ECON 101

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Contents

Introduction to Microeconomics

Scarcity is the inability to satisfy all wants. Must make **choices** based on **incentives**.

Economics is the social science that studies the choices that individuals, businesses, governments, and entire societies make as they cope with scarcity and the incentives that influence and reconcile these choices.

Variations

- Alfred Marshall defines economics as the study of mankind in the ordinary business of life.
- Jacob Viner: Economics is what economist do
- Jim Duesenberry: Economics is about how people make choices. Sociology is about why there isn't any choice to be made.
- John Maynard Keynes: The theory of economics does not furnish a body of settled conclusions immediately applicable to policy. It is a method rather than a doctrine, a technique of thinking that helps its possessors to draw correct conclusions.
- Lionel Robbin: Economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses.

Microeconomics: Study of choices that individuals and businesses make, how those choices interact in markets, and the influence of governments.

Macroeconomics: Study of the overall performance of an economy (National and global)

Two Big Economic Questions:

- How do choices end up determining what, how, and for whom goods and services get produced?
- Self-interest promoting social interest

Goods and services are the objects that people value and produce to satisfy human wants.

In China, agriculture accounts for 11%, manufactured goods 49%, and services 40%

In Canada, agriculture accounts for 2% of total production, manufactured goods 20%, and services 78%.

Goods and services are produced by using productive resources called **factors of production**. They are grouped into four categories

- Land (Gift of nature)
- Labour (Time and effort)
- Capital (Human capital is the skillset for labour, while capital is the tools that businesses use)

- Entrepreneurship (Organizes previous three)

Self interest and social interest tensions:

- Globalization (Sustainable business, expansion of international trade, lending, and investment)
  - In the self-interest of multinational firms that outsource in low cost regions and sell in high price regions
- Information age economy
- Global warming and natural resource depletion
- Economic instability
  - Getting out of a recession

Social interest: Efficiency is achieved when the available resources are used to produce goods and services at the lowest possible price in quantities that give the greatest benefit

Economic Way of Thinking

- A choice is a tradeoff
- People make rational choices by comparing benefits and costs
- Most choices are "how-much" choices made at the margin
- Choices respond to incentives

A **rational choice** is one that compares costs and benefits and achieves the greatest benefit over cost for the person making the choice.

The **opportunity cost** of something is the highest valued alternative that must be given up to get it.

To make a choice at the margin, you evaluate the consequences of making incremental changes in the use of time.

Marginal benefit is the benefit from incremental increase in an activity

Marginal cost is the opportunity cost of pursuing an incremental increase in an activity

If marginal benefit exceeds marginal cost, then the event is beneficial.

Changes in marginal cost/benefit change the incentives, and may lead to a change in choice

Tradeoffs

- What tradeoffs arise when people choose how to spend their incomes
- How Tradeoffs arise when businesses choose among alternative production technologies.
- Whom tradeoffs arise when choices change the distribution of buying power across individuals

Government redistribution of income from the rich to the poor creates the **big tradeoff**: Tradeoff between equality and efficiency.

Choices and Change

- Save money, buy more capital to increase production
- Less leisure time: Educate and train ourselves - productivity
- Less production, more research

The rule of law that protects private property and facilitates voluntary exchange in markets.

A **positive** statement can be tested against facts (what is). A **normative** statement cannot be tested (what ought to be)

An **economic model** is a description of some aspect of the economic world that includes only those features that are needed for the purpose at hand. Simplified framework designed to illustrate complex processes.

Economists are bad at testing economic models with facts so they use natural experiments, statistical investigations, and economic experiments.

The Economic Problem

The **production possibilities frontier** is the boundary between those combinations of goods and services that can be produced and those that cannot.

Ceteris paribus: All other variables remaining constant

To show PPF, focus on two goods at a time and hold the quantities of all other goods and services constant (ceteris paribus)

Example: Cola vs pizza production in a month. With cola on y axis and pizza on x axis, it's a graph with a negative slope that has the bounds fixed between x and y intercepts. At $y = 0$, colas would be at 15 million cans and it'll gradually decrease as more pizzas are manufactured.

Any point along a PPF graph should be attainable (including the area under the curve). Points along the PPF are efficient while points within the area under the curve are not.

We achieve **production efficiency** if we can't produce more of one good without producing less of some other good (produced at the lowest cost)

Since resources are not equally productive in all activities, the PPF is usually **concave**. As quantity produced increases, so does opportunity cost. This occurs because some resources are more suited for one job than another.

Marginal Cost: Opportunity cost of producing one more unit of a good

Principle of decreasing marginal benefit: General principle that the more we have of any good, the smaller its marginal benefit and the less we are willing to pay for additional unit of it.

Marginal benefit curve shows relationship between marginal benefit and quality of goods consumed. This is a linear graph with negative slope.

Allocative efficiency is when we can't produce more of any one good without giving up some other good that we value higher

The point of allocative efficiency is the point on the PPF at which marginal benefit equals marginal cost. This is when MB and MC intersect on the graph

Economic Growth

Economic growth is the expansion of production possibilities and increase in standards of living. Mainly influenced by technology and capital.

