# Intro to Microeconomics

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Spring 2016

# Contents

Primary Textbook: Krugman's Microeconomics for AP
Teacher: Schweitzer

# 1 Chapter 2 - Supply and Demand

<u>Note:</u> Only includes Modules 8 and 9

## 1.1 Price Controls

1. Governments can intervene in the market for the benefit of sellers or buyers, based on moral or political arguments, placing price controls in the form of a ceiling or floor
   (a) In inefficient markets, price controls can often not hurt the market efficiency, but can rather improve it, such as the housing market in real life
   (b) In any market where factors other than price play a role, or where there is not complete product information, the market is not perfectly competitive, such that the model doesn't completely apply
2. Price ceilings are generally used during major shortages, such as wars or natural disasters, that hurt the general public, on essential raw materials
   (a) In an efficient market, price ceilings can force a price below equilibrium, leading to a shortage, though if above, will have no effect
   (b) Ceilings can lead to inefficient allocation to consumers, with those with less urgent needs gaining the resources, due to those willing to pay a higher price being unable, instead often leading to luck or personal connections determining who gains the products
   (c) Subletting is the process of illegally renting an apartment being rented for a price above the rent control, investigated commonly in NY, preventing it from creating efficiency in allocation, and leading to black/illegal markets, creating disrespect for the law and hurting those unwilling to violate the law
   (d) Ceilings also lead to wasted resources, due to spending additional effort attempting to compensate for the shortaes, such as searching for opportunities to purchase the good, creating production inefficiency as well
   (e) They also lead to ineffiency by low quality due to the lack of incentive to provide better products without the ability to increase prices
3. Rent controls, such as in NYC, originated due to preventing raw material prices from going up too high due to less supply because of being used in the war, lowering the demand for the materials to build new apartments, extended to other buildings and modified later on
   (a) Low quality is especially incentivized in rent control, due to landlords trying to eliminate tenants to allow rent to be raised
4. Ceilings are created often due to vocal support from the minority that benefits, belief that the market doesn't follow the model, lack of economic understanding by government, and more extreme ideas about how high prices would rise otherwise, due to black market prices often being above unregulated prices
5. Price floors have been used to support the workers, such as on agricultural products for farmers or the minimum wage for unskilled workers, leading to a surplus
   (a) In some cases, such as agricultural, the government buys the surplus, leading to government warehouses of unwanted goods, often paying exporters to remove the product for a loss (in the EU) or using it in schools (in the US)
   (b) The US often also pays farmers to not produce the product above a certain level, to prevent a surplus, but in the case of minimum wage, leads to unemployment
   (c) Low quality is especially incentivized in rent control, due to landlords trying to eliminate

tenants to allow rent to be raised

6. Price floors raises prices such that consumers purchase less than the equlibrium quantity, and create inefficient allocation of sales among sellers due to sellers willing to accept lower prices for their goods, rather than not be able to sell it

   (a) It would create wasted resources due surplus not being used, incentivize illegal activity, such as black labor (off the books to avoid regulation)
   (b) It also creates inefficiently high quality, forcing sellers to produce quality justifying the price, when consumers would rather a lower price with only the desired quality

## 1.2 Quantity Controls

1. Quantity controls/quotas are the regulation of a quantity that can be bought or sold, generally by limited numbers of licenses to supply a good, or through an added tax on a specific good
2. Limiting the quantity supplied below the equlibrium results in a difference between the demand and supply price, or a wedge

   (a) This works by creating a market for licenses, with a quota rent of the difference between the demand price paid to the renter, and the supply price desired by the renter, paid in rent to the owner
   (b) If the license is not rented, the wedge is the opportunity cost of keeping the license, making up for the lack of quota rent
   (c) Thus, in addition to the product income gained from the license, it is an asset by itself as a result, with supply price as the real price for the goods
3. The main cost of quotas are inefficiency of production, due to less rides being offered than ideally provided by both, called the deadweight loss of income for production and goods for consumers, measured as the area of the triangle between the quota and equilibrium, with dollars as the unit

   (a) This also incentivizes unregulated, black market transactions
   (b) On the other hand, owners of the licenses have a far stronger incentive to be vocal in favor of preserving the quota, hurting revenue of owners
4. The tax/quota burden is distrubuted based on the slopes of the curve, such that the difference in price per unit to the buyer and seller determines the distribution of the burden to each, measured in dollars per unit
5. It must be noted that market equilibrium is assumed to be socially optimal only if all cost-benefits are accounted for and income distribution is fair, such that the market is perfectly competitive and takes into account all factors

# 2 Chapter 9 - The Demand Curve

## 2.1 Income Effects, Substitution Effects, and Elasticity

1. The Law of Demand is based on the Income and Substitution Effects
2. The Substitution Effect states that as the price of a good increases, people begin buying other substitute goods instead, such that quantity demanded of the good decreases

   (a) This is the main reason for goods which take a small portion of a person's income

3. The Income Effect states that as the price of a good increases, less will have to be spent that or other goods, such that real income decreases and quantity demanded on the good can decrease
    (a) This only effects goods that take up a majority of income, such as housing, working with the substitution effect
    (b) Inferior goods, on the other hand, have demand increase as income decreases, such that it works against the substitution effect
        i. Giffen goods are inferior such that the Income excesses Substitution, such that demand increases as price increases, but may not exist
4. Elasticity is the amount of change of the dependent variable from a change in the independent
    (a) Price Elasticity of Demand $= \frac{\% \text{ Change in Quantity Demanded}}{\% \text{ Change in Price}}$, where $\%\Delta x = \frac{\Delta x}{x_i} * 100\%$, usually written as the absolute value of the elasticity by convention
    (b) Since percent difference between values depends on the method of measuring, based on what is in the denominator, the midpoint method uses the average value of the variable to measure percent difference
        i. It can also be written as Price Elasticity of Demand $= \frac{dQ}{dP} * \frac{P_i}{Q_i}$ as a result

