

5. From Firms to Industry

Key Concepts

- Transaction cost
- Principal-agent problem
- Structure-Conduct-Performance (SCP) paradigm
 - Structure (of the market)
 - Industry concentration
 - Potential for entry
 - Conduct (for a firm)
 - Pricing strategies
 - Integration and merger activity
 - Other firm behaviours (R&D, advertising)
 - Performance (for an industry)
 - Profitability
 - Social welfare
- Externality as market failure
 - Negative externality
 - Positive externality
 - Social optimum
 - Internalizing the externality
 - Private solutions to externalities (**Coase theorem**)

Methods for Obtaining Inputs

- **Spot exchange:** immediate purchase of inputs at current market prices
 - **Contracts:** formal relationship between buyer and seller that obligates the buyer and seller to exchange at terms specified in a legal document
 - **Vertical integration:** firm produces its own inputs
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Transaction Costs

Transaction Costs

Transaction costs are the costs that parties incur in the process of agreeing to and following through a bargain.

They are the **cost** for acquiring an input **in excess of the price paid to the supplier**.

E.g. search for supplier, cost of negotiation, investments required to make the transaction happen, etc.

Principal-Agent Problem

Principal-Agent Problem

The **separation of ownership and control** creates the **principal-agent (P-A) problem**.

Examples:

- Owner (principal) hires manager (agent) to run the firm
- Landlord (principal) hires tenant (agent) to take care of property
- Tenant (principal) wants to pay as little energy costs as possible, landlord (agent) doesn't want to spend money on energy-saving improvements
- Patient (principal) hires doctor (agent) to take care of health
- Manager (principal) hires employee (agent) to work

Solutions to the P-A Problem

In the case of owner-manager, the manager makes an economic trade-off: **effort vs. leisure**. We can incentivize the manager to work harder:

- **Incentive contract**
 - Tie manager wage to firm performance (e.g. profits)
- **Outside forces**
 - Reputation
 - Takeover threat
- **Profit sharing**
 - Give manager a share of the firm's profits
- **Revenue sharing**
 - Give manager a share of the firm's revenues
- **Time clocks and spot checks**
 - Monitor the manager's work hours and performance

1. S STRUCTURE

Industry Concentration

Industry Concentration

Industry concentration measures the size distribution of firms within an industry

- Many small firms?
- Few large firms?

Four-Firm Concentration Ratio (C)

$$C = \frac{S_1 + S_2 + S_3 + S_4}{S_T}$$

Where S_i are the sales of the four *largest* firms and S_T is total industry sales.

Herfindahl-Hirschman Index (HHI)

$$HHI = 10000 \sum_{i=1}^N \left(\frac{S_i}{S_T} \right)^2$$

HHI Interpretation

$$\text{Highly concentrated} \iff HHI > 200$$

Potential for Entry

Optimal decisions by firms will depend on the ease with which new firms can enter the market. Several factors can create **barriers to entry**:

- Capital requirements
- Patents
- Economies of scale

2. C CONDUCT

... of a firm refers to its **behaviour** in the marketplace.

Pricing Strategies

Σ Lerner Index

$$L = \frac{P - MC}{P} \iff P = \left(\frac{1}{1 - L} \right) MC$$

The **Lerner Index** measures the **market power of a firm** by quantifying the difference between price and marginal cost as a proportion of price.

Σ Markup Factor over Marginal Cost

$$\text{Markup factor over MC} = \frac{1}{1 - L}$$

Integration and Merger Activity

❖ Integration

Integration is the process of **combining different stages of production** or uniting productive resources of firms. It can occur during the formation of a firm.

It is a form of **vertical integration**.

E.g. a car manufacturer acquiring a tire company.

❖ Merger

A **merger** is the combination of two or more firms into a single firm.

It is a form of **horizontal integration**.

E.g. two car manufacturers merging to form a larger company.

Types of Integration

- **Vertical integration:** combining different stages of production
- **Horizontal integration:** combining firms at the same stage of production

Reasons for Integration

- Reduce transaction costs
- Reap (= exploit) economies of **scale** ($LRAC \downarrow$ as $Q \uparrow$)
- Reap economies of **scope** ($C(Q_1, Q_2) < C(Q_1, 0) + C(0, Q_2)$)
- Increase market power
- Gain better access to capital markets

Other firm behaviours (conduct)

- **Research and development**
 - Expenditures made by firms to gain a technological advantage
 - With the aim of acquiring a patent
 - **Advertising**
 - Expenditures made by firms to inform or persuade consumers to purchase their product
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3. P PERFORMANCE

... refers to the **profits** and **social welfare** that result in a given **industry** (>< conduct was for one firm!).

S-C-P Paradigm

Structure → Conduct → Performance

The SCP paradigm views these three aspects of industry as being integrally related.