Technological change is the development of new goods and of better ways of producing goods and services.

Capital accumulation: is the growth of capital resources, which include human capital.

To use resources in R&D, we must decrease production of consumption goods and services. Not free. Opportunity cost of growth is current consumption.

Stock Pollutant: accumulate in the environment while **Fund pollutant** either dilute to harmless levels or get transformed into harmless substances.

Sustainability is providing the typical person alive in the future with a standard of living at least as high as that enjoyed by the typical person today.

Neoclassical economists: Created capital substitutes for natural capital

Ecological economists: Created capital complement natural capital

Comparative advantage is an advantage for performing an activity at a lower opportunity cost than anyone else. (opportunity cost)

Absolute advantage is an advantage if the person is more productive than others (productivity)

Gains from Trade

Neoclassical approach: Trade allows people to specialize in the production of goods for which they have a comparative advantage and then trade for goods other people produce.

Due to specialization, total output rises and can be shared <3

Learn by doing is when a person specializes by repeatedly producing a particular good or service and because more productive in it, lowering the opportunity cost.

Dynamic comparative advantage is when a person gains a comparative advantage from learning by doing.

Free trade is a system of trade policy that allows traders to trade across national boundaries without interference from the respective governments (Prices would then be a reflection of true supply and demand)

Fair trade contributes to sustainable development by offering better trading conditions to, and securing the rights of, marginalized producers and workers - especially in the South.

Fair trade organizers are engaged actively in supporting producers, awareness raising and in campaigning for changes in the rules and practice of conventional international trade.

Economic Coordination

To reap the gains from trade, the choices of individuals must be coordinated. Four complimentary social institutions have evolved over the centuries

A **firm** is an economic unit that hires factors of production and organizes those factors to produce and sell goods and services.

A **market** is any arrangement that enables buyers and sellers to get information and do business with each other.

Property rights are the social arrangements that govern ownership, use, and disposal of resources, goods or services

Money is any commodity or token that is generally acceptable as a means of payment.

Demand and Supply

Prices act as incentive.

Markets vary in the intensity of competition.

A **competitive market** is a market that has many buyers and many sellers so no single buyer or seller can influence the price.

The **money price** of a good or service is the number of dollars that must be given up for it.

A **relative price** is an opportunity cost. The ratio of one price to another is called a relative price.

Demand reflects a decision about which wants to satisfy. (Want it, can afford it, make plan to purchase)

Law of Demand

Law of Demand: Other things renaming the same, the higher the price of a good, the smaller is the quantity demanded and viced versa.

Substitution effect is when the relative price (opportunity cost) of a good or service rises, people seek substitutions for it, so the quantity demanded of the good or service decreases.

Income effect is when the price of a good or service rises relative to income, people cannot afford all the things they previously bought, so the quantity demanded of the good or service decreases.

A **demand curve** shows that the relationship between the quantity demanded of a good and its price when all other influences on consumers' planned purchases remained the same.

When some influence on buying plans other than the price of the good changes, there is a **change in demand** for that good. When demand increases, the demand curve shifts rightward. When demand decreases, the demand curve shits leftward.

Six factors that change demand

- Price of substitute products
- Expected future prices
- Income
- Expected future income and credit
- Population
- Preferences

A **complement** is a good that is used in conjunction with another good.

If the price of a good is expected to rise in the future, current demand for the good increases and the demand curve shifts rightward.

When income increases, consumers buy more and demand curve shifts rightward.

A **normal good** is one for which demand increases as income increases.

An **inferior good** is a good for which demand decreases as income increases.

Supply

If a firm supplies a good/service, then it has resources and tech to produce it, can profit from it, and has made a definite plan to produce and sell it.

Resources and technology determine what it is possible to produce. Supply reflects a decision about which technologically feasible items to produce.

Law of supply: Higher price = higher quantity, lower price = lower quantity supplied (Cover marginal cost of production)

Supply curve shows relationship between quantity supplied of a good and its price when all other influences of a producers' planned sales remain the same.

A supply curve is also a **minimum-supply-price** curve. As quantity produced increases, marginal cost increases. Lowest price at which someone is willing to sell an additional unit rises. This lowest price is marginal cost.

When supply increases, supply curve shifts rightward, and when it decreases, shifts leftwards.

Six factors that change supply

- Prices of factors of production
- Prices of related good produced
- Expected future prices
- Number of suppliers
- Technology
- State of nature

A substitute in production for a good is another good that can be produced using the same resources. Supply of a good increases if the price of a substitute in production falls or price of complement rises.

Market Equilibrium

Equilibrium is a situation in which opposing forces balance each other. Occurs in market when price balances the plans of buyers and sellers.

Equilibrium price is the price at which the quantity demanded equals the quantity supplied.

Equilibrium quantity is the quantity bought and sold at the equilibrium price.