## 2.2 Price Elasticity of Demand

1. Perfectly elastic demand is such that if the price is raised, the quantity demanded is 0, but if lowered, is infinite
    (a) Perfectly inelastic demand is an elasticity of 0, such that changes in the price result in no change in the quantity demanded
    (b) If price elasticity of demand is greater than 1, it is elastic, less, it is inelastic, and if equal, then it is unit-elastic
2. Elasticity is used to predict the change in total revenue, or the total value of sales of a product, equal to the product of the price and quantity sold, or the area from the origin to the point on the curve
    (a) For unit-elastic demand as a result, increase in price results in no change in total revenue, while for inelastic, there is an increase in revenue, and elastic, a decrease
    (b) This is due to the price effect of higher prices combined with the quatity effect of less sold
3. Price elasticity often changes throughout a demand curve, such that when measured, it is used to mean the elasticity at the immediate point on the curve
4. Price elasticity is affected by the availablility of close substitutes, if a good is a necessity or a luxary, share of income spent, and time
    (a) If a large share of income is spent, elasticity tends to be far higher, due to a greater reaction to price change
    (b) Over time, consumers adjust habits to a price change, even if it is difficult in the short run, such that long-run price elasticity is far higher than short-run

## 2.3 Other Elasticities

1. Elasticity overall is unitless, such that it does not depend on the price/quantity being related to the units, rather due to percent change ratios, to avoid confusion

2. Cross-price elasticity of demand is the change in the quanity demanded due to the change in the price of substitutes or compliments
    (a) Cross-price elasticity $= \frac{\%\Delta \text{Quantity demanded of good}}{\%\Delta \text{Price of related good}}$
    (b) Substitutes have a positive cross-price elasticity, while complements have a negative, where the closer the substitution/the stronger the compliment, the greater the magnitude of the elasticity will be
3. Income elasticity of demand is the change in the quantity demanded due to the change in income
    (a) Income elasticity $= \frac{\%\Delta \text{Quantity demanded}}{\%\Delta \text{Income}}$
    (b) Normal goods have positive elasticity, while inferior goods have neative
    (c) Income-elastic is elasticity greater than 1, such that demand rises faster, while income-inelastic has positive, but below 1, such that demand rises slower than income
        i. Necessities are income-inelastic generally, such as good or clothing, such that the low income of producers of necessities such as farmers is the result of recent economic growth, raising other incomes
4. Price elasticity of supply $= \frac{\%\Delta \text{Quantity supplied}}{\%\Delta \text{Price}}$
    (a) Similarly, perfectly elastic supply has elasticity of $\infty$, such that below a price, 0 is supplied, above the price, infinity, and any amount is supplied at the price
    (b) Perfectly inelastic supply has elasticity of 0, such that changes in the price produce no change in the quantity supplied
    (c) Price elasticity of supply is determined by availablity of inputs (easier adding and removing of inputs results in higher elasticity) and time
        i. In the long run, elasticity is higher due to having more time to respond to a change in price
        ii. This is also partially due to the ability to expand the availability and production of inputs, even for limited resources, building the infrastructure and technology to do so

## 2.4   Consumer and Producer Surplus

1. Consumer surplus is the benefit gained by buyers from being able to purchase a good, and producer surplus is the benefit gained by the sellers from being able to sell a good
2. Consumer surplus is based on the buyer's willingness to pay, or the maximum price at which the buyer would buy the good
    (a) At that price, they are indifferent about buying, willing below, and unwilling above, though it is generally assumed that it is bought at the point of indifference
    (b) Individual consumer surplus is equal to the willingness to pay - the price paid, such that total consumer surplus is the sum of the individual buyers
    (c) Consumer surplus can thus be gained from the area between the portion of the curve above the horizontal price line, and the horizontal price line
3. Producer surplus is measured similarly by the area above the supply curve, under the price line
    (a) This is based on the cost of each seller, or the lowest price at which they would be willing to sell the good

## 2.5 Efficiency and Deadweight Loss

1. Total surplus is the sum of consumer and producer surplus at any given price, proving that all parties gain from trade
2. Market efficiency (of allocation) is such that there is no way to make some better off without hurting others, possibly able to be created by reallocating consumption among consumers, sales among sellers, or quantity traded
   (a) Reallocation to consumers willing to trade less than the equilibrium price reduces consumer surplus by taking it from those who need it more, creating negative consumer surplus for those buyers, reducing total
   (b) Reallocation of sales to those who would be unwilling to sell above market equilibrium results in a loss of producer surplus, creating negative producer surplus for those sellers, reducing total
   (c) Changing the quantity to less prevents transactions that would increase surplus, while more creates forced transactions, such that there is negative surplus
3. Market equilibrium thus allocates consumption to those who value the good the most and sales to those who value it the least
   (a) It also makes it so that each buyer gains it from someone who values the good less than they do (mutually beneficial)
   (b) It also makes it so there are no buyers who can't purchase the good who value it more than any sellers who can't sell it (no missed transactions)
   (c) On the other hand, while this maximizes efficiency, it does not maximize equity (fairness), does not make each participant the happiest, just the total, and has the possibility of the market failing
4. Equity is based on personal values, and helps determine taxation, either progressive, regressive, or proportional (same percentage for all incomes)
   (a) In a perfectly competitive market, there is a trade-off between economic efficiency and equity, in the form of redistributive taxes and services
5. Excise taxes, or taxes on each unit sold, are able to be levied on either the producer or the consumer, but the tax incidence, or the measure of how the tax burden is divided, is the same regardless for a given tax
   (a) Excise taxes for equally elastic supply and demand curves are divided evenly, while for unequal curves, it falls more on the more inelastic curve
   (b) The benefit from the tax is the revenue, or the area of the rectangle made by the wedge and quantity sold, and the services provided
   (c) While the revenue is to provide services back to the taxpayers such that it is not a cost, the cost is the inefficiency caused by the tax, by the loss of mutually beneficial transactions/deadweight loss
       i. The loss in producer and consumer surplus is equal to the sum of the revenue and the deadweight loss
       ii. The larger the wedge, the greater the inefficiency created by the tax by the loss
       iii. There is an added cost of administrative costs of the tax, meaning the resources used to collect and pay, avoid, or evade the tax
6. Taxes have different amounts of equity, generally a trade-off, such as a lump-sum tax, which is the same on all people, such as a poll tax, with high efficiency, creating little deadweight loss, but low equity

## 2.6  Utility Maximization

1. Utility is the measure of satisfaction individuals gain from consumption, which they can be assumed to attempt to maximize production of through consumption
   (a) Utility is measured in utils, where a utility function shows the relationship between utility (y-axis) and the consumption bundle consumed (x-axis)
   (b) Marginal utility is the change in total utility based on additional consumption of one more unit of the good, plotted in the midpoint on the x-axis between the two quantities
2. The principle of diminishing marginal utility states that the marginal utility curve is generally downward sloping, such that there is eventually no gain in utility from additional consumption, and may be a loss
   (a) This is the final rule, along with the substitution and income effect, to explain the shape of the demand curve
3. Budget constraints also limit consumers, such that the total set of consumption bundles under constraints are the consumption possibilities
   (a) The budget line is the set of affordable consumption bundles of two items that cost exactly the income
4. The optimal consumption bundle is that which is both affordable and maximizes utility
   (a) Marginal utility per dollar is the change in total utility based on additional consumption of one more dollar of the good, calculated at the midpoint, equal to the marginal utility divided by the price for a unit
   (b) The optimal consumption rule states that the maximum total utility is at the point where the marginal utility per dollar is equal for each good
   (c) As a result, increase in price leads to decrease in marginal utility per dollar, such that less is demanded for the optimal consumption bundle

