COMMERCE MENTORSHIP PROGRAM

MIDTERM REVIEW SESSION

ECON 101

PREPARED BY

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TABLE OF CONTENTS

Introduction

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

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

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

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

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

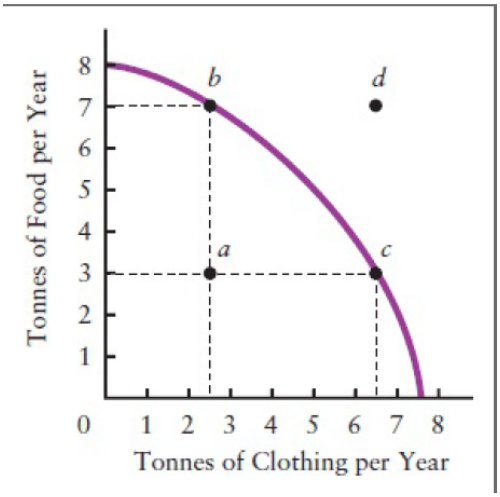
Opportunity cost: value of the second-best alternative that you are giving up (e.g. giving up hanging out with friends to study for an exam)

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

Q1
Jack Olantern wants to go to a UBC costume themed party tonight, which cost him $30. He is debating whether he should give his part-time restaurant shift to his best friend and go to the party. He knows that he would be earning $15 per hour for 4 hours, and $40 of tips if he takes the shift. In addition, his mom had already bought him dinner for $10. What is Jack Olantern's opportunity cost of going to the costume party?

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

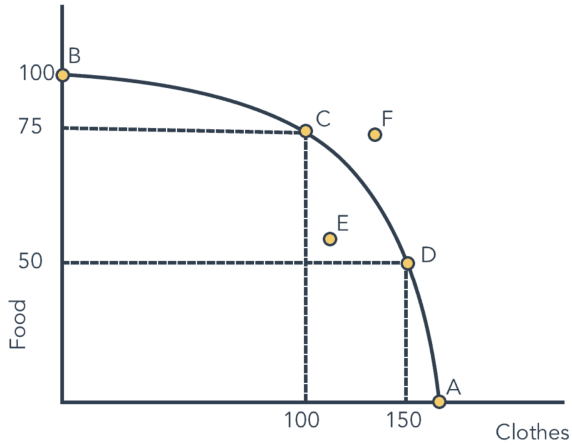
- When you are on the line of the curve, it means all inputs are fully utilized to their highest potential and it is the maximum output you can get
- Represents Opportunity cost of producing more of one product and less of the other
- Marginal Rate of Transformation (MRT): slope of production possibilities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



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

Law of increasing marginal opportunity cost: opportunity cost of one product increases as you produce more of it
As you reach the end of the curve in producing more clothes, the quantity of food drops more drastically

Q2 Production possibility
What is the opportunity cost of moving from point C to point D on the production possibility curve?



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

- Relatively efficient

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

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

Specialization of labour: product produced by one specialized worker
Division of labour: product divided into multiple tasks done by one worker each, gives comparative advantage as you get better at doing one thing
Types of markets: traditional, command, free, mixed

Economic Principles

Positive statements: statements of fact, no value judgement
Normative statements: statements of opinion, value judgement

Correlation relationship: 2 variables tend to move together
Causal relationship: one variable causes a change in another

Law of large numbers: group behaviour easier to predict than the individual

Refutation test: see if a theory can be refuted (disproven) by evidence

Confirmation bias: looking for evidence that confirms your theory

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

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

Q3
What are the price indexes when the base year is set to 2017? What is the percentage increase in the price from 2017 to current day?

