

# BUEC 311: Business Economics, Organization and Management

## Producer Behaviour, Part 3

Fall 2020

# Outline

- 1 The Ownership and Governance of Firms
- 2 Profit Maximization
- 3 Owners' vs. Managers' Objectives
- 4 The Make or Buy Decision
- 5 Market Structure

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# Economic sectors

- Firms operate in one of three sectors:

- 1 The Private Sector: Firms that are owned by individuals or non government entities and whose owners may earn a profit.
  - E.g. Apple, Heinz, Toyota.
  - In most countries, the private sector accounts for the largest fraction of economic output.
- 2 The Public Sector: Firms and other organizations that are owned by governments or government agencies; also called *state-owned enterprises*.
  - E.g. Armed forces, education, health care, Canada Post, Via Rail.
  - The public sector can be large or small; typically between 10-20% of economic output.
- 3 The Nonprofit Sector: Organizations that are neither government owned, nor intended to earn a profit, but typically pursue social or public interest objectives.
  - E.g. Greenpeace, Alcoholics Anonymous, the Salvation Army.

# Ownership Structures

- There are three main ownership structures for firms in the private sector:
  - ① Sole proprietorships are firms owned and controlled by a single individual.
  - ② Partnerships are businesses jointly owned and controlled by two or more individuals operating under a partnership agreement.
  - ③ Corporations are firms owned by shareholders, who own the firm's shares or stocks.
    - A share is a unit of ownership of the firm. A shareholder's ownership is proportional to the number of shares they hold.
    - Shareholders typically elect a board of directors to represent them. The board of directors hires managers to run the firm's operations.
    - The legal name of a corporation often includes the term "Incorporated" (Inc.) or "Limited" (Ltd.) to indicate its corporate status.

## Public vs Private

- Shares of *public corporations* can be bought and sold by the general public.
  - Shares may be available on an organized stock exchange, such as the New York Stock Exchange, the NASDAQ, the Tokyo Stock Exchange, the Toronto Stock Exchange, or the London Stock Exchange.
- Shares of *closely held corporations* are not available for purchase or sale on an organized exchange.
  - Typically its stock is owned by a small group of individuals (private equity).
- To transition from privately held to publicly traded status, a closely held firm will typically make an initial public offering (IPO) of its shares on an organized stock exchange.
  - Why go public?
- Firms can also transition from being publicly traded to being closely held.
  - E.g. Toys-R-Us, Burger King.

# Corporations

- Owners of a corporation are not personally liable for the firm's debts.
  - They have limited liability: personal assets cannot be taken to pay a corporation's debts, even if it goes into bankruptcy.
- Historically, owners of sole proprietorships and partnerships were fully liable, individually and collectively for any debts of the firm.
  - Now owners can form a limited liability company (LLC).
  - The precise regulations governing LLCs varies from country to country.

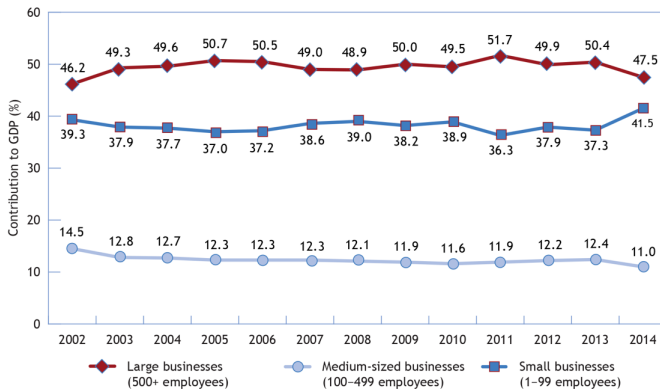
# Limited Liability

- Key benefit of limiting liability for firm owners: firms can grow larger.
- In the U.S., most large firms are corporations.
  - According to the 2015 ProQuest Statistical Abstract of the U.S., U.S. corporations are only 18% of all non-farm firms, but make 81% of sales revenue and 58% of net income. Non-farm sole proprietorships are 72% of firms, but make only 4% of sales revenue and 15% of net income.
  - Less than 1% of U.S. corporations earn over \$50 million, but they account for 77% of total revenue.
- The available data suggests the pattern in Canada is similar.



# Distribution of Firms

Figure 13: Contribution to GDP by business size, Canada, 2002–2014



Source: Statistics Canada.