# 3  Chapter 10 - The Supply Curve

## 3.1  Definition of Profit

1. The supply curve is based on the assumption that the goal of firms is to maximize profit, or total revenue minus total cost
2. Explicit costs are those requiring payment of money, while implicit costs are measured in terms of dollars, but based on the value of benefits lost, such as possible income
   (a) Both types must be taken into account, rather than just explicit costs, often less than implicit
   (b) Implicit can also be thought of as the cost of expending ones own resources on the activity, such as labor time
3. Accounting profit = total revenue - explicit cost - deprecation of capital, generally reported to the IRS and investors
4. Economic profit = accounting profit - implicit cost, used to determine whether the resources could be better used elsewhere and the implied form of profit in economics
   (a) If capital is not owned but rented, it is an explicit cost, but there is no deprecation, while if owned, there is also the implicit cost of capital, or the income that could have been generated by the capital (physical or finanical used to purchase it) if used elsewhere

(b) Positive economic profit means resources are being used the most productive way, while negative means there are more productive alternatives

(c) Normal profit, or economic profit of 0, means that it is the best use of resources, equal to the alternative in terms of profit, acting as a natural profit amount

    i. Actual profit is equal to the economic profit plus the normal profit

    ii. Normal profit can also be thought of as the revenue from entrepeneurialism as one of the major resources, such that breaking even can be thought of as gaining from that resource

## 3.2   Profit Maximization

1. After determining whether the enterprise is economically profitable by making at least normal profit, it must be determined the quantity of production that will maximize profit
2. The principle of marginal analysis states that the ideal quantity is when the marginal benefit is equal to the marginal cost
   (a) In this case the optimal output rule, balancing marginal revenue and marginal cost
3. The marginal cost curve and marginal revenue curve can be drawn, the latter as a flat line equal to the price in perfectly competitive markets, the former generally as a vaguely parabolic curve, going down then rising

## 3.3   Production Function

1. Fixed inputs are those whose quantity cannot be changed during the short-run, such as land or capital, while variable are those able to varied, such as labor
   (a) All inputs are assumed to be able to be changed in the long-run
2. The total product curve measures the total amount of a good produced based on the quantity of a variable input, where all other are assumed to be fixed
   (a) The marginal product of input $= \frac{\Delta \text{Quantity}}{\Delta \text{Input}}$, taken between adding a unit of the input
   (b) Diminishing returns to an input is generally true, such that as more input is added, the marginal product of the input decreases
3. Increasing the fixed input generally causes both the marginal product of input and the total product curves to shift upward at all points except 0

## 3.4   Firm Costs

1. Resource costs are broken up into fixed/overhead costs, not depending on the amount produced, and variable costs, added to get the total cost, combined explicit and implicit from giving up the rental income
   (a) Total cost curve is the total cost on the y-axis and the quantity produced on the x-axis, getting steeper as it progresses due to diminishing returns for added variable input (increasing marginal cost)
   (b) Marginal cost $= \frac{\Delta \text{Total Cost}}{\Delta \text{Quantity Produced}}$
2. Average total cost $= \frac{\text{Total Cost}}{\text{Quantity Produced}}$
   (a) Average costs are measured at each quantity point, unlike marginal cost which is measured between quantity points
   (b) Average variable cost is measured similarly for only the variable input cost

3. Average total cost is said to decrease at first, and then increase, as quantity increases, such that it is U-shaped
    (a) This is due to the spreading effect (larger quantity to spread over the fixed cost) along with the diminishing returns (from adding variable inputs as quantity increases)
        i. Since diminishing returns gains strength as it increases, and spreading decreases strength due to the overall change in quantity getting smaller, this causes the shape
    (b) The minimum average cost is the point where the average variable cost equals the average fixed cost, when the effects offset equally, though this is only true if both effects hold true at all points
        i. The amount of output produced at this point is the minimum-cost output
        ii. Outputs below the minimum cost output have marginal less than average total, while above the minimum cost output have marginal greater than average total, such that the minimum is the point where marginal intersects
        iii. This is also the point where marginal cost intersects the total cost curve, even if average variable and fixed don't intersect, in the case of rising then diminishing returns
4. Marginal cost curves often don't purely rise, but rather initial fall as production increases until some point where they start to rise
    (a) This is due to specialization of labor and division of tasks as the production and number of workers increases at first
    (b) On the other hand, this occurs before the minimum point of the average total cost or variable cost curve, such that the model holds true, though the minimum average total cost point cannot be found by the average fixed and variable intersection

## 3.5   Long-Run Costs and Economies of Scale

1. In the long run, fixed costs are variable, such that capital/other fixed resources can be changed resulting in higher fixed cost, but increased productivity and lower variable costs in the short-run
    (a) For low output quantities, low fixed cost is preferable, while for high quantities, it is the other direction
    (b) The intersection of the two (short-run) average total cost curves is the point where the fixed cost decision doesn't matter
    (c) The total series of fixed cost curves is called the family of short-run average total cost curves, used to determine the ideal fixed cost
    (d) Thus, planned long-term output determines the ideal fixed cost, moving in the long run to a new short-run curve
2. Long-run average total cost curves are the ideal short-run cost curve points at each quantity, such that it forms a U-shape generally
    (a) In the short-run, changes in output move on the short-run curve, off the long-run curve if previously on, such that the short-run curve must be changed to move back
    (b) Due to it being at the minimum cost curve point for each, all short-run curves are within the long-run curve due to rising faster from the point of tangency (when that curve is optimal)
3. Economies of scale are those whose scale effects (the results of change in quantity of output in the long run curve) cause average total cost to decrease as output increase

(a) Thus, there are increasing returns to scale, with increases output more than the respective increase in all inputs

(b) At the bottom of the curve, such that the slope is 0, there are constant returns to scale, while when positive, there are decreasing returns to scale, such that it is diseconomies of scale

4. Economies of scale are caused by increased specialization effect, as well as high setup cost of many industries, but low expansion cost