Year	Price	Price Index
2017	49	
2018	52	
2019	57	
2020	60	
2021	68	

Percentage increase: _____

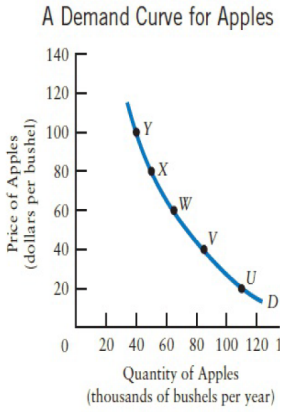
Demand and Supply

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

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

A Demand Schedule for Apples

Reference Point	Price ($ per bushel)	Quantity Demanded (thousands of bushels per year)
U	20	110
V	40	85
W	60	65
X	80	50
Y	100	40

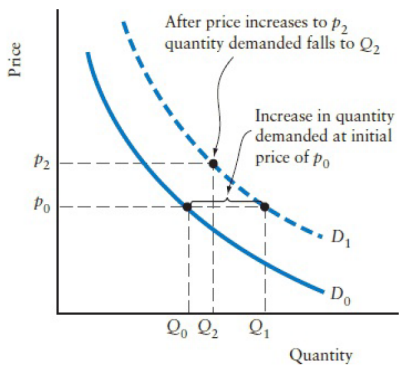


Demand: whole curve function
Quantity demanded: specific value on horizontal axis

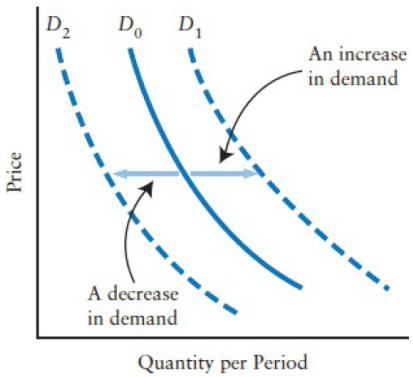
Ceteris paribus variables: other variables influencing demand that we are holding constant to determine P and Qd

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

A movement along the curve results from a change in P or Qd
A shift of the curve results from a change in a ceteris paribus variable



Movement along curve



Shift of curve

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

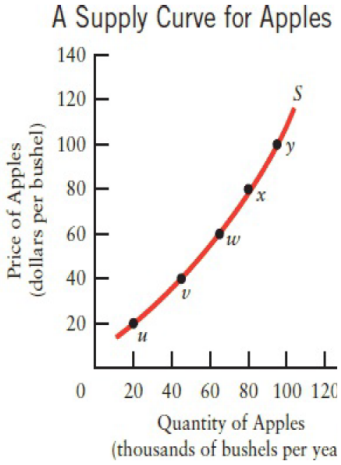
- direct/positive price-quantity relationship
- Usually the lower the price = less supply
- Convex curve

Supply: whole curve function
Quantity supplied: specific value on horizontal axis

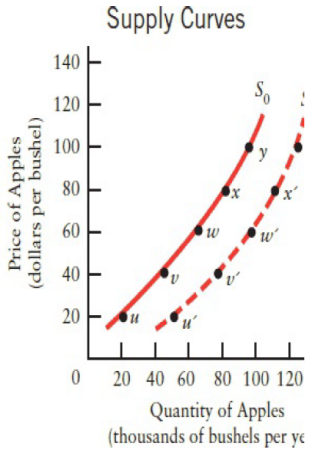
Ceteris paribus variables: other variables that influence supply that we are holding constant to determine p and qs

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

A movement along the curve results from a change in P or Qs
A shift of the curve results from a change in a ceteris paribus variable



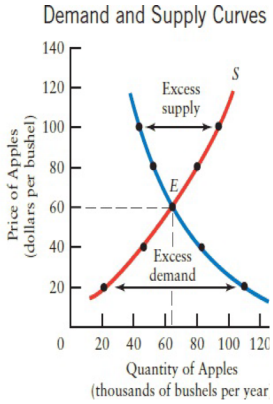
Movement along curve



Shift of curve

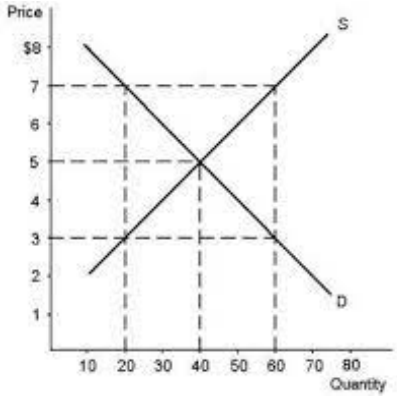
Equilibrium

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



Q4

What is the equilibrium price and quantity for the below demand and supply function?



