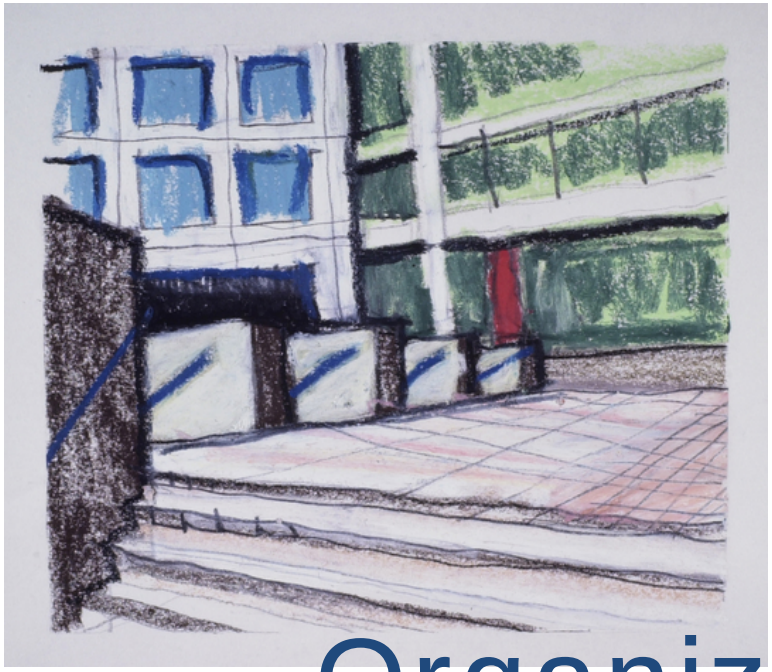


Organizing Production

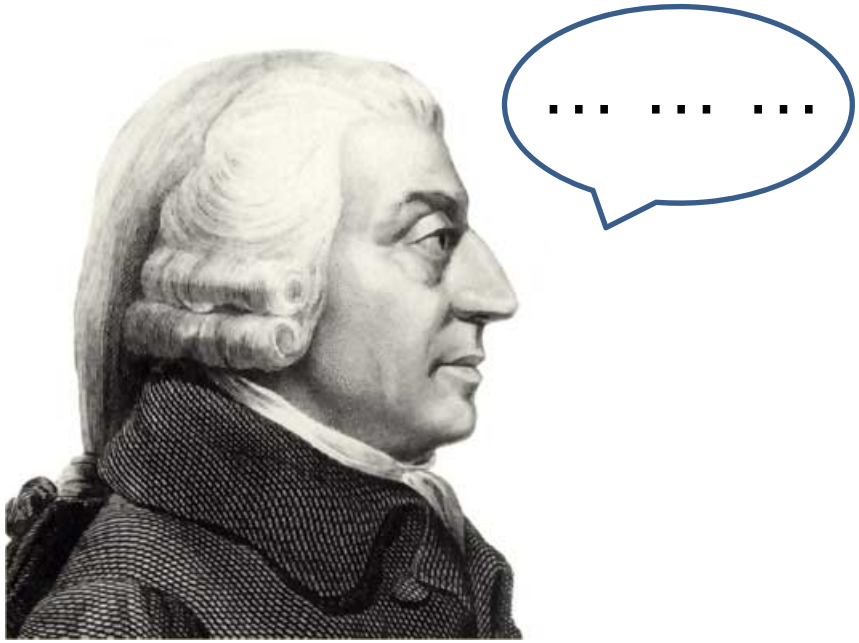
Fei DING
HKUST ECON

Announcements

- Assigned reading:
  - Textbook, Chapter 10, 11
- Tutorial Oct. 29 – Nov. 2: utility and indifference curves
- Problem set 6
  - Ch10: 1-3, 5, 7, 10, 18
  - Ch11: 2-14, 19
  - Due dates will be announced via CANVAS.