(a) Diseconomies are the result of coordination and communication issues between members of the firm

5. Sunk costs are those which have been spent, and are nonrecoverable, such that they are ignored in decision making

## 3.6   Introduction to Market Structure

1. Perfect competition relies on having standardized/non-differentiated products and many sellers, such that both consumers and firms are price-takers

(a) Thus, the individual firm product demand curve is totally elastic, not able to set the price

(b) To be able to have truly many firms, none must have a large market share, such that none are able to influence the price

2. Perfect competition also requires the product to be standardized, such that consumers view the products of each firm as equal, called a commodity

(a) Most perfectly competitive markets also have free entry and exit, such that there are no obstacles to entering/leaving an industry in the long run, such as government regulation, limited resource access, or fees for leaving

(b) Free entry and exist is not completely necessary for perfect competition, but prevents firms from keeping others out

3. Monopolists are firms which are the only producer of a standardized good, such that the industry is called a monopoly, generally prevented by anti-trust laws

4. For monopolies to exist, there must be a barrier to entry, either control of a scarce resource or input, economies of scale, technological superiority, or government policies

(a) Natural monopolies are those existing due to an economy of scale over the entire relevant output, encouraging growth due to lower average total cost for monopolies, generally existing for local utilities due to the high fixed cost for firms of placing infrastructure to reach homes

   i. Thus, over that range, average total cost is fully downward sloping, due to being an economy of scale

(b) Technological superiority is generally only a barrier in the short-run, due to firms able to fund additional research and overtake the leader, but if maintaining an advantage, can be a barrier

   i. Network externalities are common in tech industries, such that those with the most customers has an advantage in gaining new customers, creating a monopoly in the long term

   ii. This is commonly due to other technology companies making technology for that company, such that it will have further superiority

(c) Patents and copyrights are common government barriers, giving the former for 20 years

on inventions, the latter on the lifetime of the creator + 70 years on creative work

    i. These exist to give incentives for innovation, allowing temporary monopolies to exist to compensate the inventor for the invention

    ii. On the other hand, due to the lack of flexibility of the system, this can create inefficiency and issues for poorer nations requiring essential, but patented goods, such as medication, incentivizing breaking the patent

        A. This has led to special discounted prices often for 3rd world nations on medications, in exchange for honoring the patent

5. Oligopolies are industries with only a few firms, called oligopolists, competing with each other, but each market power, creating imperfect competition

    (a) Oligopolies are caused by the same factors as monopolies, just on a smaller scale, generally due to economies of scale

    (b) Due to commonly having several small niche firms which don't compete, but are in the industry, it is difficult to determine oligopolies, such that concentration ratios and the Herfindahl-Hirschman Index are used

        i. Concentration ratios measure the percentage of sales of some number of the largest firms, generally using the 4 and 8 ratios, such that greater percentages for lower number ratios are more of an oligopoly

        ii. HHI is the sum of the squares of the market share percentage of each firm in the industry, where greater value is more of an oligopoly

    (c) Oligopolies have interdependent profits, such that there is incentives to collaborate to maximize profits, due to lack of easy entry and exit making it feasible

6. Monopolistic competition markets are those with many firms, but each of which with a different, unstandardized product, but which are close substitutes, such that there is limited price control and market power

    (a) This is found often in service industries, such as food, gas stations, hotels, or manufacturing

    (b) Monopolistic competition has free entry and exit in the long run generally, such that collaboration is unfeasible

# 4 Chapter 11 - Perfect Competition and Monopolies

## 4.1 Intro to Perfect Competition

1. The needed conditions for perfect competition are many producers, each with a small market share and a standardized product

2. In a price-taking firm, by the optimal output rule, the marginal revenue is equal to the market price, such that the price is the marginal cost at the optimal quantity of output

    (a) This is due to being in a perfect market, the price is external, unable to be influenced by a single firm by changing quantity sold, such that the firm is called price taking

3. The marginal revenue and marginal cost curves can be thought as supply and demand curves for the firm, such that consumer surplus is positive profit, producer surplus is negative profit

    (a) Thus, in a perfectly competitive market, the firm demand is perfectly inelastic

4. Firms only produce a particular good to begin with if the economic profit is greater or equal to 0, such that price has to be greater or equal than average total cost to be profitable

(a) If this is the case, they would produce until the optimal output point

## 4.2 Graphing Perfect Competition

1. Profit = (Price - Average Total Cost) * Quantity, where the Quantity is determined by the optimal output rule, and will be after minimum total average cost if there is a profit, at if there is normal, before if a loss
    (a) The break-even price is the price where the firm gets normal profit, such that average total cost is equal to the price at the quantity (such that it is also equal to marginal cost)
        i. Thus, since marginal cost intersects average total at the minimum cost output, it gains a normal profit when minimum cost output intersects optimal output
    (b) As a result, if price is above minimum average total, optimal output is greater than minimum cost output, and average total cost is below price (due to marginal cost below until that point), such that it is profitable, and vice versa
2. In the short run, even if a firm is unprofitable, if there is a fixed cost, the firm might still produce, since the fixed cost is paid regardless, not shutting down until the long run, unless unprofitable ignoring fixed cost
    (a) The shut down price is the minimum average variable cost, such that below it, the firm would minimize loss by not producing at all, otherwise it should produce to minimize losses
        i. At the minimum average variable cost as the price, the firm is indifferent, but is assumed to produce
    (b) Thus, the fixed costs in the short term act as a sunk cost, which cannot be recovered and thus should not effect decisions
    (c) On the other hand, some businesses shut down without going out of business, such as seasonal operations, where the price is too low for part of the year
3. The individual short-run supply curve can be created similarly to demand by marginal revenue, by the marginal cost curve, going down to the shut down price, where the actual price determines the amount produced
4. In the long run, fixed cost is chosen by the company, though the first choice is whether to begin or end operation
    (a) Thus, in the long run, above the break-even price, companies enter the industry due to free entry (ease of gaining the supplies necessary due to in a competitive market), and below, they leave

## 4.3 Long-Run Outcomes of Perfect Competition

1. Industry short-run supply curves have fixed firm numbers (due to no entry and exit), such that it is the horizontal sum of individual curves, ending at the shut down price for all sellers
    (a) The intersection with the demand curve is short-run market equilibrium
    (b) It is generally assumed the costs for each seller are constant when establishing supply curves
2. In the long-run, when profit is above normal/when price is above break-even, new firms enter the industry, causing a rightward supply shift, lowering the price