- **Structure**
 - Industry concentration (C , HHI)
 - Barriers to entry
- **Conduct**
 - Individual firm behavior on the market
 - Pricing strategies (Lerner index, markup factor)
 - Integration and merger activity
 - Other firm behaviours (R&D, advertising)
- **Performance**
 - Profitability (accounting profit, economic profit)
 - Social welfare (consumer surplus, producer surplus, total surplus)

Critique on SCP

There is **no one-way causal link** among structure, conduct, and performance.

- Firm conduct can affect market structure (e.g. mergers)
 - Market performance can affect market structure (e.g. high profits attract new firms, changing concentration)
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Absence of Market Failures

In **absence of market failures**, the competitive market outcome (= social optimum, equilibrium) is **efficient** **maximizes total surplus**.

Externality as Market Failure

❖ Externality

An **externality** is a type of market failure.

It is the **uncompensated impact** of one person's actions on the **well-being of a bystander**.

Externalities can be:

- **Positive**
 - Impact on bystander is beneficial
 - E.g. vaccination, research

- **Negative**
 - Impact on bystander is adverse
 - E.g. pollution, noise

Supply and Demand

Σ Supply is private cost

$$\text{Supply} = \text{private Cost}$$

Σ Demand is private value

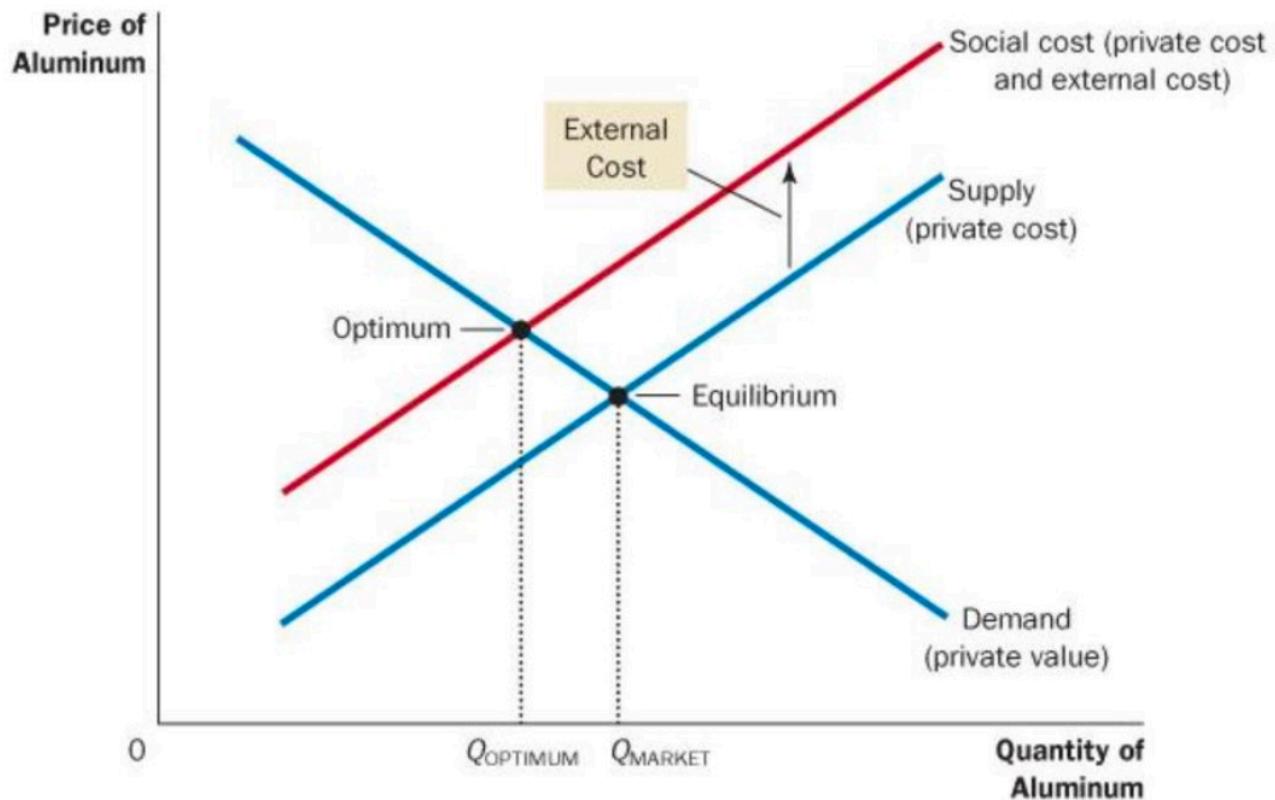
$$\text{Demand} = \text{private Value}$$

Negative Externality

Σ Social Cost in presence of *External Cost*

$$\boxed{\text{Social Cost} = \text{private Cost} + \text{External Cost}}$$

The **social cost** curve lies **above** the supply curve by the amount of the **external cost**.