Production

"***It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest.***" --- Adam Smith



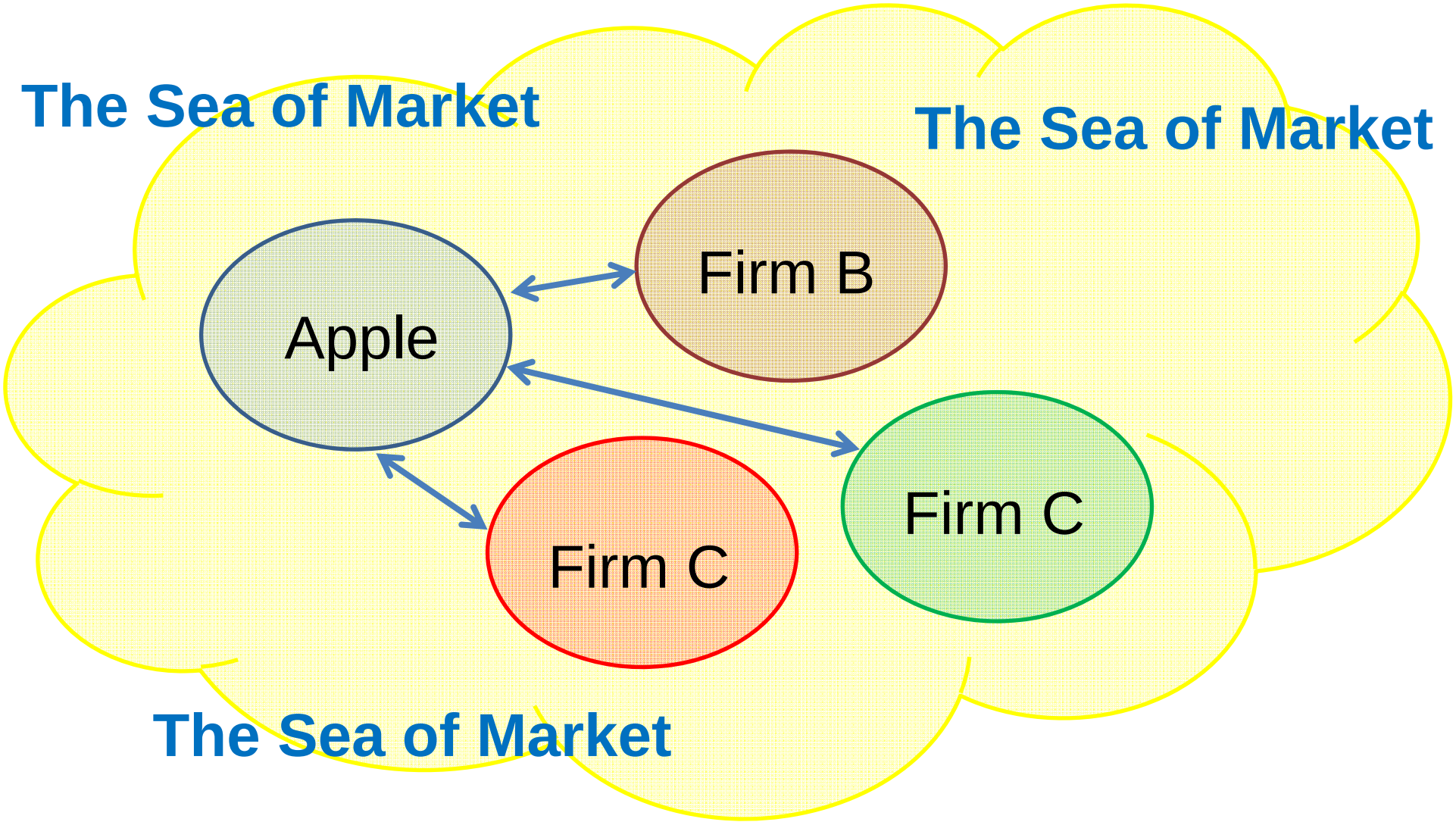
What is a “firm”?

