



commerce  
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society

COMMERCE MENTORSHIP PROGRAM

# **FINAL REVIEW SESSION**

# **ECON 101**



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# TABLE OF CONTENTS

**01 Introduction**

**02 Economic Principles**

**03 Supply and Demand**

**04 Elasticity**

**05 Economic markets**

**06 Consumer Behaviour**

**07 Producers in Short run**

**08 Producers in Long run**

**09 Competitive Markets**

**10 Monopoly**

**11 Imperfect Competition**

**12 Efficiency and Public Policy**

**15 Interest Rates**

**16 Government Intervention**



# Introduction

**Economics:** the study of how to manage scarce resources to satisfy unlimited human wants and the choices that individuals make when navigating scarcity

**Microeconomics:** the study of how allocation of resources are affected by price and government intervention

**Scarcity:** human desires > actual supply of resources (food, water, health)

**5 factors of production (inputs):** capital, land, labour, technology, entrepreneurship

**Outputs:** goods and services

We utilize factors of production to produce goods and services for consumption

**Opportunity cost:** value of the second-best alternative that you are giving up  
(e.g. giving up hanging out with friends to study for an exam)

- Excludes sunk costs: cost incurred in the past, is no longer relevant

**Q1.** Tanya just got accepted into UBC Sauder. In the time it takes to complete her 4 year degree, she could have either:

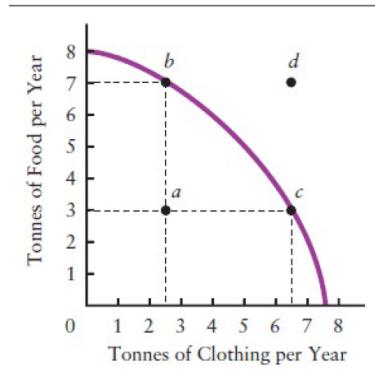
- Work full time at a receptionist job
- Travel back to her home country
- Started her own small business

What is her opportunity cost of going to Sauder?

- a. The sum of all her alternatives
- b. Only working full time and the profit from her small business
- c. **The most valuable opportunity she had to miss**
- d. Travel back to her home country

**Production Possibilities Boundary:** negative curve that shows all possible combinations of production

- When you are on the line of the curve, it means all inputs are fully utilized to their highest potential and it is the maximum output you can get
- Represents Opportunity cost of producing more of one product and less of the other
- Marginal Rate of Transformation (MRT): slope of production possibilities boundary



**Comparative advantage:** most efficient factors are used first before switching into other factors

**Law of increasing marginal opportunity cost:** opportunity cost of one product increases as you produce more of it

As you reach the end of the curve in producing more clothes, the quantity of food drops more drastically

**Q2.** You and your friend each want to produce a different point on the production possibility curve. Both argue that the other is not efficient. Which point should you pick to produce?

- a. A
- b. B
- c. Both are not efficient, you need to be further from the curve
- d. Both are efficient as long as it is on the curve

**Free market:** no government intervention, the invisible hand (Adam Smith) in the market brings buyers and sellers together

- Relatively efficient

**We assume:** individuals are rational and act in their best self-interests to satisfy desire, firms maximize profit, government maximize social welfare

- Marginal analysis: making decisions at the margin of one extra unit
  - Marginal benefit: additional value you get from consuming an extra unit
  - Marginal cost: additional cost to pay from consuming an extra unit



## Economic Principles

**Positive statements:** statements of fact, no value judgement

**Normative statements:** statements of opinion, value judgement

**Correlation relationship:** 2 variables tend to move together

**Causal relationship:** one variable causes a change in another

**CPI (consumer price index):** weighted average of consumer goods and services basket

$$\text{Value of index} = \frac{\text{Absolute value in given period}}{\text{Absolute value in base period}} \times 100$$

**Q3.** What are the price indexes when the base year is set to 2019? What is the percentage increase in the price from 2019 to current day?

| Year | Price | Price Index |
|------|-------|-------------|
| 2019 | 105   |             |
| 2020 | 134   |             |
| 2021 | 193   |             |

Percentage increase: \_\_\_\_\_

# Demand and Supply

**Quantity demanded:** total quantity that the household or individual wants to purchase

- Usually the lower the price = more demand but there are exceptions
- inverse/negative price-quantity relationship
- Convex curve

**Demand:** whole curve function

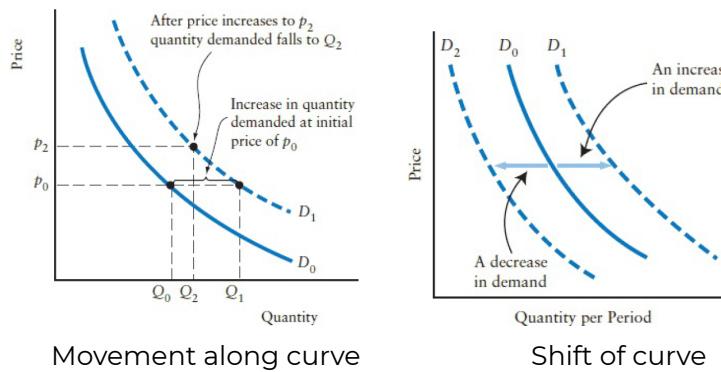
**Quantity demanded:** specific value on horizontal axis

**Ceteris paribus variables:** other variables influencing demand that we are holding constant to determine P and Qd

- Income, preference, advertising and perception, price of related goods (complement, substitute) future expectations, population, extreme weather changes

A movement along the curve results from a change in P or Qd

A shift of the curve results from a change in a ceteris paribus variable



**Quantity supplied:** quantity of goods and services the firm wants to sell

- direct/positive price-quantity relationship
- Usually the lower the price = less supply
- Convex curve

Supply: whole curve function

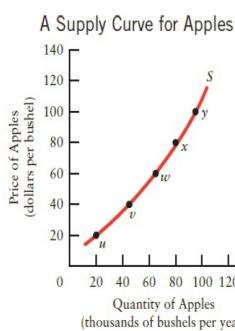
Quantity supplied: specific value on horizontal axis

**Ceteris paribus variables:** other variables that influence supply that we are holding constant to determine p and qs

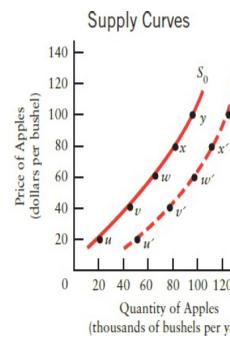
- Input prices, technology, taxes/subsidies, price of related goods in production (complement, substitute), future expectations, extreme changes in weather, number of suppliers

