



CFA  
LEVEL I

ECONOMICS

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## ELASTICITY

### PRICE ELASTICITY ON DEMAND

The change in the demand quantity when market price changes, is measured by price elasticity of demand.

PRICE ELASTICITY OF DEMAND = PERCENT CHANGE IN QUANTITY DEMANDED / PERCENT CHANGE IN PRICE

NOTE: PERCENT CHANGE = CHANGE IN VALUE / AVERAGE VALUE

Similarly Price elasticity of Supply is

PRICE ELASTICITY OF SUPPLY = PERCENT CHANGE IN QUANTITY SUPPLIED / PERCENT CHANGE IN PRICE

### FACTORS THAT INFLUENCE PRICE ELASTICITY ON DEMAND

- Ø Tastes or preferences of consumers
- Ø Level of consumer incomes
- Ø Level of other (substitute and complementary) prices (price of software on PC demand)
- Ø Price of the product itself
- Ø Future expectations – if price is expected to go up in the future
- Ø Distribution of income: might favor luxury goods
- Ø Market demographics
- Ø Advertising Price elasticity varies across the demand curve, across markets & lies between 0 and infinity

Price	Elasticity	Property
Elastic	Elasticity > 1	% Quantity change > % Price change
Inelastic	Elasticity < 1	% Quantity change < % Price change
Unilateral	Elasticity = 1	% Quantity change = % Price change

FOR PERFECTLY ELASTIC: QUANTITY DEMANDED = 0, IF PRICE INCREASES

FOR PERFECTLY INELASTIC: CHANGE QUANTITY DEMANDED DOES NOT CHANGE WITH PRICE

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## DETERMINANTS OF ELASTICITY OF DEMAND

Key factors include:

- ∅ Availability of substitute products  
Easier it is to substitute the more the elasticity.
  - ∅ Share of the budget spend  
Consumer will be more price conscious for larger spends and hence demand will be more elastic
  - ∅ Time  
More elastic over time due to lifestyle adjustments; also demographic shifts over time
  - ∅ Necessities are more inelastic as compared to luxury goods.
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## OTHER ELASTICITY OF DEMAND

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### INCOME ELASTICITY

As income rises, more of the good can be purchased, hence it is positive.

Exception being inferior goods  $E(i) = (\Delta Q/Q)/(\Delta I/I)$

Goods	Elasticity
Inferior goods	Elasticity $< 0$ , Income increases, demand decreases
Necessity goods	Elasticity $> 0, < 1$ & Rate of Income increase $>$ rate of increase in Demand
Luxury goods	Elasticity $> 1$ & Rate of Income increase $<$ rate of increase in Demand

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### CROSS ELASTICITY

Measures how demand changes with regards to changes in price of a related good

$E(yx) = [\Delta(Qy)/Qy]/[\Delta(Px)/Px]$

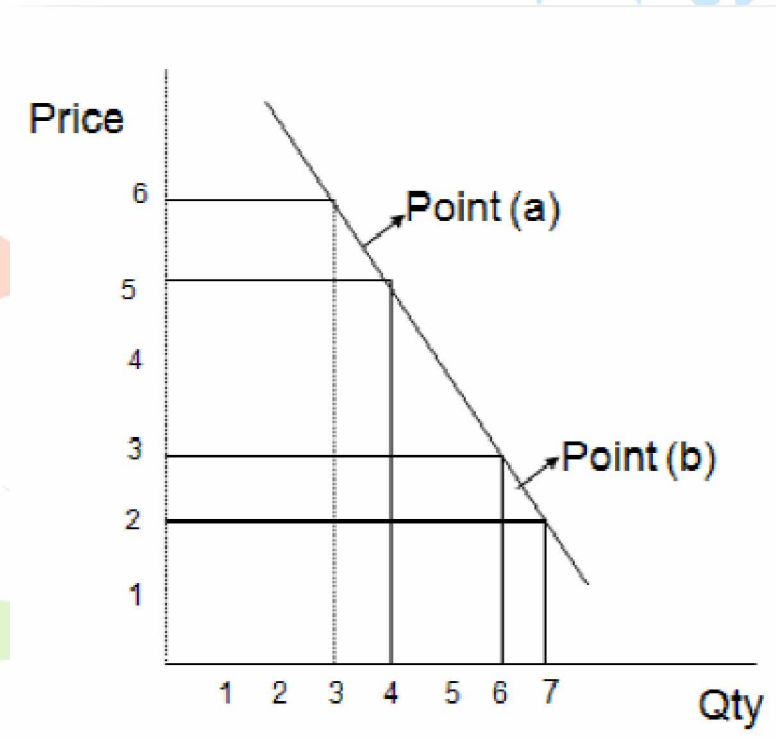
Goods	Elasticity
Substitute goods	Elasticity $> 0$ ,Price increase in one will increase demand of substitute good
Complementary good	Elasticity $< 0$ , Price increase in one will decrease demand of complementary good