Q5

The prices of chocolate cake in the market suddenly went up due to a lack of cocoa. The price for ice cream cake, a direct substitute for chocolate cake, stayed the same. Draw each demand curve of each good, illustrating how the curves would change in this situation.

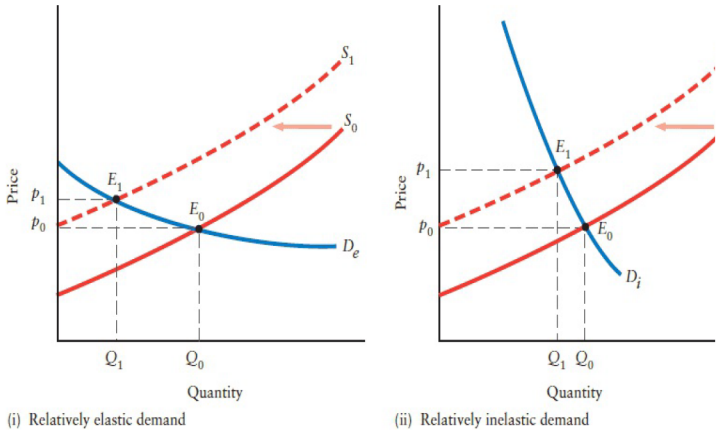
Elasticity

Price elasticity of demand

- Price sensitivity: Responsiveness of Qd to change in P

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

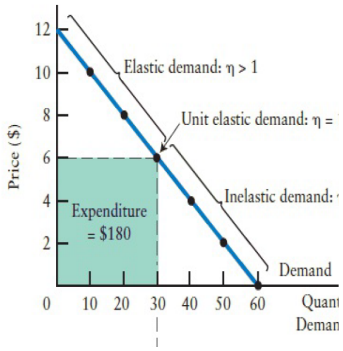
The more elastic, the more Qd changes in response to changes in P



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

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

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

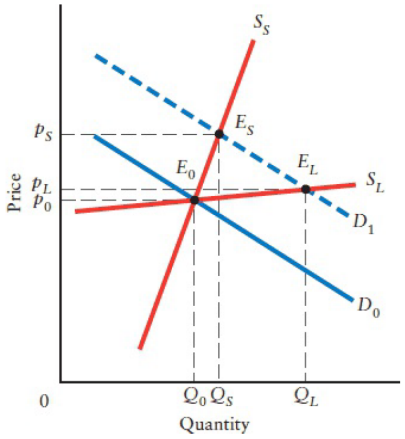


Elasticity	Change in total revenue as price decreases	Reasoning
E = 0	fall	No change in quantity
E < 1	fall	Change in quantity < change in price
E = 1	Maximum revenue	Change in quantity = change in price
E > 1	rise	Change in quantity > change in price
E = infinite	rise	No change in price

Price elasticity of supply

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

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



Income elasticity of demand

- Relative change in qd / relative change in income Y

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

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

Cross-elasticity of demand

- Responsiveness of Qd of X to a change in Price of Y

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

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

Q6

As Maria’s income increased after getting a job, her demand for Campbell's soup decreased. What type of good is Campbell soup and what type of elasticity is it?

Q7

If the quantity demanded of hydroflasks drop after a price increase of Brita water filters, what is the relationship between hydroflasks and Brita filters?

Q8

Suppose the equilibrium price for banana bread ingredients is $5 for a quantity of 100 banana bread loaves per month. The price of bananas went up, and as a result it now costs $8 to bake banana bread. Quantity demanded falls to 70 per month. What is the price elasticity of demand? Is it elastic or inelastic? What does this mean for people’s preference for baking banana bread?