A movement along the curve results from a change in P or Qs

A shift of the curve results from a change in a ceteris paribus variable



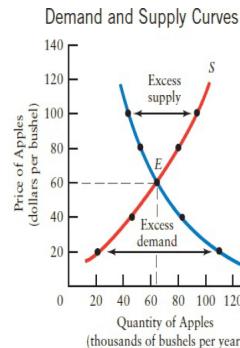
Movement along curve



Shift of curve

## Equilibrium

- When demand equals supply and the demand and supply curves intersect
- Over time it will gradually try to move back to equilibrium. It will stay at equilibrium until disturbed by a market condition that changes the demand or supply curve
- Disequilibrium: when demand does not equal supply
- Absolute price: in terms of money
- Relative price: in terms of another good, ratio of absolute prices



**Q4.** When the floods started in BC, the supply of gasoline was cut short and price increased. As a result the demand for Lays chips at each local gas station decreased. What is the relationship between the 2 goods?

**Q5.** You got a pay raise and as a result your overall income increases. What happens to your consumption of kitkats?

- Demand curve shifts left
- Demand curve shifts right**
- There is a movement up the curve
- There is a movement down the curve

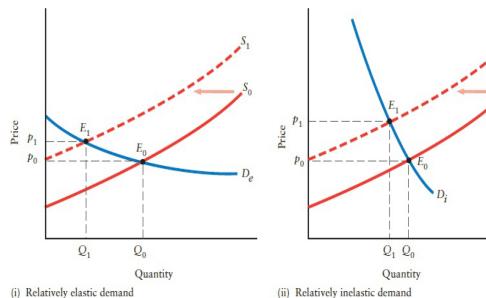
# Elasticity

## Price elasticity of demand

- Price sensitivity: Responsiveness of Qd to change in P

$$\eta = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}} = \frac{\frac{Q_2 - Q_1}{(Q_2 + Q_1)/2}}{\frac{P_2 - P_1}{(P_2 + P_1)/2}}$$

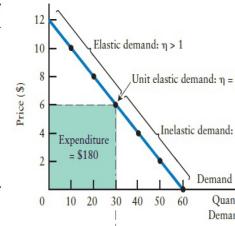
The more elastic, the more Qd changes in response to changes in P



In the long run - demand becomes more elastic due to technology adjustment, substitutes etc.

|              |   |
|--------------|---|
| $E = 0$      | Perfectly inelastic (quantity demanded does not change with price)    |
| $E < 1$      | Inelastic (change in quantity demanded < change in price) insensitive |
| $E = 1$      | Unitary elastic (quantity demanded = price) constant                  |
| $E > 1$      | Elastic (change in quantity demanded > change in price) sensitive     |
| $E = \infty$ | Perfectly elastic (price does not change with quantity demanded)      |

| Price (\$) | Quantity Demanded | Expenditure (\$) |
|------------|-------------------|------------------|
| 12         | 0                 | 0                |
| 10         | 10                | 100              |
| 8          | 20                | 160              |
| 6          | 30                | 180              |
| 4          | 40                | 160              |
| 2          | 50                | 100              |
| 0          | 60                | 0                |

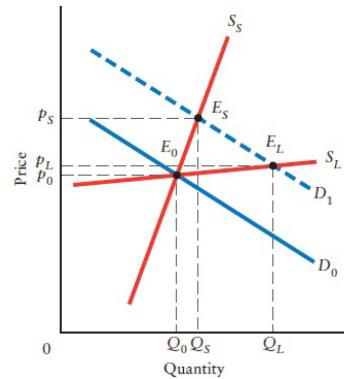


| Elasticity   | Change in total revenue as price decreases | Reasoning                            |
|--------------|--|--------------------------------------|
| $E = 0$      | fall                                       | No change in quantity                |
| $E < 1$      | fall                                       | Change in quantity < change in price |
| $E = 1$      | Maximum revenue                            | Change in quantity = change in price |
| $E > 1$      | rise                                       | Change in quantity > change in price |
| $E = \infty$ | rise                                       | No change in price                   |

## Price elasticity of supply

- Price sensitivity: responsiveness of qs to change in p
- Availability of factors of production affect elasticity (costs)
- In the long run - supply is more elastic because production efficiencies keep costs down and there are more substitutes for inputs

$$\eta_S = \frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in price}} = E_S = \frac{\frac{Q_2 - Q_1}{(Q_2 + Q_1)/2}}{\frac{P_2 - P_1}{(P_2 + P_1)/2}}$$



**Q6.** What is the elasticity if there was a larger percentage price increase of muffins causing a smaller percentage decrease of quantity demanded?

- a.  $E = 0$
- b.  $E < 1$**
- c.  $E > 1$
- d.  $E = \text{infinite}$

### Income elasticity of demand

- Relative change in  $q_d$  / relative change in income Y

$$\eta_Y = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}}$$

- Positive income elasticity depending on how much quantity demanded changes in relation to income
  - Luxury good: positive income elastic
  - Normal good: positive income inelastic
  - Inferior good: negative income elasticity

### Cross-elasticity of demand

- Responsiveness of  $Q_d$  of X to a change in Price of Y

$$\eta_{XY} = \frac{\text{Percentage change in quantity demanded of good } X}{\text{Percentage change in price of good } Y}$$

- Complements: move opposite ways
- Substitutes: move the same way

**Q7.** If you found a \$100 bill stuck in the vending machine and your desire for vending machine snacks decreased, what type of good are vending machine snacks?