(a) Thus, the break-even price is the long run market equilibrium price, earning a normal profit

(b) Thus, in the long run after a demand shock, increase in quantity is due to the increase in sellers, rather than the increase in production of each seller due to price change, such that long run supply is perfectly elastic

(c) This still requires constant costs across the industry for it to be perfectly elastic

3. For industries without constant cost for all firms, the long-run industry supply curve slopes upward, but is far more elastic than short-run

(a) This is due to the assumption that resources are limited, such that as more firms enter the market, costs rise due to competing for those resources

(b) Increasing costs across the industry are thus in effect, such that as the quantity produced increases, the cost increases, creating upward sloping, while decreasing costs are also present in economies of scale, creating slightly downward sloping

(c) It is more elastic due to free entry and exit, with a demand shock raising price as more output is desired, falling due to free entry, and vice versa

4. Due to all having normal profit in the long run, average total cost is minimized, such that the total cost of production is minimized (productive efficiency)

(a) In addition, the marginal cost for all firms is equal, due being price-takers so that all stop producing when marginal cost equals price

(b) It is also fully efficient, with only sellers whose production is below or equal to price sell, such that it is fully efficient with respect to sales

   i. Since the long-term price is normal profit, such that it is the cost of production, it is fully efficient in allocation, with each buyer willing to pay the price of production or more receiving the good, such that no mutually beneficial transactions are lost (P = MC, meaning allocative efficiency)

## 4.4   Intro to Monopoly

1. In monopolies, rather than having a perfectly elastic demand curve at the price, since they are the entire industry, the demand curve is that of the market

(a) As a result of the quantity and price effects causing the demand curve, the marginal revenue is downward sloping as well, starting from the same point, but decreasing at a faster rate

(b) Thus, total revenue is negative parabolic, such that when the quantity effect (additional revenue from a new sale) equals the price effect (loss in revenue due to price decrease from previous sales), such that marginal revenue equals 0, is the maximum total revenue

2. Unlike perfectly competitive markets, the decrease in the demand curve for each increase in output is due to the price effect, not present in perfectly competitive firms as price takers

3. In a monopoly, due to the wedge between marginal revenue and demand produced by the price effect, the intersection of marginal revenue and cost is the one produced, less than the intersection with demand, such that less is produced

(a) This results in a higher monopoly price, due to paying the demand price, which is higher than at the intersection with demand

(b) There is also a long term monopoly/industry profit, due to the price remaining above the intersection of break-even price, due to being the demand price

   i. Since marginal revenue is below demand, and average total cost is below marginal

cost by that point, there is a profit of the difference between average total cost and demand times the quantity

ii. This is mainly due to the barriers of entry, preventing the market from reaching equilibrium

## 4.5 Monopoly and Public Policy

1. Due to the lower quantity produced, there is the deadweight loss of the area between demand, marginal cost, and the quantity produced, creating inefficiency
   (a) While the monopoly gains from it, the loss in consumer surplus is greater, such that governments generally try to limit monopolies
   (b) The deadweight loss is the loss of mutual beneficial transactions resulting from the monopoly price being higher than the cost of production
2. If it is assumed for simplicity that marginal cost is constant such that average total cost is constant, it becomes evident that in perfect competition, the entire area between average total cost and demand is consumer surplus
   (a) Under the assumption of constant marginal cost, there is no producer surplus, such that it can be ignored
   (b) In monopolies, it is far smaller, with the profit square and deadweight loss square taking away from it, such that total surplus decreases under this model
3. Policy towards monopolies depends on if it is natural or unnatural, the latter able to be easily broken up by antitrust policies
   (a) Natural monopolies lower the average total cost, but causes inefficiency, such that it naturally forms by firms, and is not as easy to break up
   (b) Public ownership is commonly used to fix natural monopolies, such that it is based on maximum efficiency rather than profit maximization
      i. This has issues due to often becoming politically corrupt, and due to having no incentive to lower costs or produce high quality products
   (c) Price regulation is also used, lowering the price at most to the point where average total cost is equal to the demand price, below the monopoly price
      i. Below this point, firms no longer produce, such that there is even greater loss, but at this point, it causes the market to function closer to a perfectly competitive market
   (d) On the other hand, some believe that attempts to regulate monopolies create more inefficiency, such that they should be excepted

## 4.6 Price Discrimination

1. Single-price monopolists are those that charge everyone the same price, but many increase profits through price discrimination, charging different prices to different customers
   (a) This is also found under oligopolies or monopolistic competition
   (b) Price discrimination is used when multiple buyers have different sensitivity to price, or price elasticity of demand
   (c) Price discrimination is generally not explicit, due to legal restrictions and the difficulty of enforcing, instead creating rules that mainly apply to specific groups
2. Perfect price discrimination is when a monopolist charges each their willingness to pay, such that there is no consumer surplus, but rather only producer surplus

(a) As price discrimination approaches perfect, the number of different prices will rise, and the lowest price will decrease/reach marginal cost

(b) In perfect price discrimination, there is no deadweight loss from the monopoly, but is impossible due to difficulty determining the willingness to pay of consumers

(c) As a result, governments generally avoid regulating price discrimination, due to increasing efficiency, except in cases of severe inequity

3. Price discrimination is often done by advance purchase restrictions (lower prices in advance), volume discounts, or two-part tariffs (annual fees combined with the discounted price of the product, acting like a volume discount)

# 5 Chapter 12 - Imperfect Competition

## 5.1 Intro to Oligopoly

1. Oligopolies require interdependence, such that the profits of a firm rely on the actions of others, modeled generally by a duopoly

(a) Due to functioning on the market demand curve, the total revenue is higher if both producers limit production to the monopoly quantity to keep the price high

2. This creates an incentive for collusion, or cooperation, including the forming of a cartel, or an agreement to work together to limit output and maximize profit, such as OPEC

(a) Cartels and any form of collusion are generally illegal in nations like the US under anti-trust laws

(b) The issue is that both firms have an incentive to produce slightly more, lowering the price for both, but raising revenue for themselves if the quantity effect overrules the price effect

   i. At the same time, total industry revenue would fall as a result

   ii. Conversely, if both choose to produce more, total industry profit will fall further, but the individual revenue of both will fall as well

3. This often results in noncooperative behavior, with the possibility of driving down all profits, but also the possibility of raising their own

4. Oligopolies could follow the Bertrand model of price competition, lowering the price slightly to try to steal customers from the demand price until it reaches marginal cost, creating normal profit