- Price regulates buying and selling plans
- Price adjusts when plans don't match

Surplus forces price down, shortage forces the price up.

Change demand or supply changes the equilibrium price and equilibrium quantity.

Demand + –> equilibrium price rises and equilibrium quantity increases Demand - –> equilibrium price falls and equilibrium quantity decreases

Supply + –> equilibrium price falls and equilibrium quantity decreases Supply - –> equilibrium price rises and equilibrium quantity increases

Decrease in demand and increase in supply lowers the equilibrium price.

Decrease to supply and increase in demand increases the equilibrium price.

Elasticity

The **price elasticity** of demand is a units free measure of responsiveness of quantity demanded of a good to a change in its price.

Income elasticity of demand measures how strong demanders respond to a change in income

Cross elasticity of demand measures how strongly demanders respond to change in price of another good

Elasticity is given by the slope of the derivative multiplied by the slope of two points.

$$\frac{\%\text{ change in quantity demanded}}{\%\text{ change in price}}$$

Percent change is change in X over average of X between two points.

Note: The demand elasticity formula yields a negative value because price and quantity move in the opposite directions. However, we are only interested in the magnitude of the price elasticity if demand to measure responsiveness.

If the elasticity is 0, the good has **perfectly inelastic demand**

If elasticity is infinity, the good has **perfectly elastic demand**

If percentage change in the quantity demanded equals the percentage change in price, the price elasticity of demand is 1 and is **unit elastic**.

If elasticity is less than 1, it has inelastic demand. If elasticity is greater than 1, it has elastic demand.

Note: For demand to be elastic, changes in price should yield big changes in demand.

Demand becomes less elastic as the price falls along a linear demand curve. When prices are above mid-point of the demand curve, demand is elastic. Otherwise it is inelastic.

Total revenue is maximized at the unit elastic point. If demand is elastic, reduce price to increase revenue. If demand is inelastic, increase price to increase revenue.

Total revenue test is a method of estimating the price elasticity of demand by observing the change in total revenue that results from a price change.

Elasticity and Total Revenue

When the seller raises the price of a good, there are two effects

- Price effect: Units sell at higher price, raising revenue
- Quantity effect: Fewer units are sold, lowering revenue

If elastic, (quantity effect stronger than price effect). If inelastic, price effect stronger than quantity effect.

Factors that effect elasticity

- Closeness of substitutes
  - Necessities generally have inelastic demand
  - Luxuries generally have elastic demand
- Proportion of income spent on the good
  - Greater proportion of income spent = larger elasticity of demand
- Time elapsed since a price change
  - The more time consumers have to adjust to a price change, the more elastic is the demand for the good

Cross Elasticities of Demand

Cross elasticity of demand measures responsiveness of demand for a good to a change in the price of a substitute or a complement.

Formula is

$$\frac{\%\text{ change in quantity demanded}}{\%\text{ change in price of substitute or complement}}$$

Cross elasticity of demand for

- A **substitute** is positive
- A **complement** is negative

Income Elasticity of Demand

The **income elasticity** measures how the quantity demanded of a good responds to change in income.

Formula is

$$\frac{\%\text{ change in quantity demanded}}{\%\text{ change in income}}$$

Income elastic, income inelastic has same criterias.

If income elasticity of demand is less than zero (negative), then the good is an **inferior good**.

Elasticity of Supply

The **elasticity of supply** measures the responsiveness of the quantity supplied to a change in the price of a good.

Same formulas as demand

Elasticity of supply: $\frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in price}}$

Perfectly inelastic, perfectly elastic (0 and infinite) and unit elastic (passes through origin)

Factors that influence elasticity of supply:

- Resource substitution possibilities (Easy to substitute, higher elasticity)
- Time frame for supply decision (More time = higher elasticity) (Momentary, short run, long run)

Utility and Demand

Choices are determined by consumption possibilities and preferences

Benefit or satisfaction from consuming a good or service is **utility**

Cardinal Utility Theory: Utility gained from good can be measured and magnitude of measurement is meaningful. (Measured in utils)

Utilitarianism: Maximize happiness for greatest number of people

Marginal Utility: Change in total utility that results from one unit increase in the quantity of the good consumed

Diminishing marginal utility: Decreasing marginal utility

Utility Curve and Marginal Utility Curve (Derivative relation)

Budget line describes the limits to a household's consumption choices.

Example: $8x + 4y = 40$ (x represents movie, y represents pop, 40 represents income)

An utility maximizing combination for spending is called **consumer equilibrium**

Marginal utility per dollar is literally marginal utility per dollar. (per price of good)

Marginal Utility per dollar spend is marginal utility from good by spending an additional dollar

To maximize utility, (Marginal utility per dollar) MU/P for unit A must be same as MU/P for unit B.

Marginal Utility Theory

1. Fall in price of a substitute of a good decreases the demand for the good
2. Rise in income increases the demand for normal goods.

Predictions of Marginal Utility Theory

When price of a good falls, quantity demanded increase, so MU/P if the good rises.