- a. Positive good, negative income elasticity
- b. Normal good, positive income elasticity
- c. Inferior good, negative income elasticity**
- d. Inferior good, positive income elasticity

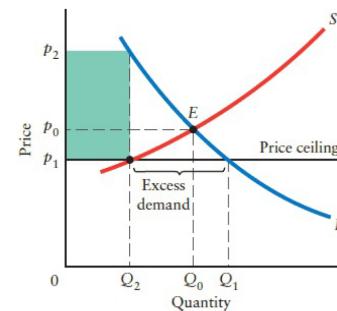
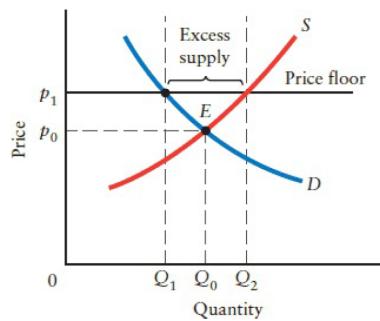
# Price Controls and Market Efficiency

**General equilibrium:** analyzing all markets at one time

**Partial equilibrium:** analyzing one market at a time

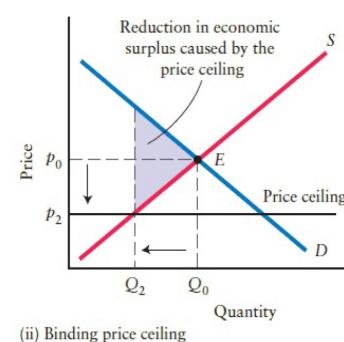
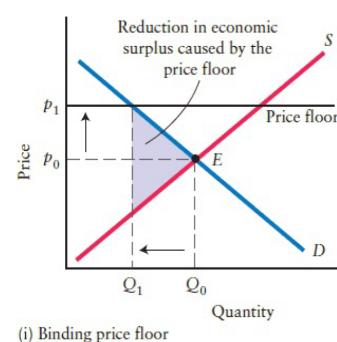
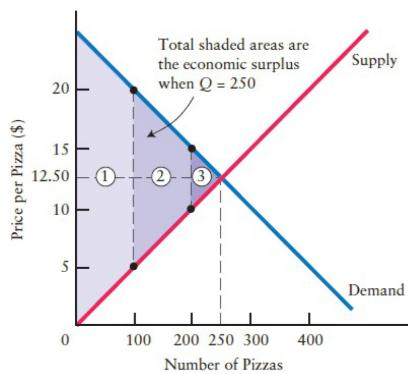
**Disequilibrium price:** non-equilibrium price

- Price floor: government-set minimum price that price cannot fall below
  - Minimum wage - argued that minimum wage creates more unemployment
  - above equilibrium line creates excess supply
  
- Price ceiling: government-set maximum price that prices cannot go above
  - Black market problem
  - Rent controls in housing market - creates shortage of rental housing and worsens over time because supply becomes more elastic
  - Below equilibrium line creates excess demand



## Economic surplus

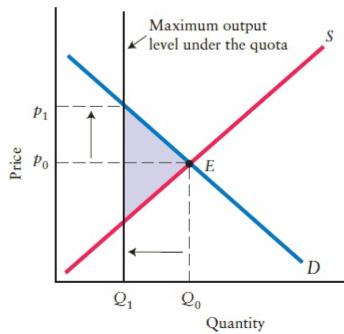
- Benefit to buyer - cost to seller
- Market efficiency: when the quantity of product produced and consumed maximizes economic surplus, but sometimes government policy will create dead-weight loss
- Price controls and quotas from government will intervene with market



## Output quotas

- Government policy of restricting output of goods

- More revenue and less production costs for producers



Consumer surplus: Economic surplus to consumer (below D and above P)

Producer surplus: Economic surplus to producer (above S and below P)

**Q8.** The equilibrium wage in BC is currently \$20. What would happen if the government imposed a minimum wage policy of \$15.60?

- There will be a shortage of jobs because of the wage control
- Supply for jobs would decrease because the price is below equilibrium
- The equilibrium would go down to \$15.60
- This policy would have no effect because equilibrium is already above the price control

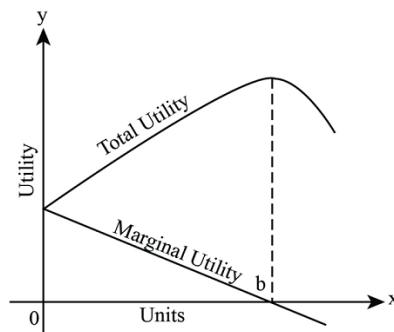
**Q9.** In order to be an effective price ceiling, the rent control must be

- Above the equilibrium line
- Below the equilibrium line
- Exactly on the equilibrium line
- Having an excess supply

# Consumer Behaviour

## Marginal utility theory

- Utility: total benefit from consuming a good or service
  - Marginal utility: Extra benefit or satisfaction that you get when consuming one additional unit
  - Total utility: total satisfaction from consuming all units of the good



**Law of diminishing marginal utility:** law that states that your marginal utility (additional satisfaction gained) will decrease as you consume more units of the good after a certain point

- MU = change in total utility / change in quantity
- TU = total marginal utilities
- Highest point of utility is when marginal benefit = marginal cost and consuming additional units will not give you any extra benefit

$$\frac{MU_X}{p_X} = \frac{MU_Y}{p_Y} \quad \frac{MU_X}{MU_Y} = \frac{p_X}{P_Y}$$

**Q10.** When Bella does not gain additional marginal utility from her 3rd popsicle, what does this say about her consumption?

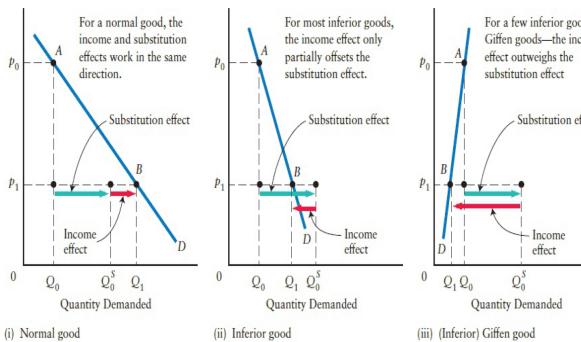
- Her marginal cost is greater than her marginal benefit
- She is in the negative part of her marginal utility curve
- Her marginal benefit is greater than her marginal cost
- She has reached her maximum total utility**

## Substitution effect

- Consumers will always substitute into a cheaper good when their income/purchasing power is constant
- Change in quantity demanded when relative price changes

## Income effect

- Normal and inferior goods act in different ways
- Consumers will always buy more when income increases and prices are constant (exception of inferior goods)

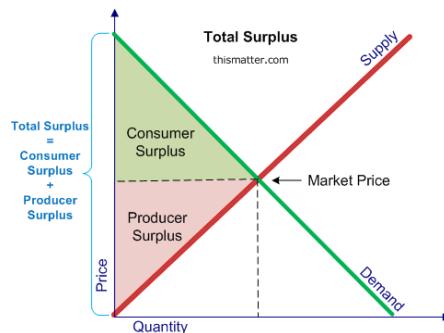


## Consumer surplus

- What they are willing to pay - what they actually pay
- Reservation price = max price willing to pay