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### DETERMINANTS OF ELASTICITY OF SUPPLY

- Ø The NPV profile is just a graphical representation of the change in NPV relative to the change in the discount rate
  - Ø The discount rates are on the x-axis and the corresponding NPVs are plotted on the y-axis.
  - Ø The project's IRR is where the NPV profile intersects the horizontal x-axis
  - Ø NPV Profiles intersect because of difference in the timing of the cash flows.
  - Ø NPV of Project B falls faster than Project A as cash flows of B come later in life.
  - Ø Hence Project B more sensitive to Discount Rate
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PRICE ELASTICITY OF DEMAND ALONG DEMAND CURVE NPV V/S IRR



- ∅ Price Elasticity is different at different points along a demand curve
- ∅ Price Elasticity between price 2 and 3 :  $[(6-7)/6.5] / [(3-2)/2.5] = -0.385$
- ∅ Price Elasticity between price 5 and 6 :  $[(3-4)/3.5] / [(6-5)/5.5] = -1.572$
- ∅ At pt. (a) in a higher price range the price elasticity is greater than at point (b)

## EFFICIENCY AND EQUITY

### MARGINAL BENEFIT AND MARGINAL COST

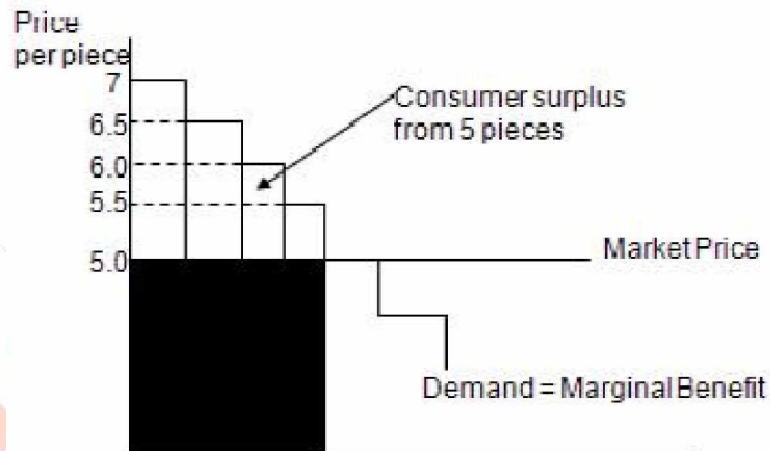
- ∅ Marginal Benefit (MB)
  - It is the benefit a consumer gets from consuming one additional unit of a good or service
  - It is quantified as the maximum price that a consumer is ready to pay for an additional unit of good or service
- ∅ Marginal cost (MC)
  - It is the cost of producing one more unit of output
  - It is the opportunity cost, as it is the value of the resource required to produce an additional output

Example: Consider Marginal Benefit and Marginal cost for a certain good say burger

Cases	Observation
MB > MC	More value is created by using the resources to produce more burgers and decrease the production of other goods Efficient quantity of burgers is the quantity of output for which MB = MC
MB < MC	More value is created by reducing the quantity of burgers produced and reallocating the resources to the production of other goods.
MB = MC	The total value created at this pt. ( MB = MC) by producing burgers is maximum. This is optimal quantity of production And productive resources are being allocated efficiently

### CONSUMER SURPLUS AND VALUE OF A GOOD / SERVICE

- ∅ Consumer Surplus
  - It is the difference between the total value consumer place on the quantity of good produced and amount they must pay for that quantity
  - It depends upon consumer demand curve
- ∅ EG. A burger lover demand curve and consumer surplus is shown in the figure
- ∅ A boy is ready to pay 7 Rs. for 1<sup>st</sup> burger and the 5<sup>th</sup> burger of the week he values at Rs. 5
- ∅ Consumer surplus is equal to the sum of the consumer surpluses for each of the 5 slices.