(a) They also may follow the Cournot model of quantity competition, viewing competitor output as fixed, finding the profit-maximizing quantity at that, producing positive profit, similar to a monopoly, but lessened

(b) Under supply constraints are an issue, near the maximum able to be supplied demanded, the Cournot model is usually in effect, while otherwise, Bertrand is

   i. Due to the Bertrand method providing no profit, without capacity constraints, firms try to avoid price competition by other means, such as differentiated products, creating monopolistic competition to produce profit

   ii. Collusion is also a solution to that issue, preventing Bertrand behavior

## 5.2   Game Theory

1. Game theory models the situation where the payoff (profit) to one player depend on the actions of both themselves and the other player
   (a) This is represented by a payoff matrix, where each row is the possible action of one player, each column of the other player
   (b) Nash equilibrium is the equilibrium of each player making the best choice for themselves based on the actions of other players
2. The prisoners' dilemma situation is one in which the total is minimized by one choice, the individual is increased if one does the other choice, and both lose if both make the other choice
   (a) Thus, acting in self-interest, rather than in overall interest has the effect of hurting both parties
   (b) This produces a dominant strategy for both players, where their best actions for their own self-interest is independent of the actions taken by the other player
   (c) Dominant strategy equilibrium, or noncooperative equilibrium, are those of two dominant strategies, such that neither take the actions of the other player into account
3. Oligopolists play a game with repeated interaction, such that they engage in strategic behavior, taking into account the effects of their actions on future player actions as well
   (a) Tit for tat strategy is to begin cooperatively, then copying what the other player does in future rounds
      i. This encourages collusion by providing long term greater profits for following the collusion, with punishments for cheating in the long term
   (b) This produces tacit collusion, lowering production to aid other firms, in the hope that they will return the favor

## 5.3   Real-life Oligopolies

1. Oligopolies began in the mid-1800s when railroads created a national market, allowing companies to form cartels to raise profits, not banned until 1890 when anti-trust legislation was passed
   (a) Cartel agreements were not enforceable in courts, such that eventually, Rockefeller's Standard Oil formed a trust
      i. Trusts had shareholders of all major companies give their shares to a board of trustees, virtually forming a single firm, creating an oil monopoly
   (b) Due to fear of the economic effects and power of oligarchs, the Sherman Antitrust Act of 1890 was passed, breaking up and preventing monopolies
      i. While not immediately enforced, the government later began breaking up monopolies actively, such as Standard Oil in 1911 or Bell Telephone in the 1980s
      ii. The justice department also now reviews all mergers to prevent reducing competition
   (c) Until the 1990s, the US was the only nation with anti-trust laws, with some nations creating monopolies to aid competition on an international scale
      i. The EU implemented anti-trust policies since, and the US has created a policy of providing information of cartels for reduced penalties
      ii. The maximum fines have also been raised drastically, providing incentive to give away other cartel members

2. While tacit collusion has been shown to be the natural state of oligopolies, it doesn't reach monopoly levels
    (a) This is first due to the complex pricing dynamics, with many different products, and more complicated pricing systems
    (b) With more firms, the incentives to cheat rise as the short-term gains from the quantity effect rise, and the long-term from price decrease, as well as making monitoring the agreement more difficult
    (c) In addition, firms may have a different agreement on what split of the market is fair, or may have different marginal costs curves, making it uncertain what the profit-maximizing output is
    (d) Some buyers are large enough to have bargaining power, such that large oligopolists are able to force suppliers to offer lower prices
    (e) These issues have often led tacit collusion to fail, leading to the creation of a cartel, as well as to gain increased bargaining power for the cartel
        i. This can also lead to price competition, or a price war, lowering prices to the competitive level, or below in an attempt to punish other firms for cheating or run them out of business
3. Oligpolies often try to differentiate products to gain market power, either by actual differentiation or percieved, adding extras, a different design, or marketing campaigns
    (a) In price differentiated oligopolies, there is often an agreement to keep prices relatively equal, determined by the price leadership firm, who announces first, followed tacitly by the industry
    (b) Thus, they engage in intensive nonprice competition, spending large amounts on price differentiation
4. While most industries are oligopolies, rather than monopolies or perfect competition, limits to collusion keep them acting similar to perfectly competitive industries
    (a) Thus, it is generally assumed that industries act competitively, except when necessary to take into account oliopolistic actions

## 5.4   Intro to Monopolistic Competition

1. Due to having a share of market power, not being price-takers, the demand curve is downward sloping, with marginal revenue below it, similar to a monopoly
    (a) If the demand curve intersects average total cost at any point, there is some point where the firm is profitable, while if not, it must always take a loss, tangent if at equilibrium
2. In the long run, there is a zero-profit equilibrium, due to the market being entered or exited based on the profit produced, shifting the demand curve of each producer leftward due to entry, right due to exit
    (a) The marginal revenue curve will shift in the same direction as well, such that it remains below demand at all points
    (b) As a result, monopolistic competition firms act like monopolies in terms of decisions, but do not gain the monopoly profit in the long term
3. While the long-run has no profit, the point of tangency of the demand curve to the average total cost, unlike in perfect competition, is not at the minimum cost output, but rather less than that
    (a) Thus, there is less being produced with a higher price in monopolistic competition than

in perfect competition

(b) In addition, since the price is greater than marginal cost in monopolistic competition, there is the desire to sell more under monopolistic competition at the current price, increasing the demand at the given price

   i. In perfect competition, the price is fixed, such that an increase in demand would have no effect on the curve (rightward shift)

   ii. This is due to not producing at the minimum cost output, such that an increase in demand at that price would lower the average total cost, increasing total revenue

   iii. These leads to advertising to try and create an increase in demand

(c) This is called the excess capacity issue, not producing enough to minimize average total cost, such that there is productive

   i. There is also allocative inefficiency, due to the price not being the marginal cost at the quantity

   ii. The excess capacity is mainly due to the differentiation of products, caused wasteful duplication, not using resources fully efficiently due to allowing choices, but creating a tradeoff of product diversity, such that it may not be less socially optimal

## 5.5   Product Differentiation and Advertising

1. Actual differentiation of products is done by style, location, or quality, convincing people to pay more for a good that appeals to them slightly more

   (a) Differentiation by style or type is done to satisfy a higher willingness to pay for some particular taste/preference, due to other vendor's products being imperfect substitutes

   (b) Differentiation by location, such that location or accessibility, especially within service industries, is used

   (c) Differentiation by quality is done by appealing to a group willing to pay higher for higher quality, some only willing to buy lower