# Distribution of Firms

Table 5: Total private sector employment by industrial sector and business size, 2017

	Small businesses (1–99 employees)		Medium-sized businesses (100–499 employees)		Percentage of SME employment	Large businesses (500+ employees)		Total (thousands)
	Number (thousands)	%	Number (thousands)	%		Number (thousands)	%	
<b>Goods-Producing Sector</b>	1,891.4	62.1	783.7	25.7	87.9	369.6	12.1	3,044.8
Agriculture	101.3	90.9	9.4	8.4	99.3	0.8	0.7	111.5
Forestry, fishing, mining, quarrying, and oil and gas extraction	142.1	50.7	66.9	23.9	74.5	71.5	25.5	280.6
Utilities	6.8	44.9	3.8	25.4	70.3	4.5	29.7	15.1
Construction	821.3	82.1	133.4	13.3	95.4	45.6	4.6	1,000.3
Manufacturing	819.9	50.1	570.2	34.8	84.9	247.2	15.1	1,637.3
<b>Service-Producing Sector</b>	6,404.4	72.4	1,587.7	17.9	90.3	858.7	9.7	8,850.7
Wholesale and retail trade	1,949.8	77.3	469.9	18.6	95.9	102.5	4.1	2,522.2
Transportation and warehousing	350.8	57.8	160.8	26.5	84.3	95.5	15.7	607.1
Finance, insurance, real estate and leasing	551.7	61.5	182.8	20.4	81.8	163.1	18.2	897.6
Professional, scientific and technical services	670.5	68.3	211.1	21.5	89.8	99.9	10.2	981.5
Business, building and other support services	416.1	73.8	109.1	19.3	93.1	38.8	6.9	564.0
Educational services	65.1	61.6	17.8	16.8	78.5	22.7	21.5	105.6
Health care and social assistance	537.1	55.7	194.7	20.2	75.9	232.4	24.1	964.2
Information, culture and recreation	344.8	64.1	115.5	21.5	85.6	77.4	14.4	537.6
Accommodation and food services	1,007.0	90.5	84.9	7.6	98.1	20.7	1.9	1,112.5
Other services (except public administration)	511.6	91.6	41.1	7.4	99.0	5.8	1.0	558.5
<b>Total</b>	<b>8,295.8</b>	<b>69.7</b>	<b>2,371.4</b>	<b>19.9</b>	<b>89.7</b>	<b>1,228.3</b>	<b>10.3</b>	<b>11,895.5</b>

Sources: Statistics Canada, Labour Force Survey; and ISED calculations.

# Distribution of Firms

Table 1: Total number of employer businesses by business size and number of SMEs per 1,000 provincial population, December 2017

Province/Territory	Small businesses (1–99 employees)		Medium-sized businesses (100–499 employees)		Large businesses (500+ employees)		Total	Number of businesses per 1,000 Individuals (18+ years)
	Number	%	Number	%	Number	%		
Newfoundland and Labrador	16,580	97.9	310	1.8	43	0.3	16,933	38.7
Prince Edward Island	5,963	98.3	94	1.5	11	0.2	6,068	49.4
Nova Scotia	28,874	97.9	554	1.9	68	0.2	29,496	37.3
New Brunswick	24,827	98.0	449	1.8	59	0.2	25,335	40.5
Quebec	236,705	97.9	4,447	1.8	603	0.2	241,755	35.3
Ontario	417,742	97.7	8,744	2.0	1,232	0.3	427,718	37.2
Manitoba	38,226	97.6	822	2.1	122	0.3	39,170	37.8
Saskatchewan	40,072	98.3	625	1.5	86	0.2	40,783	45.4
Alberta	160,264	98.0	2,933	1.8	387	0.2	163,584	48.8
British Columbia	179,517	98.3	2,829	1.5	324	0.2	182,670	46.1
Territories	3,999	97.0	119	2.9	4	0.1	4,122	46.4
<b>Canada</b>	<b>1,152,769</b>	<b>97.9</b>	<b>21,926</b>	<b>1.9</b>	<b>2,939</b>	<b>0.2</b>	<b>1,177,634</b>	<b>39.7</b>

Sources: Statistics Canada, Table 33-10-0037-01 — Canadian Business Counts, with employees, December 2017;  
Statistics Canada, Table 17-10-0005-01 — Population estimates on July 1st, by age and sex; and ISED calculations.