A change in price of one good changes the demand for another good. (Maximum total utility)

Falls in the price of a good increases demand, movement along demand curve. Decrease in the demand is a shift in the demand curve

Consumer Surplus is the difference between what consumers are willing to pay for a good or service relative to its market price

Producer Surplus is the difference between what producers actually receive when selling a product and the amount they would be wiling to accept for a unit of the good

Paradox of Value

Why is water more expensive than diamond?

Water: Price low, total utility large. Marginal utility small

Diamonds: Price high, total utility small. Marginal utility high

Therefore marginal utility per dollar is same for both

Supply of water perfectly elastic. Supply of diamond perfectly inelastic

Behavioural Economics studies the ways in which limits on the human brain's ability to compute and implement rational decisions influence economic behaviour.

Bound rationality is rationality that is bound by the computing power of the human brain. (When faced with uncertainty, consumers rely on others, gut instinct, etc)

Bounded Willpower is the less than perfect willpower that prevents us from making a decision that we know we'll later regret.

Bounded self-interest is the limited self interest that sometimes results in suppressing our own interests to help others.

Endowment Effect is the tendency to overvalue something because they own it.

Neuroeconomics is the study of the activity of the human brain when a person makes an economic decision.

Easterlin paradox Income and happiness are positively related but happiness increases but only at a decreasing rate.

Bandwagon effect: Do something because others are doing it

Snob effect: Do something because others aren't doing it

Veblen effect: Purchase of expensive goods to illustrate that the owner has money and power

Possibilities, Preferences, and Choices

- Budget line

Budget equation states: Expenditure = Income

Real income is income measured in terms of a good (Example: I make 2 iPhones a week)

Relative Price: of product A in terms of B is Price of A over Price of B

Real income is depicted on intercepts of budget line. Relative price is the magnitude of the slope of the budget line

Rise in price of good in x axis decrease affordable quantity and increases (absolute) slope. (Sort of like a rotational about the y-intercept)

Change in income is a shift in the budget line.

A **preference map** shows how a person ranks various combinations of goods and services.

Indifference curves are used to illustrate a person's preference map.

It is modified from budget line because in theory, you wouldn't want to have 0 of a good and the maximum quantity for another good

The slope at any point in the indifference curve is called the **marginal rate of substitution**. Rate at which the consumer is willing to trade one good for another

Steep indifference curve -> High MRS

Willing to give up a large quantity of y to get a bit more of x

Relative flat curve -> Low MRS

Diminishing marginal rate of substitution: General tendency for a person to be willing to give up less of good y to get one more unit of good x while remaining indifferent as the quantity of good x increases.

Slope decreases as you move along the indifference curve

Perfect Substitutes

Consumer willing to substitute one good for another at a constant rate. Straight line that slope downward

$U(x, y) = ax + by$

Perfect Complements

Goods consumed in fixed proportions

$U(x, y) = min\{ax, by\}$

Predicting Consumer Choices

The consumer's best affordable choice is

- On the budget line
- On the highest attainable indifference curve
- Has marginal rate of substitution between the two goods equal to the relative price of the two goods

The **substitution effect** is the effect of a change in the price of the quantity bought when the consume remains on the same indifferent curve.

Income effect jumps to a different indifference curve.

Substitution Effect and Income Effect: For a normal good, a fall in the price always increases the quantity consumed.

For inferior good, when income increases, the quantity bought decreases

Organizing Production

A **firm** is an institution that hires factors of production and organizes them to produce and sell goods and services.

Revenue = Price * Quantity

Profit = Revenue - Expenses

Economic profit is total revenue minus total cost (opportunity cost of production)

Opportunity cost of production is the value of the best alternative use of the resources that a firm uses in production

Resources bought in the market is an opportunity cost of production

When a firm uses its own equipment, it's equivalent to **implicitly** renting the capital from itself. The opportunity cost is the implicit rental rate of capital

Economic depreciation is the change in the market value of capital over a given period

The profit that an entrepreneur can expect to receive on average is called the **normal profit**. This is the cost of entrepreneurship and cost of production.

The Firm

To maximize profit, a firm must make five decisions

- What to produce (quantities)
- How to produce
- How to organize and compensate
- How to market and price
- What to produce itself, and what to buy from others

Constraints

- Technology constraints
- Information constraints
- Market

Technology efficiency occurs when a firm produces a given level of output by using the least amount of input.

Economic efficiency occurs when a firm produces a given level of output at the least cost

Economic efficient production process -> Technology efficient.

Note: Previous example is not if and only if.

Information and Organization

A firm organizes production by combining and coordinating productive resources using a mixture of two systems

- Command systems
- Incentive systems

Most firms usually use a mix.