2. Product differentiation is thus done in industries where there is competition between sellers, even if there is some market power, and where there is value in diversity, such that consumers gain from product choices

3. Product differentiation is also done without actual differentiation, either by adverising or brand names

   (a) Advertising is used in industries where the firm has market power, and thus has incentive to try to sell more at the given price, informing buyers of advantages

      i. There is the question over if advertising is a waste of resources in other cases, relying on emotional consumer decisions

      ii. It can also be interpreted as a sign of firm success able to pay for expensive ads, and thus show that the firm is capable of producing high quality products

   (b) Brand names are also used to differentiate in consumer's minds, acting as major brand assets, subject to lawsuits if used without permission

      i. This is first of all due to being a sign of firm success, such that it is low risk, giving an expected amount of quality, rather than the possibility of better or worse quality

      ii. In addition, brand names provide an incentive to provide high quality to protect the brand name

# 6 Chapter 13 - Factor Markets

<u>Note:</u> Includes all modules except Module 73

## 6.1 Intro to Factor Demand

1. Factors are resources used by firms to produce products, bought for factor prices in the factor markets from households
   (a) They are divided into labor, land, capital (physical and human, which is knowledge and education-created capital), and entrepeneurship (financial risk)
2. The factor market ensures that resources are allocated to where they are most needed, similar to product markets, though different in that demand is derived demand, and that most income originates from the factor market
   (a) Factor distribution of income is how income is divided by the type of factor within the total economy, such that the price of each factor influences how the total income is divided
   (b) In advanced economies, a majority is due to labor, 70.9% in 2009 in the US, including all forms of employee compensation (wages, employer provided pensions, health insurance, etc)
       i. In the long run, the factor distribution of income is generally consistent, with the exception of major societal changes, such as the Industrial Revolution
       ii. On the other hand, a large percent of employee compensation is due to human capital, rather than labor, unable to be seperated
       iii. Human capital in labor payments is generally believed to be the most important factor of production in the economy
   (c) Proprietors income is due to the total income to individual business owners, as a mixture of all forms of income revenue, due to lack of separation
3. Factor markets are generally perfectly competitive, such that almost all buyers and sellers are price takers
   (a) For the firm, the marginal cost per worker is the wage rate, while the marginal product/physical product of labor is generally decreasing as more are hired
   (b) This can be used as a direct way of finding the optimal output rule, based on the same marginal analysis principle
       i. The value of marginal product of labor is the marginal product of labor multiplied by the price, such that the optimal output is when that is equal to the wage rate
       ii. This can be applied similarly to any factor of production
   (c) As a result, the firm labor demand curve is the value of the marginal product of labor curve, with firm supply as the wage rate
4. The labor factor demand curve can be shifted by changes in the prices of goods, supply of other factors, or technology
   (a) Since factor demand is derived, the price of the good changing results in a change in the marginal product of the factors making the good
   (b) Technology changes can either replace a factor, reducing demand, or increase the marginal product of a factor, increasing it, such as how capital technology increases increases labor productivity
   (c) Increases in the supply of other factors increases the marginal productivity of each worker

using it, increasing demand

## 6.2 Land and Capital Markets

1. Similarly to labor, land and capital are rented up until the value of the marginal product, while if previously owned, there is still the implicit cost of not renting it out, such that it is valid
    (a) The rental price of land or capital is called the rental rate, with diminishing product for both land and capital, similar to labor
2. The supply curve of land is extremely inelastic, due to the difficulty of finding/creating new land by irrigation, which is extremely expensive
3. The capital supply curve is elastic, on the other hand, due to the ease of producing new capital, paid for by investors, and as a result, easily responds to an increase in demand
4. The supply of land and capital can shift due to situations which make it less or more accessible
    (a) Thus, the marginal product, used as shorthand for the marginal product of the final factor at equilibrium, would increase along with he rental rate, due to the negative supply shock
    (b) The market demand curve, on the other hand, is the sum of the individual firm demand curves for land and capital
5. The Marginal Productivity Theory of Income Distribution states each factor is paid the marginal product of the final one added
    (a) In addition, factors are divided into different types, such there is different marginal product for each
    (b) Thus, distribution is based on the marginal product of each, determining the amount paid to each and the number used

## 6.3 Labor Market

1. Time allocation is the decision of workers for how much time to spend on labor rather than other activities, working to earn income, but losing leisure
    (a) Leisure itself can be thought of as a normal good, such that as income increases, the demand for leisure increases, comparing the hourly wage with the marginal utility of leisure per hour to find the optimal leisure consumption
    (b) Change in wage rate shifts the individual labor supply curve due to the substitution effect making leisure more expensive, but the income effect making leisure more desired
        i. As a result, the curve could either slope upward or downward, depending on if the income or substitution effect is more prominent
        ii. Generally, it contains both upward and downward sloping portions, called backward-bending, such that at lower rage rates, substitution dominates, at higher, income dominates, appearing as a negative parabola
        iii. This is proven by American increased consumption of leisure over the last century, as wages have drastically increased
2. The labor supply curve, as the horizontal sum of individual curves, can be shifted by changes in preferences/social norms (such as women outside the home, due to labor-saving housework machinery and norm changes), population, opportunities, and wealth

    (a) Changes in wealth, rather than wages, such as a housing or financial asset boom, causes the curve to shift left when increasing due to the income effect

    (b) Increase in opportunities results in less willingness to take lower wages in a specific labor market, instead moving to other higher paying markets

3. Since the labor market model assumes a perfectly competitive product market, in an imperfect market, the marginal revenue isn't constant, such that the marginal revenue product of labor is found, multiplying the marginal revenue by the marginal product of labor

    (a) Thus, the marginal revenue product of labor replaces the value of the marginal product of labor/the demand curve

4. If the labor market itself is imperfectly competitive, the cost of hiring each worker is nonconstant, but rather called the marginal factor cost of labor, equal to the change in total labor costs, due to both the price effect increase in all labor wages, and the quantity increase

    (a) As a result of both the price and quantity effect, the marginal factor cost of labor curve similarly is always increasing faster than the supply curve, remaining above it

    (b) A monopsony is when there is only a single firm demanding labor, such that the labor supply curve is upward sloping

    (c) Similar to a monopoly, the price of labor at a monopsony is lower with less hired than at equilibrium as a result, paying the supply curve price

## 6.4   Cost-Minimizing Input Combination

1. The price of other inputs influence the decisions of firms of which inputs to use, acting as substitutes or complements, depending on the type of input and the situation

2. Cost minimization is done by comparing the cost per unit time of each combination that would produce the same output, simplified by marginal analysis