# Governance

- In a small private sector firm with a single owner/manager, the governance of a firm is straightforward.
  - The owner/manager makes the important decisions for the firm.
- In publicly traded companies, the shareholders own the corporation. However, most play no meaningful role in day-to-day decision making or long range planning.
  - Shareholders elect a board of directors and delegate many of their ownership rights to them.
  - The board of a large publicly traded corporation normally includes outside directors and inside directors, such as the chief executive officer (CEO) of the corporation, and other senior executives.

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# Profit Maximization

- Main goal of most firms in the private sector: *maximize profit*
- Profit ( $\pi$ ) is the difference between a firm's revenues ( $R$ ) and costs ( $C$ ):

$$\pi = R - C$$

- If profit is negative ( $\pi < 0$ ), the firm makes a loss.

# Profit Maximization and Opportunity Costs

- Firm profit:

$$\pi = R - C$$

- Revenue is price times quantity ( $R = p \times q$ ), although may also include non-market valued items.
- Cost is measured using *opportunity cost*, the value of the best alternative use of any input the firm employs.
  - Recall: the full opportunity cost of inputs (or value of output) used may exceed the explicit or out-of-pocket costs (or into-pocket revenues) recorded in financial accounting statements.

# Profit Maximization and output

- Because revenue and cost both vary with output,  $q$ , the firm's profit also varies with output:

$$\pi(q) = \overbrace{P \times q}^{R(q)} - \overbrace{C(q)}$$

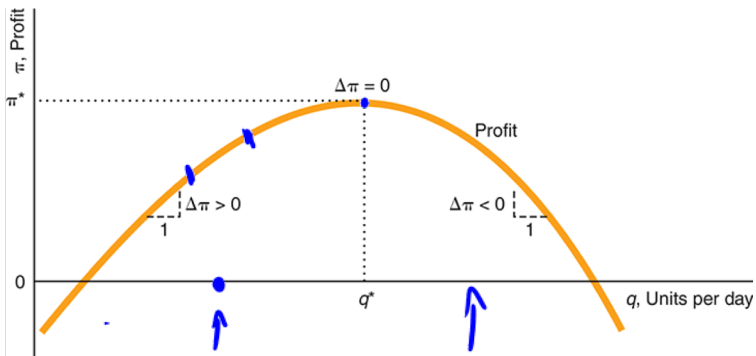
- Key question: What level of output,  $q$ , should the firm choose?



# Profit Functions

- If the firm knows how profit changes with  $q$ , it can choose the  $q$  that yields the highest level of profit. That is, it can choose the *profit maximizing* level of  $q$ .
- This is the same as the firm picking the highest point on its *profit curve*.

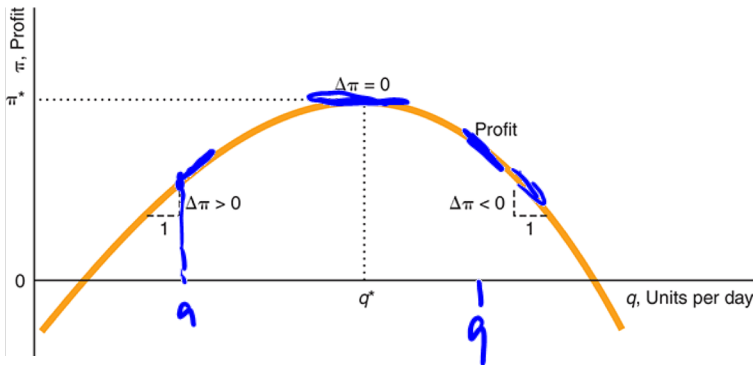
# Profit Maximization



# Profit Maximization

- Unfortunately, the shape of the profit curve is not always known.
- In this case, the firm can find the profit maximizing level of output through experimentation:
  - If the firm increases output by a small amount, and profit increases, it should keep increasing output until doing so does not increase profit any further.
  - If the firm increases output by a small amount, and profit decreases, it should decrease output until doing so does not decrease profit any further.
- This experimentation yields the peak of the profit curve.
  - Why? Think about the end points.

# Profit Maximization



## Profit Maximization at the Margin

- We can also determine the peak of the profit curve from changes in marginal revenue ( $MR(q)$ ) and marginal costs ( $MC(q)$ )

$$\text{Marginal Profit}(q) = MR(q) - MC(q)$$

- Marginal profit increasing if  $MR(q) > MC(q)$ .
- Marginal profit decreasing if  $MR(q) < MC(q)$ .