Principal agent problem: Problem of devising compensation rules that induce an agent to act in the best interests of a principal

Coping with Principal agent:

- Ownership
- Incentive pay
- Long term contracts

Three types of businesses: Sole proprietorship, partnership, corporation

Markets and the Competitive Market

- Perfect competition (many firms/buyers/identical products) No regulations for new firms
- Monopolistic Competition (many firms, product different (product differentiation)), no regulations for new firms
- Oligopoly (small number of firms, either identical or differentiated products), barrier to entry
- Monopoly (one firm solo, no close substitute), barrier to entry

Economists use two measures of market concentration:

- Four firm concentration ratio (Percentage of total industry sales accounted for by the four largest firms)
- Herfindahl-Hirschman Index (Square of percentage market share of each firm summed over largest 50 firms)

HHI ranges from near 0 (competitive) to 10000 (monopoly)

- Less than 1000: Highly competitive
- 1000 - 1800: Moderately competitive
- 1800+: Concentrated

Limitations of Measurement:

- Geographical scope
- Barriers to entry, firm turnover
- Correspondence between market and industry

Market and Firms

Firms coordinate production so they can do so more efficient than a market

- Lower transactions costs
- Economies of Scale (cheaper to produce more)
- Economies of scope (specialized input (advantage))
- Economies of team production (individuals specialize in mutually supporting tasks)

Sustainable Business

Form of business that strives to meet the triple bottom line.

- Incorporates principles of sustainability into each of its business decision
- Supplied environmentally friendly products/services (replace demand for non green products)
- Greener than traditional competition
- Made enduring commitment to environmental principles in its business operations

Triple Bottom Line: People planet and profit

Output and Costs

Goal: Profit Maximization

Decision classifications: Short and long run

Short run: Quantities of one or more resources used in production is fixed.

Fixed factors: (management, tech, building, large equipment)

Fixed factors are called the firm's plant

Dynamic factors: Labour, raw materials, energy

Long run: Everything vary

Sunk cost: Cost incurred by the firm and cannot be changed

Traditional economies: Sunk costs should not influence one's decisions

Behavioural economics: Sunk costs greatly affect actor's decisions. Humans are inherently **loss aversive** and act irrationally when they waste money.

Loss aversion: People have strong misgivings about wasted resources. Also known as **sunk cost fallacy** or throwing good money after bad.

Short Run Technology Constraints

To increase output in the short run: Increase labor employed

- Total product (Total output)
- Marginal product (Change in total output from one unit increase in labor employed)
- Average product (Total product divided by quantity of labor employed)

Product Curves: Graphs of three product concepts that show how total product, marginal product, and average product change as the quantity of labor employed changes.

Total Product Curve: Similar to PPF but increasing slope. All points above curve unattainable, points below are inefficient.

Marginal product curve measures change in the total product curve. Draw rectangles and stuff on product curve. Stack the rectangles together for marginal product curve. Marginal product curve passes through midpoint while rectangles were drawn on endpoints (Or just take derivative)

Law of Diminishing Returns: As a firm uses more of a variable input with a given quantity of fixed input, marginal product of variable input eventually diminishes.

Maximum average product: Intersection between average product and marginal product.

Short Run Costs

- Total cost is cost of all resources
- Total fixed cost is cost of the firm's fixed inputs. (Do not change with output)
- Total variable cost: Cost of firms' variable inputs. Variable costs change with output

Can draw TC, TFC, TVC curves

At first, TC and TVC increase at decreasing rate, then they increase at increasing rates. (At first, division of labor, then running out of resources)

Marginal cost: Increase in total cost that results from one unit increase in total product (Change in TC divided by Change in output (compared to the last point))

- U shaped

Diminishing marginal return: Marginal cost rises as output increases

Increasing marginal return: Marginal cost goes down as output increases (specialization)

Average fixed cost: Total fixed cost per unit of output

Average variable cost: Total variable cost per unit of output

Average total cost: Respective cost divided by quantity produced

- AFC Curve falls as output increases.
- AVC is U shaped, average variable cost falls to a minimum and then increases
- ATC also U shaped
- MC interesting: Output over AVC falling -> MC below AVC. Output over AVC rising -> MC above AVC. Lowest AVC point: Intersection between MC and AVC

Relationship between MC and AVC also applies for ATC

Note: When marginal cost intersects with ATC or AVC, the respective cost reaches a minimum.

Shifts in Cost Curves

- Technology (MP up, MC down), (ATC higher at low lvls, lower at higher lvls), (Fixed increase, variable decrease)
- Prices of factors of production. (Increase in costs?) (Fixed affects only ATC), (Variable affects ATC and MC)

Long Run Cost

Production Function: Relationship between maximum output attainable and the quantities of both capital and labor.

Marginal Product of Capital: Increase in output resulting from a one unit increase in the amount of capital employed

Average cost of producing a given output varies and depends on the firm's plant

Larger the plant, greater is the output at which ATC is at a minimum

Long-run average cost curve: Lowest ATC for each output level. Take multiple ATC graphs, find lowest point, connect the dots

Economies of scale: Firm's technology that lead to falling long-run average cost as output increases

Diseconomies of scale: Firm's technology that lead to rising long-run average cost as output increases

Constant returns to scale: Firm's technology that lead to constant long-run average cost as output increases.