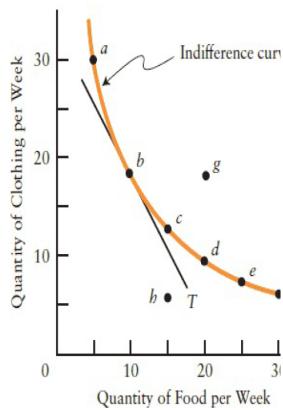
## Producer surplus

- What they are willing to receive - what they actually receive



**Indifference curve analysis:** curve that represents all combinations of X and Y and their respective total satisfaction yield taking into account preference

- Marginal rate of substitution:  $-MU_x / MU_y$ , amount you are willing to give up to get a unit of another product and still be indifferent
- Indifference curve is tangent to the budget line where  $MRT = MRS$
- All points on the curve are combos where they are indifferent

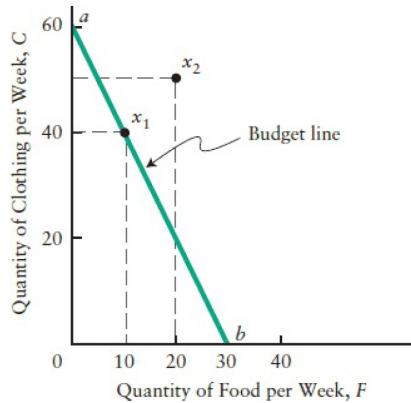


**Budget line:** all the possible combinations that you can consume with 2 goods, with constant income and prices

- Every point on budget line is efficient and employs all income
- equation =  $-P_x / P_y$
- Marginal rate of transformation: ratio of the relative prices
- Marginal rate of substitution - rate at which one factor is substituted for another when output is constant

Shift of budget line = change in income

Slope rotation of budget line = change in price of goods



**Q11.** When Ashley gets a pay raise from her minimum wage job, what happens to her budget line and indifference curve?

- a. She shifts to the indifference curve furthest from the origin and her budget line follows
- b. Her budget line shifts outwards and she is on her highest attainable indifference curve tangent to her budget line
- c. Her budget line shifts outwards and her indifference curve stays in the same position
- d. Her budget line's slope changes so that she is able to buy more of one good

# Producers in the Short Run

**Firm:** a profit-maximizing entity that produces and sells goods or services

- Sole proprietorship - unlimited liability for the owner
- Partnership - 2 or more people conducting business together with common view to profit, jointly liable
  - General partnership, limited partnership, limited liability partnership
  - Company/corporation - company is a separate legal entity from all directors and shareholders, limited liability
    - Crown corporations, NGO

## Production in short run supply curve

- Profits = Total revenue - Total costs
  - $TR = \text{price} * \text{quantity}$
  - $TC = \text{fixed costs} + \text{variable costs}$

**Short run:** at least one input factor is fixed besides technology, the rest is variable

Eg. fixed capital, variable labour

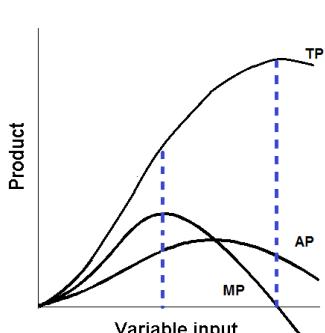
Short run production function

$$Q = f(K, L)$$

## Total production curve

- This curve measures the output produced as a function of one variable input, other factors held constant
- Total amount produced in a given time
- Average production curve
  - $AP = TP / N$ , total output per unit
- Marginal production curve
  - Change in TP / change in N
  - The extra output you get from one additional input

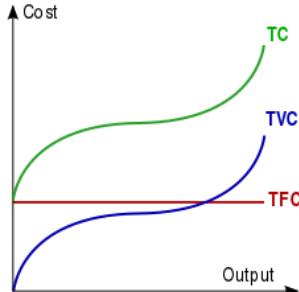
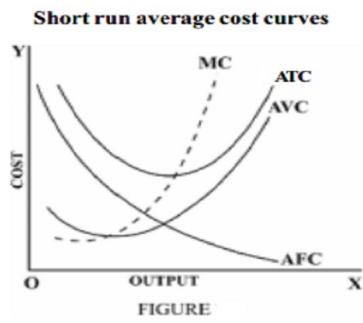
**Law of diminishing marginal productivity:** less output will be produced with each additional variable input added, after a certain point



|                        |   |
|------------------------|---|
| Total fixed costs      | Constant with changes in quantity   |
| Total variable costs   | Changes with changes in quantity  |
| Total costs            | $TC = TFC + TVC$  |
| Average fixed costs    | $TFC / Q$   |
| Average variable costs | $TVC / Q$   |
| Average costs          | $TC / Q$  |
| Marginal fixed costs   | 0 - marginal means additional amount so it does not take into account fixed costs |
| Marginal costs         | Change in $TVC$ / change in $Q$   |

**Q12.** When my marginal product goes from 5 to 3, my current average product of 4 \_\_\_\_ and current total product of 29 \_\_\_\_.

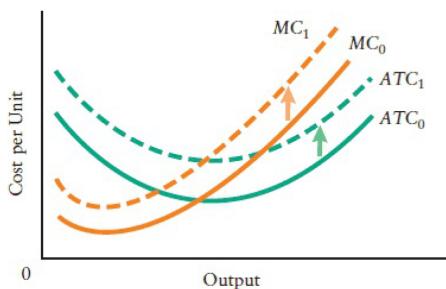
- a. Decreases, decreases
- b. Increases, increases
- c. Decreases, increases
- d. Increases, decreases



Average fixed costs go down as you produce more units because there are more units to spread out the costs

**Capacity** of the short run curve is the short run average cost minimum

- There are shifts in short run cost curves when prices and quantity of factors change



**Q13.** When average variable costs increase,

- a. Total fixed costs stay the same and total costs increase
- b. Total fixed costs increase and total costs increase
- c. Marginal costs increase and total costs decrease
- d. Total variable costs increase and total fixed costs increase

# Producers in the Long Run

In the long run, production firms can vary all their inputs besides technology, there are no fixed factors