- We have discussed markets a lot: free-market, perfect competitive market, etc.
- Do you buy ECON2113 (services) from me?
- What is a firm?
- A firm is an “institution” that hires factors of production and organizes them to produce and sell goods and services for (maximal) profit.
- Entrepreneur is the “factor of production” that bears the gains and losses incurred by the firm (residual claimant).

What is a “firm”?

- A firm buys raw materials, components, and professional services from **others (firms).**
- **FOR EXAMPLE:** Apple employs Foxconn to assemble the iPhone (outsourcing), and purchase materials from other firms, such as LCD display from Samsung.
- Why wouldn’t Apple do all these in a “single firm” or make everything by itself?
- What draws the “line” between two firms (or many firms)?

What is a “firm”?



What is a “firm”?

- Using “market” (mechanism) involves “**transaction costs**”.
- Finding sellers, contracting costs, verification of quality, etc.
- When you buy a iPad from Apple… …
  - Theoretically speaking, you can buy parts yourself, get design services from Apple and assemble services from Foxconn … ..
  - BUT, You WILL NOT.

What is a “firm”?

- Economies of scale and scope, team production
  - Specialization
  - “Trade” / “Outsourcing” to realize the gain from specialization
- Opportunistic behavior
  - Hold-up problem: Samsung tells Apple that the price of LCD will increase by 20% for iPhone6.
  - Transaction costs in contracting (in reaching an agreement)
  - Integration (one firm does more than one function)

What is a “firm”?

- Internal Control within a firm
  - How can an owner make sure workers are working to the owner’s benefit?
  - Sometimes it is difficult, especially when a firm is getting very big with many activities.
- A balance (trade-off) of different forces

Information and Organization

- A firm organizes production by combining and coordinating productive resources using a mixture of two systems:
  - Command systems: Commands pass downward through the hierarchy and information (feedback) passes upward.
  - Incentive systems: Market-like mechanism to induce workers to perform in ways that maximize the firm's profit.
- Most firms use a mix of command and incentive systems.

Information and Organization

- The principal–agent problem: Problem for the principle in making sure that an agent acts in the best interests of the principal.
  - FOR EXAMPLE: Stockholders of a firm are the principals and the managers of the firm are their agents.
- To deal with the PA problem:
  - Ownership
  - Incentive pay
  - Long-term contracts

What is a “firm”?

Theory of Firm

- Ronald H. Coase (1991)
- Oliver E. Williamson (2009)
  - Vertical integration
  - Horizontal integration
  - Outsourcing (using market between two firms, for example)

Explanatory Note – Summary

- There are many reasons to “concentrate” production activities, for example:
  - Economies of scale: Encourage more output to be produced by a firm (encourage specialization in a product/component/process)
  - Specialization: Each person to do one thing
- However, opportunistic behavior means a potential risk to firms, so there is “advantage” to “integrate” different component/process under one firm, though at the expense of “concentrate” production activities.
- Also, there is “limit” for gain from economies of scale or specialization (or even diseconomies).

Explanatory Note – Summary

- The “equilibrium” is a balance of these forces or a firm determines “how big (how many products/components/process)” to engage in.
- This tradeoff defines the size of a firm or “draw a line” between two firms.

Economic Profits vs. Accounting Profits

- A firm's goal is to maximize profit.
  - If the firm fails to maximize its profit, the firm is either eliminated or taken over by another firm that seeks to maximize profit.
- Profits:
  - Benefits from the firm's activities received by the firms' owners.
  - Profits = Total Revenues – Total Costs
  - **Costs are always "economic costs"!!!**

Economic Profits vs. Accounting Profits

Very important: Factors of production owned or provided by firm or enterpreuer

- If the firm owns capital and uses it to produce its output, then the firm incurs an opportunity cost.
- Because the firm can receive compensation or income by selling or renting the capital to other firms.
- Cost is a forward looking concept! PREVIOUS EXAMPLE: Bank of China Tower

Economic Profits vs. Accounting Profits

- Explicit costs:
  - Costs in association with payments: Paying wages to workers, buying raw materials from another forms (suppliers), etc.
- Implicit cost:
  - Opportunity costs incurred by the firm and enterpreurer without payments!