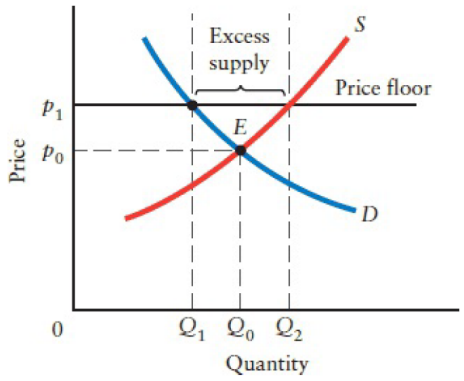
Price Controls and Market Efficiency

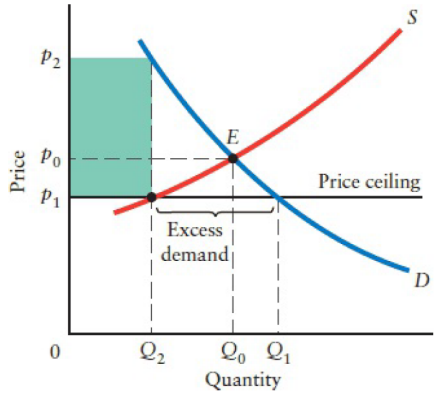
General equilibrium: analyzing all markets at one time
Partial equilibrium: analyzing one market at a time

Disequilibrium price: non-equilibrium price

- Price floor: government-set minimum price that price cannot fall below
    - Minimum wage - argued that minimum wage creates more unemployment
    - above equilibrium line creates excess supply

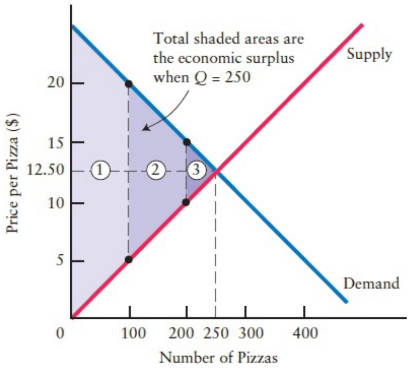
- Price ceiling: government-set maximum price that prices cannot go above
    - Black market problem
    - Rent controls in housing market - creates shortage of rental housing and worsens over time because supply becomes more elastic
    - Below equilibrium line creates excess demand