- Prices of inputs and technology are constant

Firms try to maximize profit and minimize costs when producing outputs

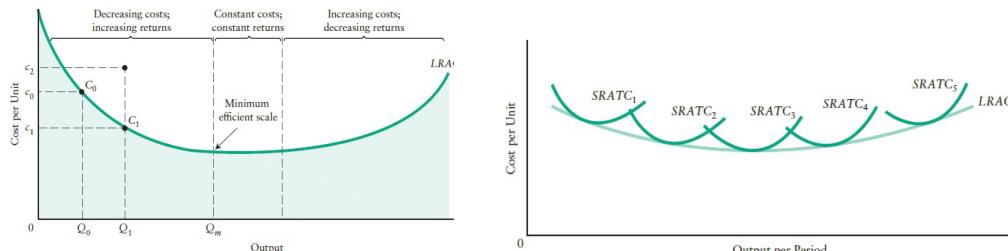
- Technical efficiency: minimizing quantity
- Economic efficiency: minimizing costs

$$\frac{MP_K}{p_K} = \frac{MP_L}{p_L} \quad \frac{MP_K}{MP_L} = \frac{p_K}{p_L}$$

- Principle of substitution - firms will change methods of production when prices change

## Long run average cost curve

- Economies of scale/increasing returns to scale, constant returns to scale, decreasing returns to scale/diseconomies of scale
- Minimum efficient scale = capacity for the long run
- Made up of many short run average cost curves, tangent point is optimal point

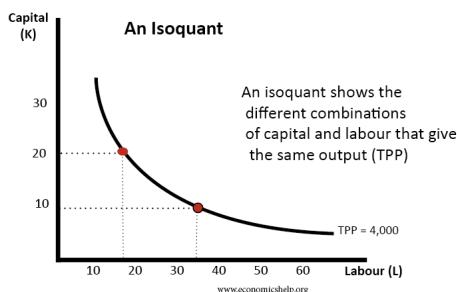


## Very long run

- Technology is no longer fixed, quantity of inputs and prices of inputs can vary
- The LRAC curve will shift
- Technological change for new inputs, new techniques, new outputs

## Isoquant analysis - production decisions

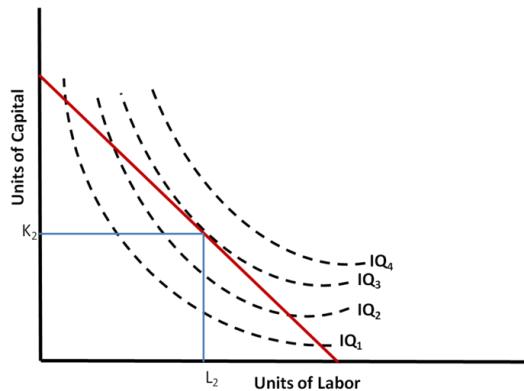
- All possible combinations of factors that produce a certain output
- Change in Qk \* marginal product of K + change in Qn \* marginal product of n = 0
- Slope =  $-\text{MP}_K / \text{MP}_L$  = marginal rate of technical substitution



**Isocost line:** line that shows possible input combinations, given total cost

- $P_k * Q_k + P_n * Q_n = TC$  of inputs
- Slope =  $-P_k / P_n$

**Profit maximization** = isocost line tangent to isoquant curve



**Q14.** When the cost of labour decreases, isocost line will \_\_\_\_ and isoquant line will \_\_\_\_\_

- Shift outwards from the origin, follow the isocost line
- Rotate outwards to utilize more of labour, be tangent to new isocost line**
- Rotate inwards to utilize more of capital, be tangent to isocost line
- Rotate outwards to utilize more of both inputs, not move

## Chapter 9 - Competitive Markets

Market structure - factors that determine degree of market power of a firm

- # and size of firms
- Type of good
- Ease of entry and exit
- Pricing behaviour

| Market Structure         | Market Power |
|--------------------------|--------------|
| Perfect Competition      | none         |
| Monopolistic Competition | some         |
| Oligopoly                | Quite a bit  |
| Monopoly                 | All          |

Perfect Competition - has many firms selling the same good, with no control over price (no market power), and free entry/exit in the long run

Total Revenue -  $P^*Q$

$$AR = \frac{TR}{Q} = \frac{(P \times Q)}{Q} = P$$

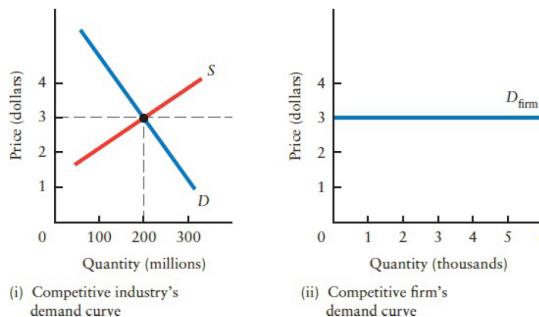
Average Revenue -  $TR / Q$

Marginal Revenue - change in TR / change in Q (change in total revenue from an additional

$$MR = \frac{\Delta TR}{\Delta Q}$$

unit sold)

Demand curve for the industry is downward sloping. Demand curve for an individual firm is horizontal because of the price taking nature.

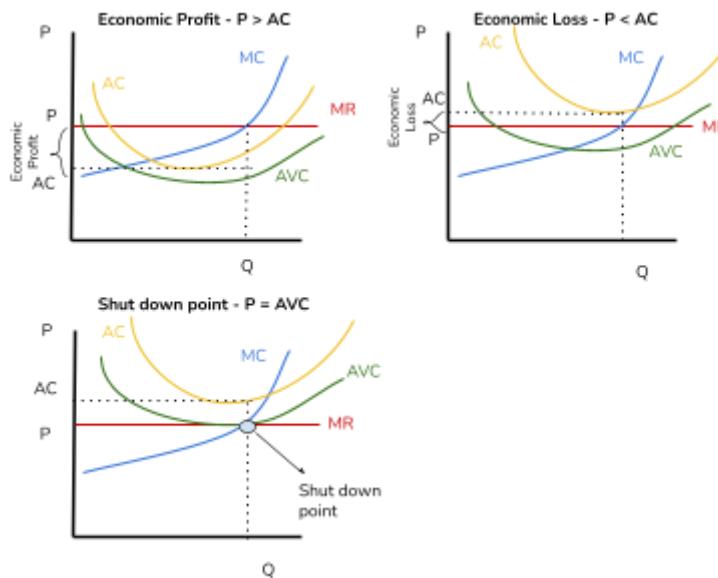
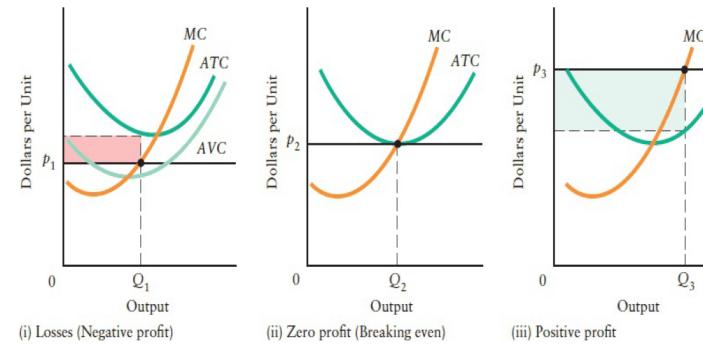