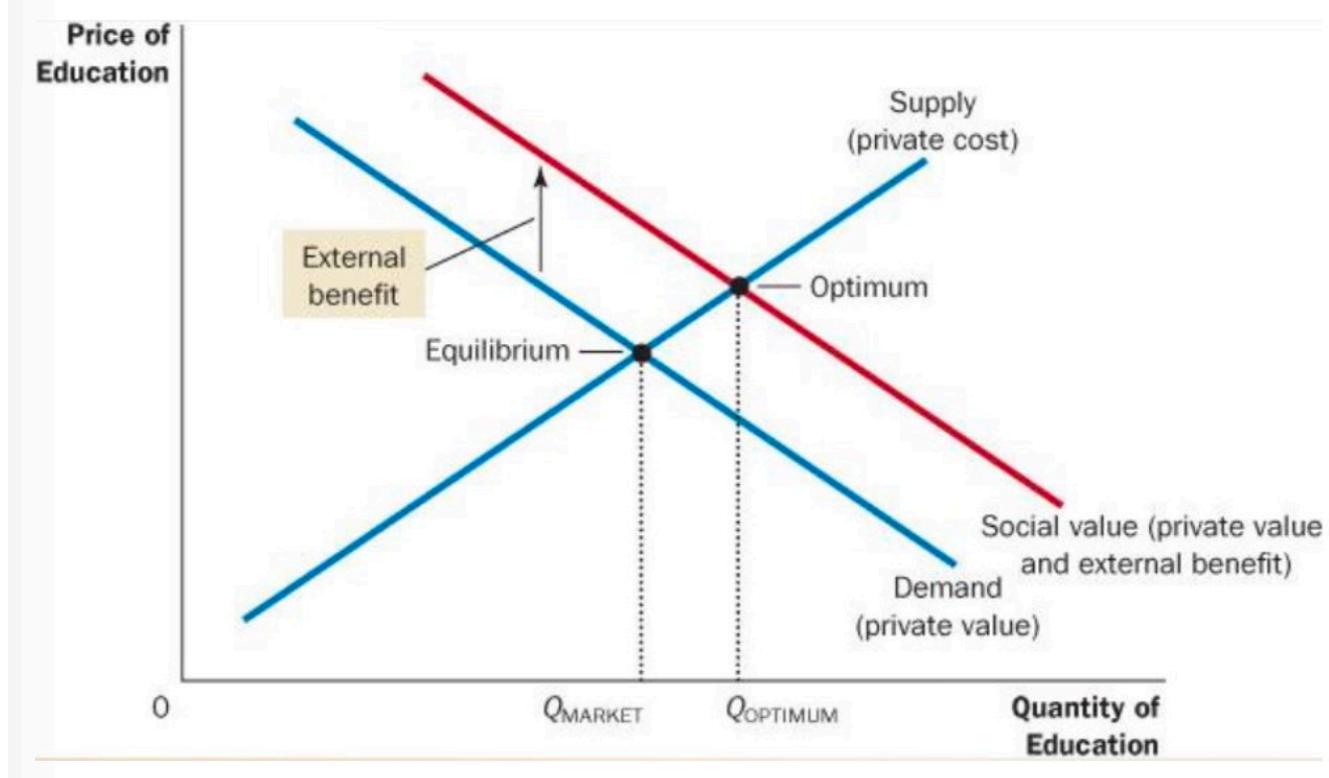


Positive Externality

Σ Social Value in presence of *External Benefit*

$$\boxed{\text{Social Value} = \text{private Value} + \text{External benefit}}$$

The **social value** curve lies **above** the demand curve by the amount of the **external benefit**.



Social Optimum

Social Optimum

The **socially optimal quantity** is the quantity that maximizes **total surplus** when accounting for the externality. It is shifted by externalities.

Internalizing the Externality

🔗 Internalizing the Externality

Altering incentives so that people take account of the external effects of their actions.

E.g. tax on pollution, subsidy for being vaccinated.

When market participants must pay social costs (= internalize the externality), the **market equilibrium is the social optimum**.

Private Solutions to Externalities

Coase Theorem

If private parties can **bargain without cost** over the **allocation of resources**, they can **solve the externalities problem on their own**, no matter how the rights are initially distributed.

The socially efficient outcome maximizes everyone's well-being (total surplus).

Why Private Solutions may not work

1. Transaction costs

- Coase assumes no transaction costs
- But in reality, transaction costs are often high

2. Stubbornness

- Even if a beneficial agreement is possible, each party may hold out for a better deal

3. Coordination problems

- If many parties are involved, it may be difficult to coordinate an agreement