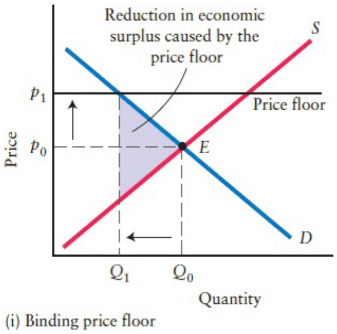




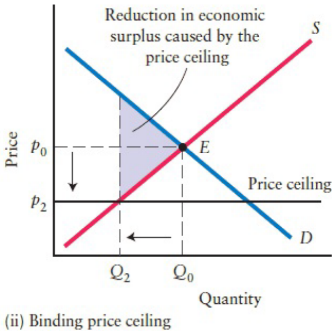
Economic surplus

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





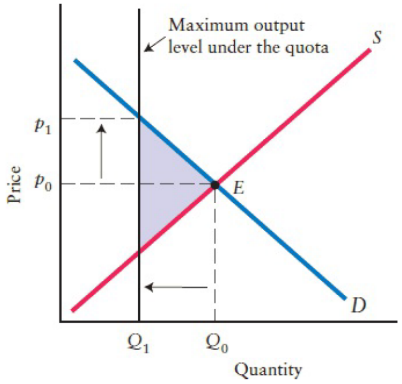
(i) Binding price floor



(ii) Binding price ceiling

Output quotas

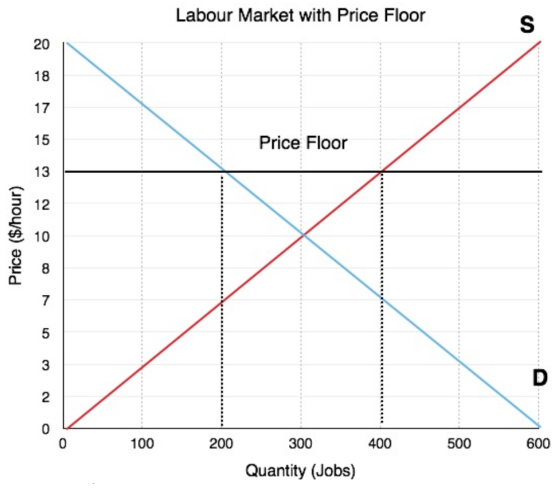
- Government policy of restricting output of goods
- More revenue and less production costs for producers



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

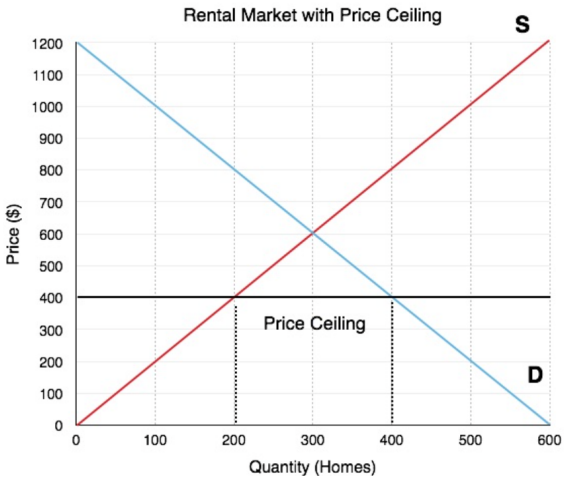
Q9

Consider the diagram below. The minimum wage equilibrium price and quantity is 300 jobs at $10/hour. What would happen if a price floor of $13/hour was implemented? What if a price floor of $7 was implemented? What is the economic loss?



Q10

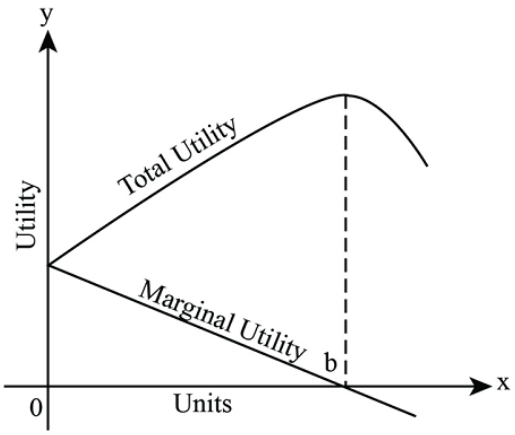
Label the consumer surplus, producer surplus, and dead-weight loss in this diagram.



Consumer Behaviour

Marginal utility theory

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



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

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

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

Q11

Fill in the Marginal utility column. Show the point of highest marginal utility and highest total utility. Plot a rough marginal and total utility curve. Locate the point of diminishing marginal utility.

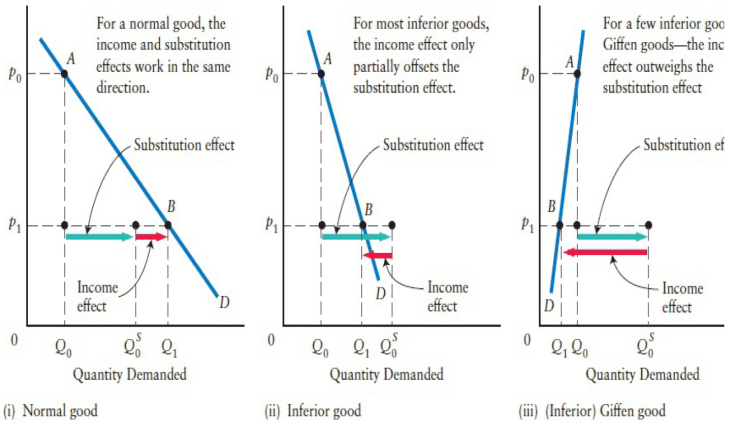
Number of times you hear a song	Total Utility	Marginal Utility
0	0	
1	2	
2	6	
3	9	
4	9	
5	8	