Economic Profits vs. Accounting Profits

Example (1):

- Sam earns HK$9,000 a month currently in HKUST as a clerk.
- Recently, he wants to set up a photography school instead.
- Estimated revenue = HK$ 30,000 per month
- Estimated expenses = HK$ 20,000 per month
- Sam's profits from the photography school?

Economic Profits vs. Accounting Profits

Economic Profits vs. Accounting Profits

EXAMPLE (II):

- You need $100,000 to start your business. The interest rate is 5%.
  - Case 1: borrow $100,000.
  - Case 2: use $40,000 of your savings, borrow the other $60,000.
- Any difference in total costs?

Economic Profits vs. Accounting Profits

- The concept of “profit” used by economists (“economic profit”) should be distinguished from “accounting profit” used by accountants.
- Accounting profit:
  - Revenues – explicit costs (as measured by actual expenditures, which specifically exclude the owner’s opportunity costs)
- Economic profit:
  - Revenues – explicit and implicit costs
- Which one is more relevant for decision?

PRODUCTION FUNCTIONS

Production Function

- "Transformation" of factors of production into final products that consumers want to buy.
- An example of a production function:

$$Y = Af(Labor, Capital)$$

where

- Y: Total output
- A: Technology level

Technological and Economic Efficiency

- **Technological efficiency:** When a firm uses the least amount of inputs to produce a given quantity of output.
- If it is impossible to produce a given amount of a good by decreasing any one input, holding all other inputs constant, then production is technologically efficient.

Technological and Economic Efficiency

- **Economic efficiency:** When the firm produces a given quantity of output at the least cost.
  - The economically efficient method depends on the relative costs of capital and labor.
- The difference between technological and economic efficiency?
  - Technological efficiency concerns the **quantity** of inputs used in production for a given quantity of output, whereas economic efficiency concerns the **cost** of the inputs used.

Different ways to make 10 TVs

	Labor	capital
A.	1	1000
B.	10	10
C.	1000	1

TABLE 10.3 The Costs of Different Ways of Making 10 TVs a Day

(a) Wage rate $75 per day; Capital rental rate $250 per day

Method	Inputs: Labor	Inputs: Capital	Labor cost ($75 per day)		Capital cost ($250 per day)		Total cost
A	1	1,000	$75	+	$250,000	=	$250,075
B	10	10	750	+	2,500	=	3,250
C	1,000	1	75,000	+	250	=	75,250

(b) Wage rate $150 per day; Capital rental rate $1 per day

Method	Inputs: Labor	Inputs: Capital	Labor cost ($150 per day)		Capital cost ($1 per day)		Total cost
A	1	1,000	$150	+	$1,000	=	$1,150
B	10	10	1,500	+	10	=	1,510
C	1,000	1	150,000	+	1	=	150,001

(c) Wage rate $1 per day; Capital rental rate $1,000 per day

Method	Inputs: Labor	Inputs: Capital	Labor cost ($1 per day)		Capital cost ($1,000 per day)		Total cost
A	1	1,000	$1	+	$1,000,000	=	$1,000,001
B	10	10	10	+	10,000	=	10,010
C	1,000	1	1,000	+	1,000	=	2,000

Production Function

- A firm's production function is the relationship between the maximum output attainable and the quantities of factors of production used (i.e. land, capital, labor).
- **ALL** inputs are variable in a production functions, however … …
- **Capital** and **Land** are more difficult to adjust in a short period of time, or we call that **short run** (SR).

SR and LR

- Short Run (SR):
  - Some inputs (at least one input) are fixed, for example: production line, factory size
- Long Run (LR):
  - All inputs are variable.
- No “**rigid**” definition (time horizon / decision time frame)
- More important is the “variability” of inputs (factors of productions), which means a firm can **choose** any “combination of inputs” available for its production.

End for today ☺

Thank you very much

See you next time !