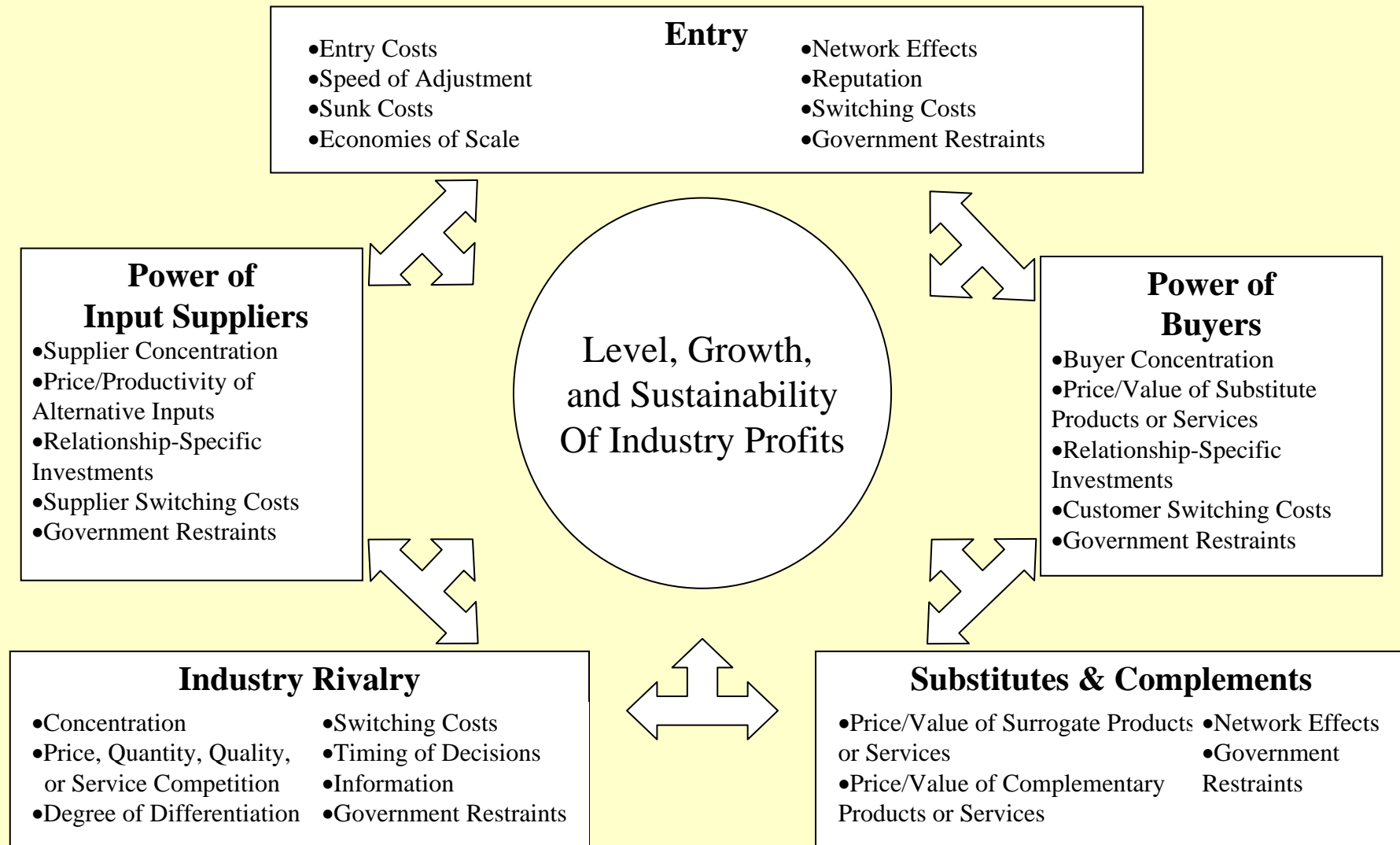Market Structure → Conduct → Performance
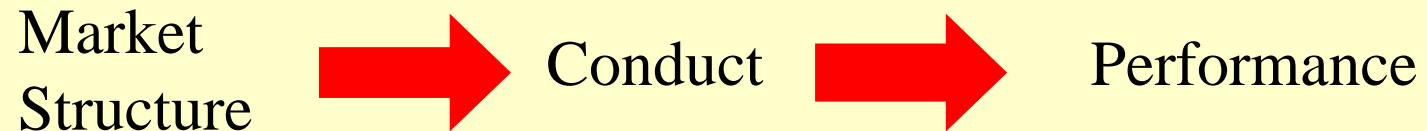
- The *Feedback Critique* (연쇄작용)
    - No one-way causal link.
    - Conduct can affect market structure.
    - Market performance can affect conduct as well as market structure.