Substitution effect

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

Income effect

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

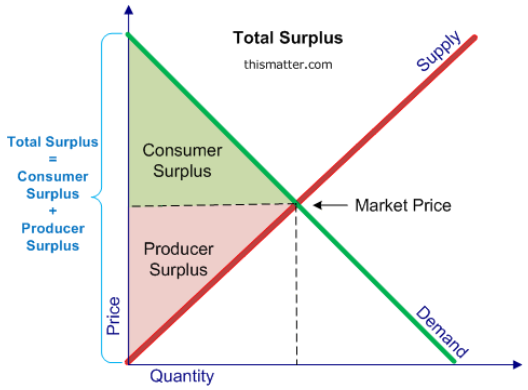


Consumer surplus

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

Producer surplus

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



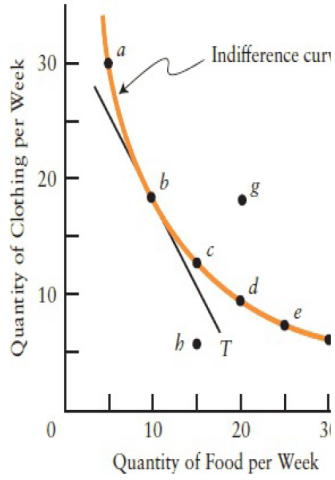
Q12

Classify each scenario as a substitution effect or income effect.

Chicken prices rise so Sally purchases more turkey and beef	
There is excess supply of Lays Chips, driving down the price, and Sally switches to Lays from Doritos.	
Sally has additional allowance left over from chores, and buys extra candy.	

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

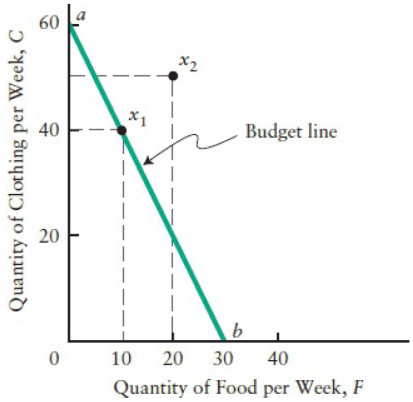
- Marginal rate of substitution: -MUx / MUy, amount you are willing to give up to get a unit of another product and still be indifferent
- Indifference curve is tangent to the budget line where MRT = MRS
- All points on the curve are combos where they are indifferent



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

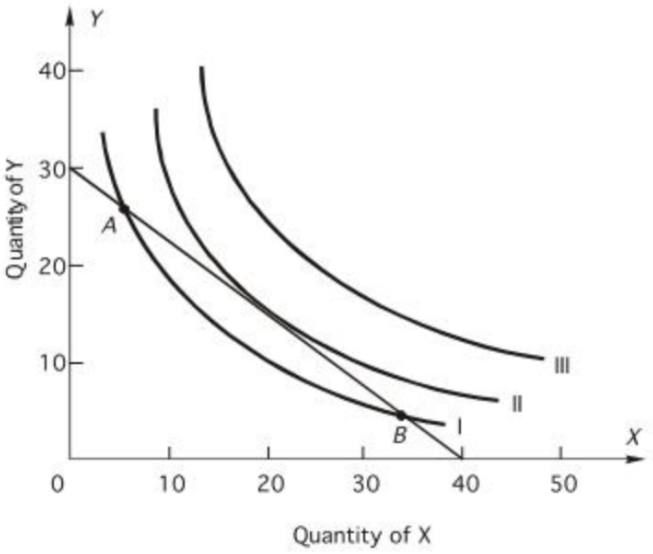
- Every point on budget line is efficient and employs all income
- equation = -Px / Py
- Marginal rate of transformation: ratio of the relative prices
- Marginal rate of substitution - rate at which one factor is substituted for another when output is constant

Shift of budget line = change in income
Slope rotation of budget line = change in price of goods



Q13

Identify the point at which the marginal rate of transformation = marginal rate of substitution. At which quantity of good X and Y is the utility maximizing choice?