An ATC graph could have economies of scale for certain intervals and then diseconomies of scale for other intervals

Minimum efficient scale: Smallest quantity of output at which the long-run average cost reaches its lowest level. Point in which economies of scale becomes diseconomies of scale

Perfect Competition

Firms in perfect competition face the maximum amount of competition.

Conditions

- Minimum efficient scale is small relative to the market demand so there is room for many firms in the industry.
- Each firm is perceived to produce a good or service that has no unique characteristics (perfect substitute)

Price taker: A firm that cannot influence the price of a good or service.

Marginal revenue: Change in total revenue that results from a unit increase in quantity sold.

Firm decisions

- How to produce at the minimum cost (minimize LRAC)
- What quantity to produce
- Whether to enter or exit a market

Profit is maximized when marginal revenue equals marginal cost.

If a firm makes economic loss, must decide whether to stay or leave the market

If a firm is getting rekt and decides to stay, must decide between producing something or temporary shut down.

A firm's **shutdown point** is the price and quantity at which it is indifferent between producing and shutting down. This is when MC crosses AVC (AVC is at its minimum). The firm incurs a loss equal to the TFC.

A perfectly competitive firm's supply curve shows how the firm's profit maximizing output varies as the market price varies.

The **short-run market supply curve** shows the quantity supplied by all firms in the market at each price when each firm's plant and the number of firms remain the same. Most optimal quantity supplied for each firm (maximize profit).

Short run equilibrium: Short run market supply and market demand determine the market price and output.

Affects on the Short Run Market Supply Curve

- Increase in demand shifts the market demand curve to the right. Price and quantity rise. Firms will enter the industry as other firms will be making economic profit.
- Decrease in demand shifts the market demand curve to the left. Price and quantity fall. Firms start to exit as they'll start to make economic loss.

Note: Maximum profit is not always a positive economic profit.

When ATC is above marginal revenue, the firm is incurring a loss. When ATC = MR, the first is at a breakeven point.

Logically, new firms enter an industry in which existing firms are making an economic profit. Firms exist an industry in which they incur economic loss.

In the long run, industries would converge to zero economic profit because of the entrance and disappearance of new firms.

External economies: Factors beyond the control of an individual firm that lower the firm's costs as the industry output increases.

External diseconomies: Factors beyond the control of a firm that raises the firm's costs as industry output increases.

The **long-run market supply curve** shows how the quantity supplied in a market varies as the market price varies after all possible adjustments have been made.

With external economies and diseconomies, when demand rises, prices will increase and when demand falls, prices will decrease. Without external economies/diseconomies, prices would remain constant.

The long-run market supply curve reflects that by having a positive slope with an increase in price and negative slope with a decrease. It connects the equilibrium at a particular price to another equilibrium after the price change has occurred and markets settled down.

Technological change

Technological change leads to economic profit. Firms either adapt to the new technology or exit. New technology firms also enter the industry.

As a result, supply increases and supply curve shifts rightward. Prices fall and quantity increases. Eventually a new long-run equilibrium emerges and each firm makes zero economic profit again.

Competition and Efficiency

Resources are used efficiently when marginal social benefit equals marginal social cost.

With no external benefits, the market demand curve is the marginal social benefit curve.

With no external cost, the market supply curve is the marginal social cost curve.

In **competitive equilibrium**, resources are used efficiently, quantity demanded = quantity supplied, and marginal social benefit = marginal social cost.

Gains from trade (consumer surplus and producer surplus) would equal total surplus. IN long-run equilibrium, total surplus is maximized.

Government Actions in Markets

Individual demand versus market demand will be different.

Similarly, individual supply versus market supply will be different.

Market supply and demand curve is the sum of all individual supply and demand curves.

Price ceiling: Regulation that makes it illegal to charge a price higher than a specified level

Rent ceiling: is a price ceiling applied to a housing market.

By placing a ceiling below the equilibrium price, effectively causing a shortage as demand is greater than supply.

People are willing to pay more, but it'll be illegal (black market).

Search activity: Time spent looking for someone with whom to do business.

Black market: Illegal market that operates alongside a legal market in which a price ceiling or other restriction has been imposed.

Ceilings Fair?

According to **fair rules** view, a rent ceiling is unfair because it blocks voluntary exchange.

According to **fair results** view, a rent ceiling is unfair because it does not generally benefit the poor.

Decreases the quantity of the product available, and the product is allocated by

- Lottery
- First come, first serve
- Discrimination

Argument in Favor or Rent Control

- High transaction costs can be reduced with the introduction of rent ceilings.
- Income tax benefits for landlords and tenants can be balanced
- Reduce instability and associated external costs for tenants
- Rent control may influence housing investment negatively or positively depending on how it affects the local economy
- Most metropolitan areas grow faster than rural areas even though urban areas face more regulations including rent control

Price floor: Regulation that makes it illegal to trade at a price lower than a specified level

Minimum wage: Price floor in the labor market.

If the minimum wage is set above the equilibrium wage rate, there is a surplus of labor and creates unemployment.