- \* Profit is maximized when  $MR(q) = MC(q)$ . \*

# Profit Maximization and Losses

- It is possible that the firm may make a loss even at its profit maximizing level of output.
- Key question:
  - Should the firm continue to operate if its profit is negative?

# Firm Exit Decisions

- In general, a firm should shut down only if it can reduce its loss by doing so.
  - This applies in both the short and long run alike.
- The firm should shut down only if its revenue is less than its avoidable cost.
  - In the short run, variable costs are avoidable, but most fixed costs are unavoidable (sunk costs).
  - In the long run, all costs are avoidable.

# Dynamic or Long-term Profit Maximization

- Of course, firms need not only focus on the current period.
  - Normally, firms are interested in maximizing profit over many periods.
- Because money today is worth more than money in the future, a stream of future profits is valued using its present value:

$$PV = \frac{FV}{(1+i)^t}$$

where  $PV$  is the present value,  $FV$  is the future value,  $i$  is the interest rate, and  $t$  is the number of years.



# Profit Maximization and Share Prices

- Should manager focus on maximizing profit or share price?
- Depends on how knowledgeable investors are.
  - If investors are well informed, stock price reflect current and future profits of the firm.
  - If investors are not well informed, stock price may not reflect profits.

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# Owners' vs. Managers' Objectives

- Key issue for firm owners:
  - Getting managers to do what they want.
- This is a form of a *principal-agent* problem.
  - Owner (principal) delegates tasks to managers (agents).
  - Issue arises because principal and agent can have conflicting objectives:
    - Owner wants to maximize profit.
    - Managers want to maximize own income/perks.
  - If the owner and manager have different objectives, profit will not be maximized.
    - This is an *agency cost*.

incentive compatibility  
participation constraint

- How can owners ensure managers do what they want?

# Owners' vs. Managers' Objectives

- Two possible solutions:

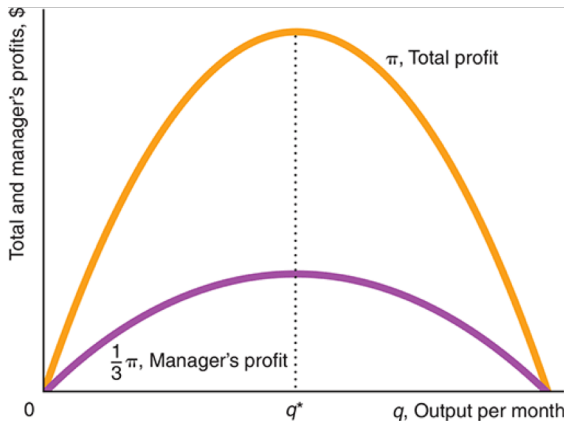
- ① Contingent rewards.

- To align owner and manager objectives, many firms use contingent rewards: higher pay if the firm does well.
    - e.g. Performance bonus, stock option.

- ② Profit sharing.

- Another option: pay the manager a share of the firm's profit.
    - Requires that profit is easily observed, and both owner and manager want to maximize monetary payoffs.

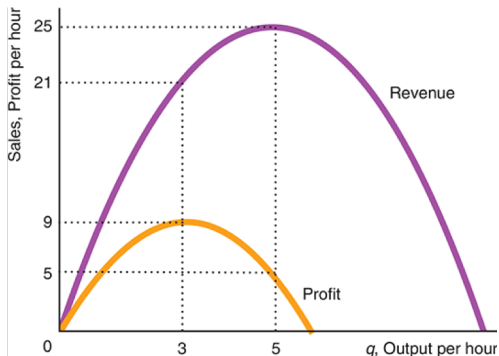
# Profit Sharing



# Profit Sharing

- Profit sharing may not be possible in all cases.
  - Profits may not be observable to all parties.
  - Reported profit could be manipulated by owner or manager.
- Common alternative to profit sharing: a revenue based objective.
  - Manager either receives a fraction of firm revenue, or receives a payment tied to size of firm revenue.
  - Would this work?

# The Problem With Targeting Revenue





# The Manager's Objective

- Owners also need to recognize that managers pursue objectives aside from maximizing their own income:
  - ① Minimizing effort.
    - If compensation is not tied to performance, a manager may not try to maximize profit; may instead try to maximize own happiness.
    - This can lead to *satisficing* behaviour.
  - ② Maximizing perks.
    - A manager may also try to maximize perks from job.
    - Some perks save a manager's time, and increase productivity.
    - Some perks have no tangible benefit to the firm; value of these perks should be deducted from the manager's salary.