Producers in the Short Run

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

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

Production in short run supply curve

- Profits = Total revenue - Total costs
    - TR = price * quantity
    - TC = fixed costs + variable costs

Short run: at least one input factor is fixed besides technology, the rest is variable
Eg. fixed capital, variable labour

Short run production function

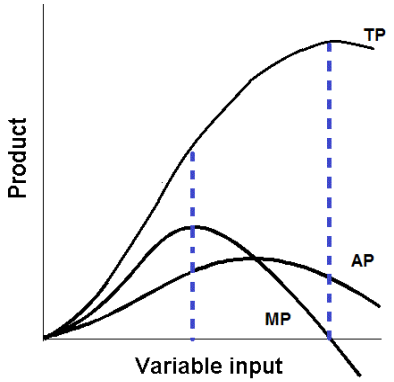
$$Q = f(K,\ L)$$

Total production curve

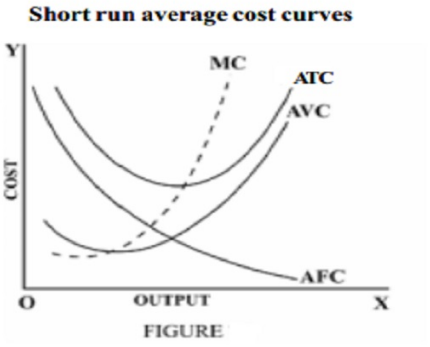
- This curve measures the output produced as a function of one variable input, other factors held constant
- Total amount produced in a given time
- Average production curve
    - AP = TP / N, total output per unit

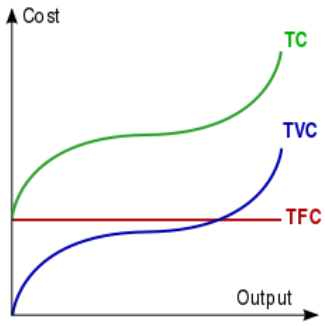
- Marginal production curve
    - Change in TP / change in N
    - The extra output you get from one additional input

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



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

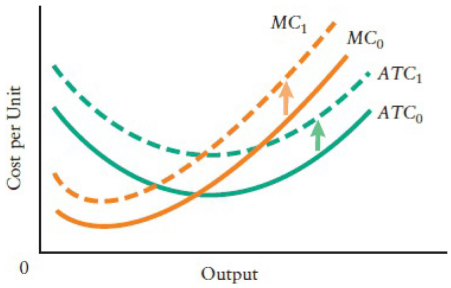




Average fixed costs go down as you produce more units because there are more units to spread out the costs

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

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



Q14

Izzy's Icecream recently expanded in operations, and as a result she has been able to buy ingredients in bulk from her suppliers. These bulk discounts have given her an overall cost savings of $2 per item.

If other things remain constant, what happens to the average total cost curve, average fixed cost curve, average variable cost curve and marginal cost curve? Demonstrate in a cost curve diagram.

Producers in the Long Run

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

- Prices of inputs and technology are constant

Firms try to maximize profit and minimize costs when producing outputs

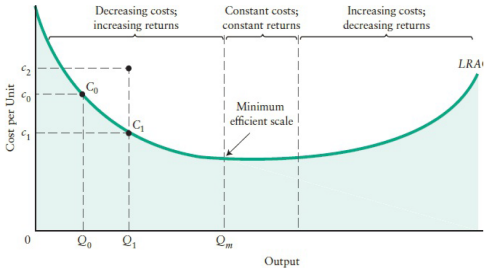
- Technical efficiency: minimizing quantity
- Economic efficiency: minimizing costs