Argument: Minimum wage laws increase the unemployment rate of low-skilled younger workers.

Counter Argument: Higher wage increases employment by making workers more productive and less likely to quit. Higher wage also makes managers seek ways to increase labor productivity.

Taxes

Income tax and social insurance taxes are deducted from pay.

Provincial sales tax and GST are added to the price of things that are bought

- Specific Tax: For every unit of quantity a consumer purchases, the government collects a certain amount
- Ad Valorem Tax: For every dollar a consumer spends, the government keeps a fraction which is ad valorem tax rate.

Tax incidence: Division of the burden of a tax between buyers and sellers.

When an item is taxed, the price paid by buyers might rise by the full amount of the tax, by a lesser amount, or not at all.

The division of tax between buyers and sellers depends on the elasticities of demand and supply.

- Perfect inelastic demand: Buyer pays entire tax
- Perfect elastic demand: Seller pay the entire tax

When the curves get shifted after a tax is applied, there will be a new equilibrium price. The difference is the tax that the buyer pays.

The Benefits Principle: Proposition that people should pay taxes equal to the benefits they receive from the services provided by the government.

The Ability-to-Pay Principle: Proposition that people should pay taxes according to how easily they can bear the burden of tax.

Interventions in markets for farm products take two main forms:

- **Production quota**: Upper limit to the quantity of a good that may be produced during a specified period.
- **Subsidy**: Payment made by the government to a producer

Monopoly

With perfect competition, the market forces of demand and supply determine a good or service's price.

In a monopoly, the demand curve for an individual firm is the market demand curve.

Monopoly: Market that produces a good/service with no close substitutes and there is one supplier that is protected from competition by a barrier of entry.

Barriers to Entry

- Natural (economies of scale)
- Ownership (control of resources)
- Legal

Natural monopoly: Industry in which economies of scale enable one firm to supply entire market at lowest cost.

Legal monopoly: Market in which competition and entry are restricted by the granting of a public franchise, government license, or patent.

A monopoly sets its own price.

Single-price monopoly: Firm th at must sell each unit of output for the same price for all customers

Prime discrimination: Practice of selling different units of a good or service for different prices.

To sell a larger output, a monopoly must set a lower price. When price is lowed, two opposing forces affect total revenue:

- Lower price results in revenue loss
- Increased quantity sold results in revenue gain

If demand is elastic, fall in price brings increase to total revenue. Else it brings decrease.

Total revenue is maximized when Marginal Revenue = 0. Critical point at first derivative = 0. (Not necessarily maximized profit)

A single-price monopoly never produces an output at which demand is inelastic.

Profit is maximized when MR = MC just like a competitive firm.

Note: There is no supply curve for a monopoly because there is no single curve that provides information on both the quantity supplied and the price.

Economic rent: Any surplus, consumer surplus, producer surplus, or economic profit

Rent seeking: Pursuit of wealth by capturing economic rent

Rent seekers pursue their goals in two ways:

- Buy a monopoly
- Create a monopoly

Price Discrimination

A monopoly can discriminate

- Among units of a good. Quantity discounts
- Among groups of buyers: (Example: Pre-purchase)

By price discriminating, a firm can increase its profit by converting consumer surplus into economic profit. This rotates the marginal revenue line and allows the firm to produce more (efficiency) as well.

Perfect price discrimination: A firm is able to sell each unit of output for the highest price anyone is willing to pay. The demand curve becomes the marginal revenue curve.

Deadweight loss is converted into economic profit.

The outcome differs from outcome of perfect competition in two days:

- Monopoly captures the entire consumer surplus
- Increase in economic profit attracts even more rent seeking activity that leads to inefficiency

Regulation: Rules administrated by a government agency to influence prices, quantities, entries, and other aspects of economic activity

Deregulation :The process of removing regulations

Theories on Regulation

Social interest theory: The political and regulatory process relentlessly seeks out inefficiency and regulates to eliminate deadweight loss

Capture theory: Regulation serves the self-interest of the producer, who captures the regulator.

When demand and cost conditions create natural monopoly, in order for the firm to maximize profit, quantity produced is less than the efficient quantity

Marginal cost pricing rule: Regulation that sets the price equal to the monopoly's marginal cost. Thus the quantity demanded at a price equal to the marginal cost is the efficient quantity.

However, this usually incurs an economic loss on the firm. To cover the costs, a regulated natural monopoly might be permitted to price discriminate to cover the loss from marginal cost pricing. OR the natural monopoly might charge a one-time fee to cover its fixed costs and then charge the marginal cost.

Average cost pricing rule: Price at average cost. Usually a bit higher than pricing at marginal cost.

It may be hard for regulator to be sure what the firm's costs are. Therefore they use one of two practical rules:

- Rate of return regulation: Justify price by showing return on capital doesn't exceed a rate. (may violate principal agent problem, inflate expenses)
- Price cap regulation (Price ceiling)

Monopolistic Competition

Monopolistic Competition: Similar to perfect competition, but with product differentiation.