Relating the Five Forces to the SCP Paradigm and the Feedback Critique

Entry
- 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

Level, Growth, and Sustainability Of Industry Profits

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

산업의 집중 정도
Industry Concentration

- (Four-Firm) Concentration Ratio 집중도 지수

  ❑ 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 all firms in a given industry, multiplied by 10,000: $HHI = 10{,}000 \times \Sigma \, w_i^2$, where $w_i = S_i/S_T$.

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?

$$HHI = 10,000\left((.2)^2 + (.2)^2 + (.2)^2 + (.2)^2 + (.2)^2\right) = 2,000$$

Limitation of Concentration Measures

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

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:

$$R = E_T / E_F$$

  - 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

Industry	Elasticity of Market Demand	Elasticity of Firm's Demand	Rothschild Index
Food	-1.0	-3.8	0.26
Tobacco	-1.3	-1.3	1.00
Textiles	-1.5	-4.7	0.32
Apparel	-1.1	-4.1	0.27
Paper	-1.5	-1.7	0.88
Chemicals	-1.5	-1.5	1.00
Rubber	-1.8	-2.3	0.78

시장진입/퇴출의 조건
Market Entry and Exit Conditions

- 진입의 장벽 **Barriers to entry**
  - Capital requirements.
  - Patents and copyrights.
 - Economies of scale.
  - Economies of scope.

가격설정행태
Conduct: Pricing Behavior

- ## The Lerner Index

$$L = (P - MC) / P$$

  - 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.
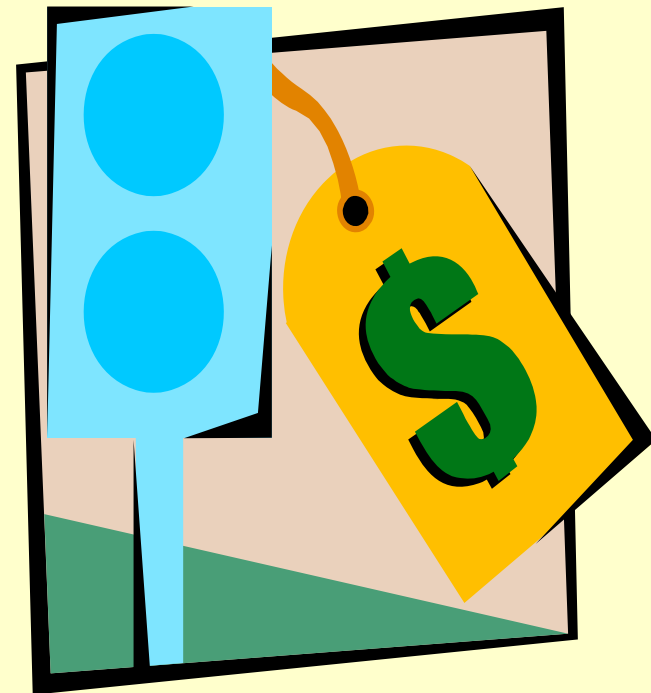
할증 요소
Markup Factor

- 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

Industry	Lerner Index	Markup Factor
Food	0.26	1.35
Tobacco	0.76	4.17
Textiles	0.21	1.27
Apparel	0.24	1.32
Paper	0.58	2.38
Chemicals	0.67	3.03
Petroleum	0.59	2.44

시장통합과 합병행위
Integration and Merger Activity

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

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

- 거대복합기업화 Conglomerate Mergers
  - The integration of different product lines into a single firm.

DOJ/FTC Horizontal Merger Guidelines

- Based on HHI $= 10{,}000 \; \Sigma \; w_i^2$, where

  $w_i = S_i / S_T.$

- Merger may be challenged if
  - HHI exceeds 1800, or would be after merger, and
  - Merger increases the 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..."

성과
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

Industry	Dansby-Willig Index
Food	0.51
Textiles	0.38
Apparel	0.47
Paper	0.63
Chemicals	0.67
Petroleum	0.63
Rubber	0.49

결론

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.