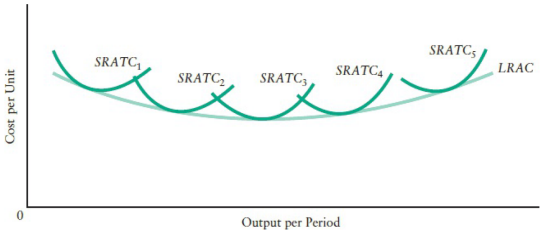
$$\frac{MP_K}{p_K} = \frac{MP_L}{p_L} \qquad \frac{MP_K}{MP_L} = \frac{p_K}{p_L}$$

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

Long run average cost curve

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



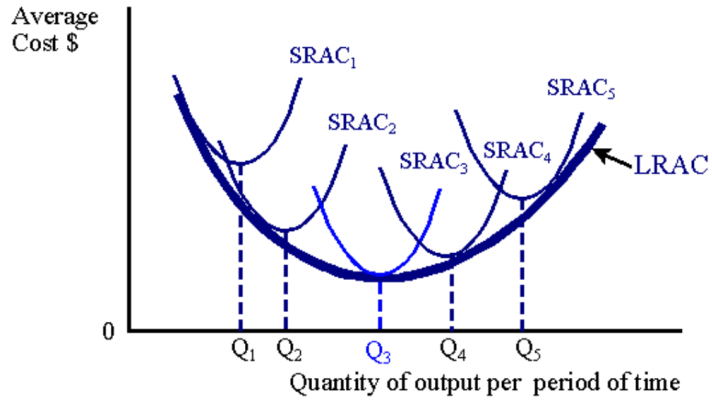


Very long run

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

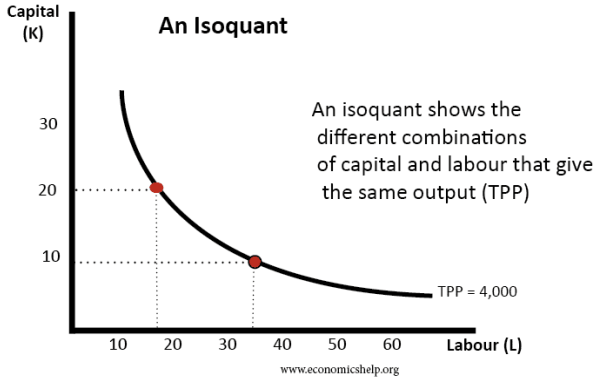
Q15

In the graph below, label the SRAC capacities and LRAC MES point. If the firm wanted to increase output in the long run, how would they do this?



Isoquant analysis - production decisions

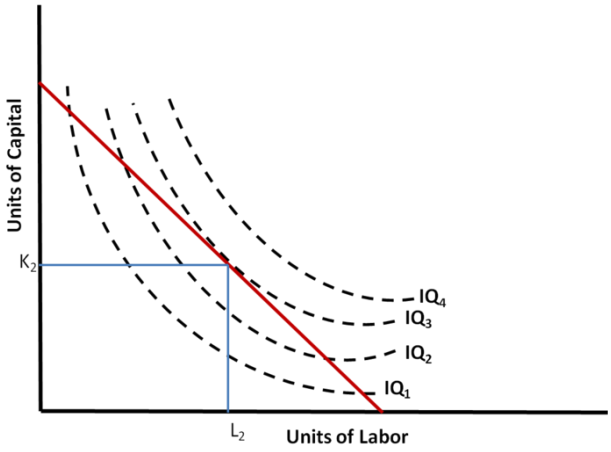
- All possible combinations of factors that produce a certain output
- Change in Qk * marginal product of K + change in Qn * marginal product of n = 0
- Slope = -MPk / MPn = marginal rate of technical substitution



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

- Pk * Qk + Pn * Qn = TC of inputs
- Slope = -Pk / Pn

Profit maximization = isocost line tangent to isoquant curve



Q16

What is the marginal rate of technical substitution for the indicated points on the graph? (-MPk / MPn)