Implications

- Each firm only has a small market share, and limited market power to influence price of its product
- Each firm is sensitive to **average market price**, but not firm pays attention to the actions of others. No firm's actions directly affect the actions of others.
- Collusion/price fixing is impossible

Product differentiation: Close substitute, but not perfect substitute

This enables firms to compete in three areas:

- Quality: Design, reliability, service
- Price
- Marketing: Advertising and packaging

In the long run, economic profit induces entry, and price will eventually equal ATC and zero economic profit will be reached

A firm has **excessive capacity** if it produces less than the quantity at which ATC is a minimum.

A firm's **markup** is the amount by which its price exceeds its marginal cost.

The **efficient scale** is the quantity at which ATC is at a minimum.

Firms in perfect competition have no excessive capacity and no markup. The perfect elastic demand curve for perfect competition demand curve drives the result.

Efficiency of Monopolistic Competition

- Prices equal marginal social benefit
- Marginal cost equals marginal social cost
- Price exceeds marginal cost, so marginal social benefit exceeds marginal social cost

In the long run, monopolistic competition produces less than the efficient quantity. However, monopolistic competition offers **product diversity**.

Loss from quantity produced being less than the efficient quantity is offset by the gain that arises from having a greater degree of product variety

Innovation and Product Development

To keep making economic profit, a firm in monopolistic competition must be in a state of continuous product development. Provides competitive edge (even if temporary).

Note: Innovation is costly, but increases total revenue.

Amount of product development is efficient if marginal social benefit is greater than marginal social cost for the innovation.

A large proportion of the price in a product pays for the cost of selling it (packaging and advertising).

Selling efforts are successful in they increase the demand for the firm's product.

A **signal** is an action taken by an informed person/firm to send a message to uninformed people.

Advertising and establishing brand names are efficient (theoretically)

Oligopoly

In an oligopolistic market, a firm sets price or output based partly on strategic considerations regarding the behavior of its competitors.

Oligopoly: Market structure with small number of firms and natural/legal barriers to prevent entry of new firms

Duopoly is a market with two firms

With a small number of firms, each firm's profit depends on every firm's actions.

Cartel: An illegal group of firms acting together to limit output, raise prices, and increase profit

Note: Cartels are illegal and often break down

Kinked Demand Curve Model

Each firm believes that if it raises its price, competitors will not follow. However if it raises its price, all of its competitors will follow

There would be a discontinuity in the MR curve

Dominant Firm Oligopoly

There is one large firm that has a significant cost advantage over many other, smaller competing firms. Large firm acts as monopoly, pricing to maximize profit. Small firms act as perfect competitors, taking given market price set by the dominant firm

Game theory: A tool for studying strategic behaviour, behaviour taken into account the expected behaviour of others and the mutual recognition of interdependence

Prisoner's Dilemma

Rules

- My boys Art and Bob locked in a separate cell
- One confess: 1 year + other guy 10 years
- Both confess: 3 year + other guy 3 years
- Neither confess: 2 year + other guy 2 year

Strategies

- 4 possible outcomes. Each player has two actions

Payoffs

- **Payoff Matrix**: Table that shows payoffs for every possible action by each player for every possible action by the other player

Outcome

- **Nash equilibrium**: Both players choose the action that is most beneficial to themselves, for each possibility for the other person's choice
- Equilibrium is to both confess. Also called dominant strategy equilibrium

Note: A game similar to prisoners' dilemma is played in duopoly.

Firms could collude, and either choose to honor it, or cheat on it. This leads to four possible outcomes.

Collusive agreement: Agreement between two or more firms to restrict output, raise the price, and increase profits.

Advertising and R&D games are also prisoners' dilemmas

Punishment strategies can support a **cooperative equilibrium**.

Tit for tat strategy: One player cooperates this period if the other player cooperated in the previous period, but cheats in the current period of the other player cheated in the previous period

Trigger strategy: Cooperate if other player cooperates, else play Nash equilibrium strategy forever.

Contestable market: A market which firms can enter and leave so easily that firms in the market face competition from potential entrants

Limit pricing: Set the price at the highest level that is consistent with keeping the potential entrant out.

Canada has Anti-Combine Law: The Competition Act that prevents firms from seizing complete control of an industry/engage in practice of anticompetitive

Criminal Practices

- Conspiracy to fix prices
- Bid rigging
- False advertising

Non-criminal Practices

- Mergers
- Abuse of dominant position
- Exclusive dealing

Major Anti-Combine Cases

- NutraSweet tried to gain a monopoly in aspartame by licensing the use of its "Swirl" only on products for which it had exclusive deal
- Bell tried to tie sale of advertising space in Yellow Pages to the sale of advertising services from one of its subsidiaries
- Merger between CIBC and TD, Royal Bank and BMO were blocked
- Gasoline price-fixing cartel in Quebec fined for 2 million

The intent of anti-combine law is to protect social interest and restrict profit-seeking anti-competitive practices by producers