The firm should produce in the short run if:  $TR \geq TVC$  or  $P \geq AVC$ .

- This covers everyday costs of running the business. Can be sustained for a short period of time because it is better than not producing but still paying fixed costs

Always strive for  $MR = MC$ .

- This is the profit maximization point



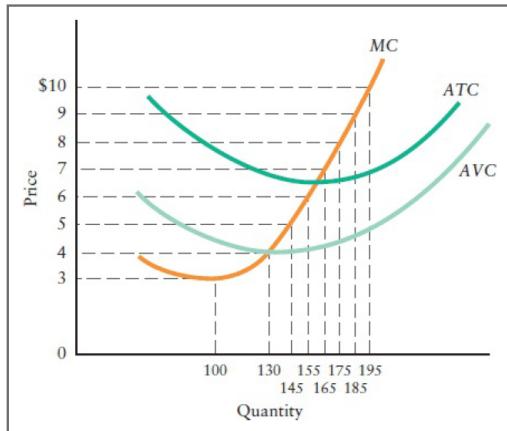
#### Long run - entry/exit of firms

- Firms enter when the industry makes economic profit, shifting it down to normal profits (price = MC/SRAC min).
- In the long run - firms increase operations and shift down to LRAC. try to reach MES = Q. Firms are making zero economic profit and this is the breakeven point.
- When there is economic loss in the industry ( $P < AVC$ ), firms exit.

#### Technological improvement

- These firms will enter making economic profits while old firms continue making normal profits
- Eventually these new firms will lower prices and push old firms out of business

**Q15.** What is the shutdown price and quantity of the below perfectly competitive firm?



**Q16.** What should a short run perfectly competitive firm do if it is not making enough to cover its average costs of operating the business and the price of the products are greater than the variable cost of producing it?

**Q17.** In the long run, perfectly competitive firms will be able to:

- Make economic profits
- Only make a loss and gradually leave the industry
- Make normal profits
- Have more control over their prices

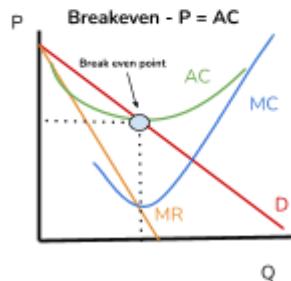
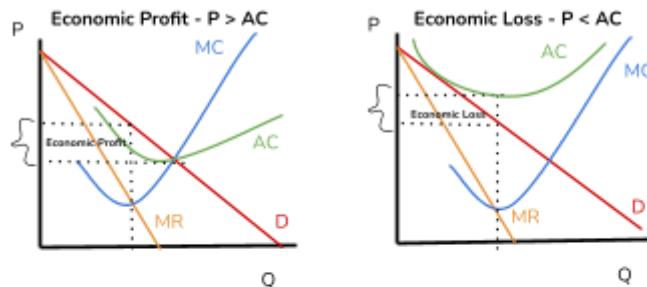
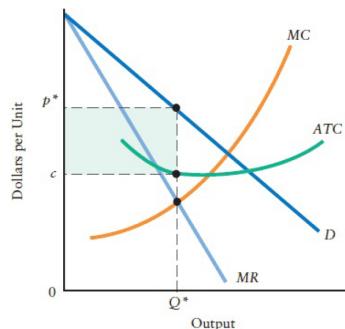
## Chapter 10 - Monopoly

Monopoly - A single firm that sells a unique good with no competition in the market (no entry/exit)

- Downward sloping demand curve (price setter)

Revenue

- Find MR as half of demand curve, MR is always twice as steep
- $P > MR$
- Produce where  $MR \geq 0, e \geq 1, P \geq AVC$ , profit maximizing point of  $MR = MC$
- Must lower price to sell each additional unit



Barriers to entry for a monopoly

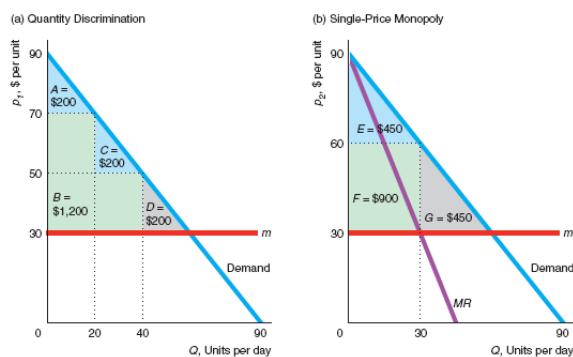
- Startup costs
- Economies of scale - only one MES firm can be sustained to produce to market at lowest cost
- Government - patents, franchises, licenses
- Firm - predatory pricing, differentiation

Cartels - producers voluntarily collaborating to act as a joint monopoly for profit

Single price monopolist - charging one price to all consumers

### Price discrimination

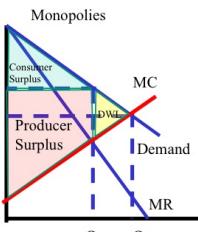
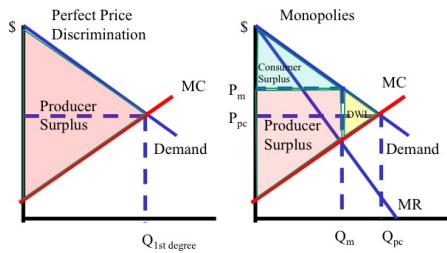
- Charging different customers different prices for the same good (either through output or segmentation)
  - Eg. general admission and children's movie tickets, bulk discounts
- Hurdle pricing - charging price that price sensitive buyers are willing to pay and charging monopoly price for others
  - charging higher prices when it first comes out and lowering price later, discounts