    (a) The cost-minimization rule states that when the marginal product of one resource divided by the wage/rental rate equals that of the other resource, it is the cheapest balance

# 7   Chapter 14 - Market Failure and Government Intervention

<u>Note:</u> Only includes Modules 75 and 76

## 7.1   Externalities and Public Policy

## 7.2   Public Goods

1. For the market to be efficient in providing goods, they must be private, such that they are excludable (able to prevent those who don't pay from consuming) and rival in consumption (cannot be consumed by many at once)

    (a) Artificially scarce goods are those that nonrival in consumption, but are exludable

    (b) Common resources are those which are non-excludable, but rival in consumption

    (c) Public goods are those which are both non-excludable and nonrival in consumption

    (d) Lack of excludability creates the free-rider problem, due to people tending to avoid payment if provided regardless, leading to the provider not being paid and thus not producing

       i. Self-interest doesn't force production, since while all want it, none are willing to pay for it, such that there is inefficiently low production

   (e) Lack of rival in consumption have a marginal cost of zero, such that the efficient price would be zero, such that there is inefficiently low consumption, due to less willingness to pay a price above zero

2. Public goods include public sewage, disease prevention, national defense, and scientific research, relying on voluntary, private donations for small projects, such as research or radio, or government provision

   (a) There are also indirect methods of gaining revenue, such as advertising, but which can hurt allocative efficiency, making those suited for advertising produced, but those desired less so

       i. Some are also made artifically excludable, such as in the UK, sending vans to detect illegal TV usage, or by social pressure in small communities

   (b) The quantity of goods provided is based on the horizontal sum of marginal private benefit/willingness to pay, or the marginal social benefit in the case of public goods (due to it being nonrival-in-consumption)

       i. Thus, the quantity to be produced is when the marginal social cost (or the total cost of an additional unit of the good) equals the marginal social benefit

       ii. In a small community, this is determined by deal-making between members, but in a large community, it is determined by taxation and voting

3. Common resources, such as water or biodiversity (animal and plant life), cannot charge for use due to being nonexcludable, creating an incentive to overuse until marginal private benefit equals marginal private cost, considered an alternate form of a negative externality (such as pollution vs clear air)

   (a) This results in problems such as highway congestion or overfishing, pushing marginal social cost above marginal private cost

   (b) Marginal social benefit is the same as marginal private benefit, due to the benefit only aiding oneself

   (c) It is fixed similar to a negative externality, such as taxing/regulation or tradable licenses for the resource, or by making it excludable with property rights, such as private parks or roads

       i. Licenses create an efficent use of the good, and make it allocated efficiently, such that those who get it are willing to pay

4. Artificially scarce goods include goods such as movie theaters, or computer software and artwork, the latter of which is called information goods, creating an inefficiently low consumption, but more optimal than none produced

# 8   Joseph Stiglitz - Global Economy and Inequality, 2/12/16

1. The growth of the disparity of income inequality has grown into a large problem within recent years, with 8 people having the same amount as the bottom 44% of the American population

   (a) A recent report estimated that worldwide, a group of 88 people (shrinking since to 66 and continuing to shrink), would have the same wealth as the bottom 50% of the worldwide population (3B people)

   (b) In the US and nations which follow the US model, economic growth has led to almost no increase in wages for the middle class, leading to the hollowing middle class as average

incomes are stagnant over the last 40 years

      i. Thus, groups such as median full-time male worker wages have decreased over the last 40 years, and unskilled workers have decreased from 60 years ago wages

(c) Worker productivity itself has also drastically increased, while compensation has not, resulting in a decrease in real wages over time

(d) Globally, OECD (advanced countries) countries have all seen different degrees of increase, but show that inequality is a problem worldwide, though some countries have been able to generally offset these changes

2. There is a systematic relationship between income and opportunity inequality, contrary to popular American belief, regardless of the occasional story, rather discussing with opportunity inequality, the probability of moving from the bottom to top of wealth

(a) Opportunity inequality is also measured as the coorelation between parental and child income

(b) The US has far greater opportunity inequality than most other advanced nations by either measure, such that economic forces are not the cause of the inequality, due to existing in each nation, rather due to government policies

3. As a result of this relationship, it can be assumed that decreasing income inequality would allow the decreasing of opportunity inequality, which in turn has been shown to allow more economic growth

4. Globally, the change in income over the past 20 years with respect to the percentile of global income distribution show a drastic increase among the 1%, as well as an increase among the 20% to 70%, more so as the percentile rises

(a) On the other hand, the bottom 10% and the 80% to 97%, which generally includes the middle class of advanced nations, has grown the least

(b) The increase in the lower percentiles is attributed to the large increase in industrializing markets, such as India or China

5. The idea of trickle-down economics stated that the increase in wealth to the top by governmental policies would trickle-down to the lower classes, but was never proven by theory or evidence, and has been shown not to work in America

(a) Many policies by the GOP and the Obama administration through the bail-out of the banks, while qualitative easing by the Fed has attempted to increase stock market prices, but has mainly benefited the top as well

(b) The ability of money to influence the political process by Citizens United created political inequality, translating to the creation of further economic inequality, leading to a cycle of inequality

6. Kiznet's Law was the idea that inequality would grow immediately during industrialization and growth, around the World Wars, believing it would come down over time as the markets adapted

(a) Since 1980 on the other hand, this has been shown to be false as inequality drastically increased nationally for a reason under debate

(b) One possible theory is the idea of supply-side economics, providing incentives businesses and the rich to expand, and removing restrictions to provide a more free market to cause the economy to grow faster, resulted in this economic inequality

(c) This resulted in lower tax rates on all brackets, especially the wealthy, ignored the fact that during the 1950s, the greatest period of economic growth of the century, had the highest tax rates, with 90% on the most wealthy

(d) In addition, a more free market economy without regulations doesn't result in an increase of productivity, but rather results in speculative investment, lowering real investment, moving toward monopolies and non-productive assets

(e) The lack of regulations also resulted in fewer anti-trust regulations and enforcement, leading to the growth of monopolies

7. The economy overall has moved to the short-term, rather than investing in long-term economic growth, working to create the highest immediate gains within the next quarter, due to this move toward supply-side economics

   (a) Higher taxes would allow for a greater increase in education and infrastructure needed for fast long-term economic growth, as well as preventing income inequality

8. Okuns Law, stating that income/opportunity inequaliy and economic performance are trade-offs, has also been shown to be false, due to less spending by the rich, preventing optimal economic growth