# Social Objectives

- Some firms pursue social objectives in addition to maximizing profit.
  - These firms are engaged in *Corporate Social Responsibility (CSR)*.
- The pursuit of CSR can be controversial.
  - If management pursues social objectives, they may be reducing returns to shareholders.
  - Key is to link the CSR to dynamic profit maximization.

# Opposing Views on CSR

## 1 Milton Friedman:

- The CSR of a firm is to increase its profits.

## 2 R. Edward Freeman:

- Firms have obligations to shareholders, workers, customers, and the community where firms reside and operate.

- Who is right?

# Conflicting Objectives

- If the owner and manager have conflicting objectives, the owner may try to monitor and control the manager's actions.
- This is straightforward if the owner and manager work side-by-side.
- Monitoring is difficult if:
  - The owner cannot observe the actions of the manager.
  - Profits/payoffs from action is subject to uncertainty.
- Control is difficult if parties cannot write an enforceable contract.

# Asymmetric Information

- When a manager's actions are difficult to observe, owners need to rely on indirect monitoring.
- Indirect monitoring should be designed to reduce agency costs.
  - Board and Managers: Senior executives are restricted in their ability to carry out activities outside the firm (disclosure of conflict of interest).
  - Shareholders and Board: Rules may require firm to have outside directors; may also govern nature and frequency of elections.
    - However, it can be difficult to specify/legally enforce what constitutes appropriate effort on the part of board members.
  - Say-on-Pay (SOP) rules: Shareholders vote periodically on compensation going to senior executives.
    - E.g. the Dodd-Frank Wall Street Reform, and the 2010 Consumer Protection Act.
    - In Canada, SOP votes are not legally required, but voluntary use is increasing.

# Bad Outcomes

- Markets can also discipline the behaviour of managers.
- *Survivor principle*: In highly competitive markets, the only firms that survive are those that are run to maximize profit.
- *Market for corporate control*: Outside investors buy enough shares to take over control of an under-performing publicly traded firm.

# Poison Pills

- In the United States, firms can defend against hostile takeovers with a *shareholder rights plan*.
  - Also known as a poison pill defence.
  - Idea is to make a firm a less attractive takeover target by changing bylaws or charter.
- Poison pills are restricted in many countries.
  - In Canada, regulatory authorities often remove provisions deemed to be poison pills during takeover bids.
  - Why would regulators do this?



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# The Make or Buy Decision

- Two key questions for management:
  - ① How large should the firm be in its primary market?
    - This is the *horizontal dimension* of the firm.
  - ② What stages of the production process should the firm participate in?
    - This is the *vertical dimension* of the firm.
- The answer to 2. referred to as *supply chain management*.
  - Decision focuses on what sequential stages of production, marketing and distribution will be done in house, and what activities will be sourced from other firms.

# The Make or Buy Decision

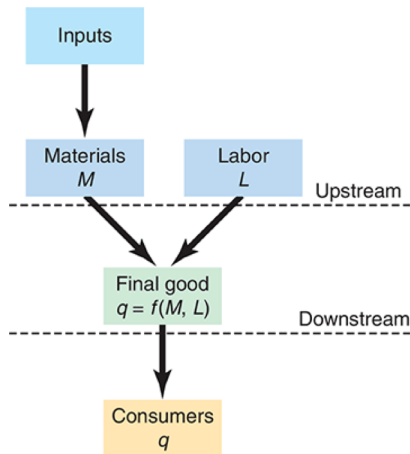


Figure: A simple supply chain

# The Make or Buy Decision

- A firm that participates in more than one successive stage of production or distribution of goods and services is vertically integrated.
- A firm may vertically integrate backward and produce its own inputs, or forward and buy its former customer.
- A firm can be partially vertically integrated.
  - It can produce a good, but rely on another firm to market it.
  - It may produce some inputs itself and buy others from the market.

# Contracting

- For many firms, it is possible to rely on *spot markets* or *cash markets* as a means to source inputs.
- Firms can also sign *long-term contracts* to secure inputs at specified prices and quantities.
  - Why contract instead of relying on the market?
- Contracts can also be used to create *vertical restraints* that lead to *quasi-vertical integration*.
  - E.g. Franchise and franchisee.
- However, in practice, all firms are vertically integrated to some degree.