### Perfect price discriminating monopolist

- Charging the demand curve price for each quantity sold, this is the max price consumers are willing to pay
- Consumer surplus is changed to producer surplus, no DWL

### First Degree or Perfect Price Discrimination

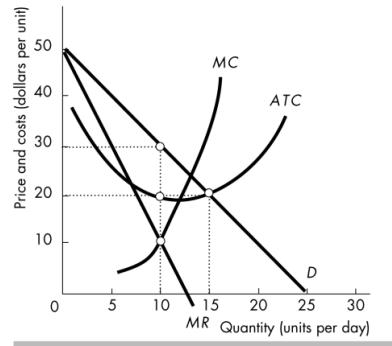


**Q18.** What is the profit maximizing quantity and price for the single price monopoly?

Label CS, PS, DWL, point of shutdown

What stage is the monopolist in (economic profit, economic loss, shutdown point)

If it were perfect price discriminating, what would be the CS, PS, DWL?



**Q19.** What type of monopoly would give a producer the most surplus?

- a. Single pricing
- b. Multiple pricing
- c. Hurdle pricing
- d. Perfect pricing

**Q20.** For a monopoly,  $P = MC$ . Is the firm maximizing profit? How would they increase profit?



## Chapter 11 - Imperfect Competition

Monopoly -> duopoly -> oligopoly -> monopolistic competition -> perfect competition

Imperfect competition includes:

- monopolistic competition: large # of smaller firms with differentiated products, limited price power. Has downward sloping demand curve
  - Eg. hair salon
- Oligopoly: small # of larger firms with differentiated products, higher price power, harder entry/exit.
  - Eg. Air Canada, Westjet
  - Collusion - collaborate to raise prices and reduce quantity
  - Cartel - all oligopolistic firms act as one
  - Barriers: start up costs, economies of scale, legislation (patents), differentiation, predatory pricing

Barriers

- Brand positioning
- Advertising
- Predatory pricing

Game theory - for strategic oligopoly behaviour

- Decisions of two or more firms regarding output and prices (either cooperate or compete)

|        |                                       | Firm A                                |                                     |
|--------|---------------------------------------|---------------------------------------|-------------------------------------|
|        |                                       | "Cooperate"<br>1/2 monopoly<br>output | "Compete"<br>2/3 monopoly<br>output |
| Firm B | "Cooperate"<br>1/2 monopoly<br>output | \$20 M<br>profit                      | \$22 M<br>profit                    |
|        | "Compete"<br>2/3 monopoly<br>output   | \$15 M<br>profit                      | \$17 M<br>profit                    |

|         |                    | John               |                    |
|---------|--------------------|--------------------|--------------------|
|         |                    | Pleads<br>innocent | Pleads<br>guilty   |
| William | Pleads<br>innocent | light<br>sentence  | no<br>sentence     |
|         | Pleads<br>guilty   | light<br>sentence  | severe<br>sentence |
| John    | Pleads<br>innocent | severe<br>sentence | medium<br>sentence |
|         | Pleads<br>guilty   | no<br>sentence     | medium<br>sentence |

Simultaneous game - making decisions at the same time

- Nash equilibrium: equilibrium in the game, firms will stay there
- Best response - player's current behaviour is their best strategy
- Dominant strategy - best strategy to play regardless of the other player's strategy
- Prisoners dilemma - each player plays their dominant strategy, leading to a nash equilibrium with a lower payoff for both players
- Pareto optimum - cannot make someone better off without hurting someone else

Sequential game - making decisions one after the other

- Decision tree - tree diagram showing sequential decisions with decision payoffs
- Ultimatum game - first player has all the power to impose terms on second player
- First mover/second mover advantage depending on the game

**Q21.** What is the prisoner's dilemma in this game and what would be the best result for both players?

|          |               | Player 2 |               |
|----------|---------------|----------|---------------|
|          |               | confess  | don't confess |
| Player 1 | confess       | (-6, -6) | (0, -10)      |
|          | don't confess | (-10, 0) | (-1, -1)      |

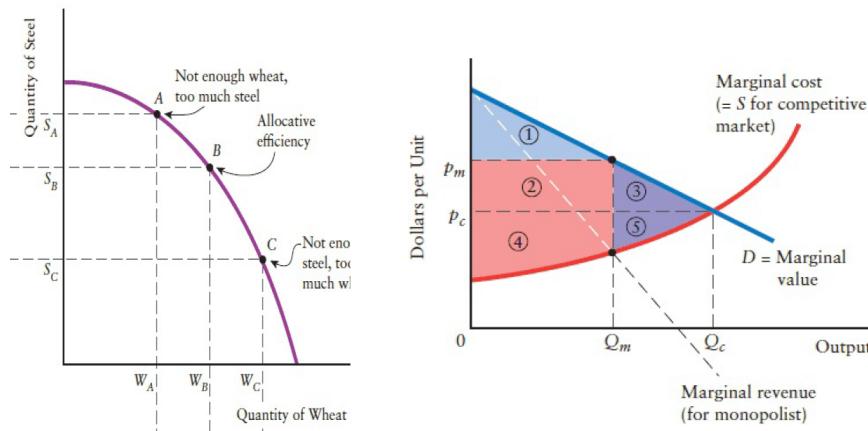
## Chapter 12 - Efficiency and Public Policy

Productive efficiency - producing the max output with minimum input (in firm, industry, economy)

- All points on production possibility boundary are productively efficient
- Firms must be minimizing costs and MC must be same in industry
- Both perfect competition and monopoly can have productive efficiency

Allocative efficiency - quantities of the combination of goods produced,  $MB = MC$  in perfect competition, no DWL

- Only one point on production possibility boundary is allocatively efficient - marginal cost to producers = marginal value to consumers
- Perfect competition can have allocative efficiency, but not monopoly because  $P > MC$ 
  - This creates DWL in a monopoly



Pricing policies for natural monopolies

- Marginal cost pricing - price at MC, creates loss but allocatively efficient
- 2 part tariffs - charge access price and price for each unit consumed
- Average cost pricing - price at AC, allocatively inefficient because  $P > MC$

**Q22.** You and your friend each want to produce a different point on the production possibility curve of a perfectly competitive market. Both argue that the other is not efficient. Which point should you pick to produce?