# Vertical Integration

- The extent of vertical integration depends on profitability.
- Key considerations for profitable vertical integration:
  - 1 The firm has to account for all relevant costs, including some that are not easily quantifiable, such as transaction costs and preventing opportunistic behaviour.
  - 2 The firm must ensure a secure and flexible supply of needed inputs to its production process.
  - 3 The firm may vertically integrate even if doing so raises its cost of doing business so as to avoid government regulations.

## Vertical Integration

- Vertical integration reduces transaction costs and avoids opportunistic behaviour.
  - Transaction costs: The costs of completing a business transaction, including the costs of writing and enforcing contracts.
  - Opportunistic behaviour: Refers to the possibility that others may take advantage of the firm when circumstances permit.
- Transaction costs may also arise when there is need for coordination.
  - Zara, a clothing retailer, felt coordination costs were high enough to justify vertical integration with one dozen factories in Spain and Portugal.
- A manufacturing firm may decide to vertically integrate if the cost of trying to prevent opportunistic behaviour is high.
  - Particularly likely when the firm only deals with one other firm: a classic principal-agent problem.

# Vertical Integration

- Another common reason for vertical integration is to ensure the supply of important inputs.
  - This is important in many industries.
    - E.g. Car assembly, aluminum.
- Backwards integration (upstream integration) can help ensure timely arrival of inputs.
  - Aluminum producers often vertically integrate to ensure supply of alumina.
- Problem can also be eliminated via quasi-vertical integration/contracts (idea is to reward prompt delivery and penalize delays), or just-in-time systems.
- Backwards vertical integration can also create flexibility by allowing the firm to change supply of essential inputs in response to shocks.



# Vertical Integration

- Firms may also vertically integrate to avoid government price controls, lower their taxes, and avoid regulations that limit profits.
- A vertically integrated firm avoids price controls by selling to itself.
  - E.g. After the U.S. government enacted price controls on steel, steel buyers bought producers that no longer wanted to sell as much as before.
- More commonly, firms vertically integrate to lower their taxes.
  - Tax rates vary by country, state/province, and type of product. A vertically integrated firm can shift profit between high-tax and low-tax jurisdictions via transfer pricing between divisions.
- When one type of business is regulated, but others are not, firms may vertically integrate to shift profits between regulated and unregulated divisions.

# Vertical Integration

- The extent of vertical integration often changes over the life cycle of a firm.
  - Initially, the market is small so firms vertically integrate to exploit internal division of labor.
    - E.g. Henry Ford's production in the early 1900s.
  - As the market and industry grows, firms vertically disintegrate. Each firm buys services/products from specialized firms.
    - E.g. Rise of parts manufacturers as auto industry matured.
  - As the industry matures further, new products develop and reduce demand for the original product, causing the market for the original product to shrink in size. Firms vertically integrate again.
    - E.g. Ford introduced a new aluminum structure for trucks in 2015; process is vertically integrated.

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# Market Structure

- When making horizontal/vertical decisions, managers need to consider the behaviour of actual and potential rival firms.
- The behaviour of firms depends on market structure:
  - The number of firms in the market.
  - The ease of entry and exit.
  - The ability of firms to differentiate products from rivals.

## 5. Market Structure

	<b>Monopoly</b>	<b>Oligopoly</b>	<b>Monopolistic Competition</b>	<b>Perfect Competition</b>
1. Ability to set price	Price setter	Price setter	Price setter	Price taker
2. Price level	Very high	High	High	Low
3. Entry conditions	No entry	Limited entry	Free entry	Free entry
4. Number of firms	1	Few	Few or many	Many
5. Long-run profit	$\geq 0$	$\geq 0$	0	0
6. Strategy dependent on individual rival firms' behavior	No (has no rivals)	Yes	Yes	No (cares only about market price)
7. Products	Single product	May be differentiated	May be differentiated	Undifferentiated
8. Example	Producer of patented drug	Automobile manufacturers	Plumbers in a small town	Apple farmers

# Takeaways

- ➊ Goal of most firms: maximize profit.
  - Profits are maximized when marginal revenue equals marginal cost.
  - In some cases, it may be better to shut down than produce at all.
- ➋ Owners and managers can have conflicting objectives.
  - It is possible to create incentives to align objectives.
- ➌ The structure of the supply chain depends on profitability of alternative forms.
- ➍ Decisions also depend on behaviour of actual and potential rivals in the market.