- a. The firm does not have any allocatively efficient points
- b. Both are allocatively efficient and one is productively efficient
- c. One is allocatively efficient and both are productively efficient
- d. Both are efficient as long as it is on the curve

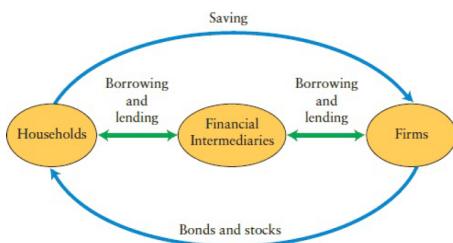
## Chapter 15 - Interest Rates

Types of capital:

- Human capital - skills of workers through education and training
- Physical capital - factor of production (machine, building)
- Financial capital - financial assets (stocks, bonds)

Financing activities for the firm

- Retained earnings
- Borrowing from commercial banks
- Issuing bonds
- Issuing stocks



Present value - how much a future amount is worth today

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

$$\begin{aligned}
 PV &= \frac{\$200}{1.06} + \frac{\$180}{(1.06)^2} + \frac{\$210}{(1.06)^3} \\
 &= \$188.68 + \$160.20 + \$176.32 \\
 &= \$525.20
 \end{aligned}$$

MRP = marginal revenue product

i = interest rate

t = time period

The larger the future MRP or longer it lasts, the greater the PV

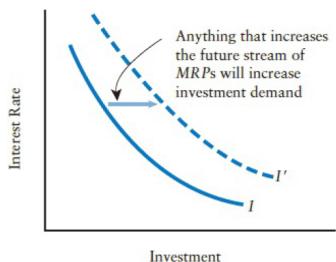
PV is negatively related to interest rate

Firm demand for investment is negatively related to interest rate

If the PV of future cash flows  $\geq$  purchase price, buy the capital good

Law of diminishing marginal returns - MRP of capital will decline with more capital

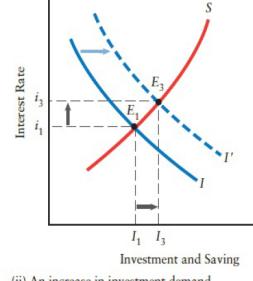
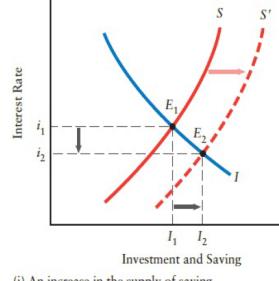
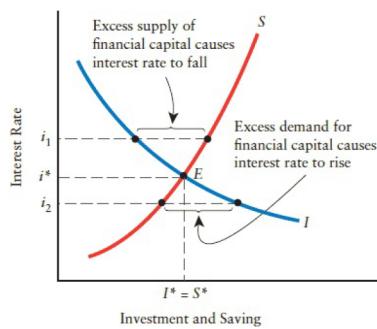
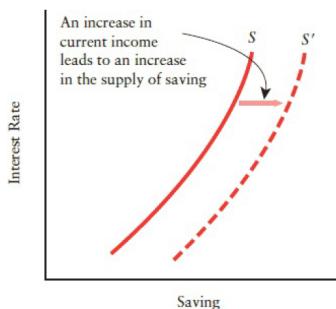
- Keep purchasing capital until PV of MRP = purchase price



shifts caused by future expectations and technology

Saving: increase in accumulation of stock asset

Higher interest rate = more household saving, positive relationship



equilibrium interest rate

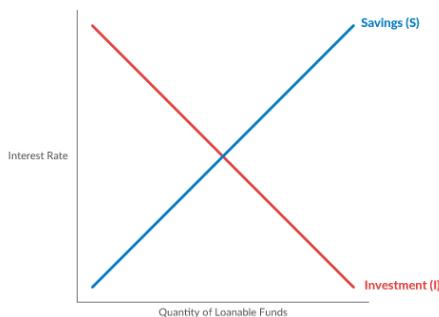
Reasons for supply curve shifts

- Income growth, population growth, policies that increase savings, increase in investment demand

Reasons for demand curve shifts

- Population and income growth, technology, policies that increase investment

**Q23.** What happens to the graph when the government introduces subsidies to firms for investment in new technology?



# Chapter 16 - Government Intervention

## Case for free markets

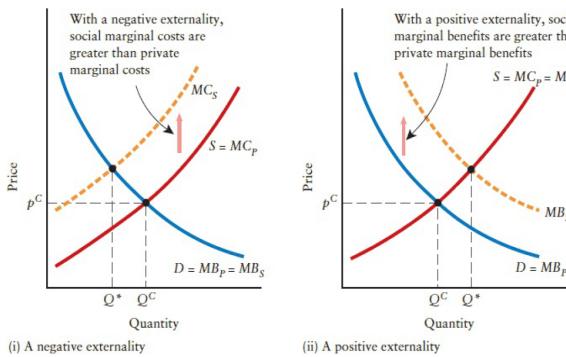
- Allocatively efficient for perfect competition
- Coordination, innovation and growth, decentralization of power

## Case for Government intervention

- Market failure - when the market economy doesn't deliver an efficient allocation of resources
- Market power (monopolies), externalities, non-rivalrous goods, non-excludable goods, asymmetric information

## Externalities

- Actions of buyer or seller affecting a third party
- Production externality - affecting supply
- Consumption externality - affecting demand
- Positive externality - beneficial effect that causes an increase in S or D
- Negative externality - harmful effect that causes a decrease in S or D
- Private cost - opportunity cost to the seller
- Social cost - private cost + opportunity cost to third party



## Public goods

- Non-rivalry - consumption does not affect others
- Non-excludability - can be consumed equally by all people

|               | Excludable                                      | Non-excludable                   |
|---------------|---|----------------------------------|
| rivalrous     | Private good - laptop                           | Common property good - fishery   |
| non-rivalrous | Club good, artificially scarce good - golf club | Pure public good - street lights |

## Asymmetric information

- Buyer and seller have an imbalance of information
- Adverse selection - buyer and seller have different relevant information
  - Lemons problem - sellers have more info on the product quality in the market



- Moral hazard - party cannot observe actions of another party relating to the contract, so party behaves adversely
  - Driving insurance - people drive more recklessly when they are insured
  - Principal-agent problem - the principal cannot observe the actions of the hired agent (shareholder and management relationship)

**Q24.** What types of externality is it during a 5:00pm traffic jam in Vancouver?