∅ Consumer surplus =  $(7-5) + (6.5-5) + (6-5) + (5.5-5) + (5-5) = \text{Rs. } 5$

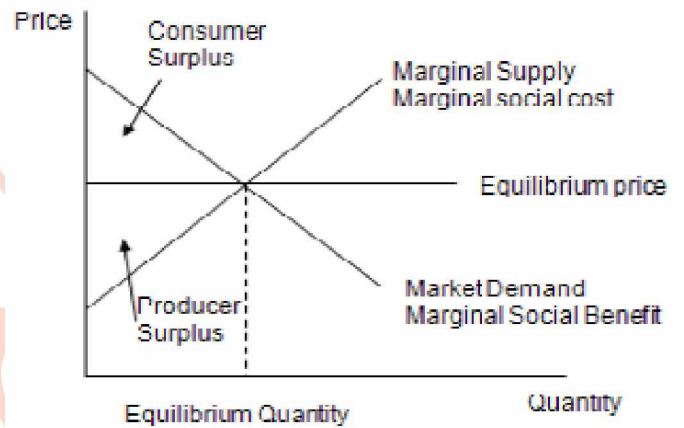
#### MARGINAL COST, MINIMUM SUPPLY CURVE AND PRODUCT SURPLUS

- ∅ Marginal cost
  - It is the value of the alternative that producers forego to provide a given good or service
- ∅ Minimum Supply Price
  - It is the minimum price that producers must receive in order to willingly supply another unit of good
- ∅ Marginal cost curve is same as supply curve for that good
- ∅ Producer Surplus
  - It is defined as the sum of the differences between the price received for each unit of good produced and opportunity cost of each unit for the total units produced

#### CONSUMER SURPLUS AND PRODUCER SURPLUS AT EQUILIBRIUM

- ∅ Marginal Social Benefit Curve (MSB)
  - It is the aggregated marginal benefit of all the consumers for a good or service
  - It is the market demand curve
- ∅ Marginal social cost Curve (MSC)
  - It is the aggregated marginal cost curves of all the producers for a good or service
  - It is the market supply curve

- ∅ The equilibrium price and quantity is determined by the intersection of the MSB and MSC curve



## OBSTACLES TO EFFICIENCY

### PRICE CEILINGS AND PRICE FLOORS

- ∅ It is a regulation that makes it illegal to charge a price above a specific level, Ex. Rent control. Price floor is a regulation that makes it illegal to pay a price below a specific level, Ex. Minimum wage

### TAXES, SUBSIDIES AND QUOTAS

- ∅ Taxes increase the price that buyers pay and decrease the price sellers receive. Subsidies are payments to producers by the government, which reduces the prices paid by consumer and increases the price received by sellers. Quotas are the limitations to the to the quantity that firm can produce

### MONOPOLY

- ∅ Single seller of a particular good or service. Seller will produce quantity of good that is less than the efficient level of production

### EXTERNAL COSTS AND EXTERNAL BENEFITS

- ∅ External costs imposed on others by the production of goods, and they are not taken into account in the production decision. External Benefits are the benefits of consumption enjoyed by people other than the buyers of the good and are not taken into account in buyers consumption decisions



#### PUBLIC GOODS AND COMMON RESOURCES

- Ø It is a good or service that is consumed simultaneously by everyone, even if they don't pay for it ex. National defense Common resources are the resources that are not owned by no one and that ever one can use
- Ø Obstacles to efficiency can be classified into : a.) Underproduction b.) Overproduction

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#### UTILITARIANISM & THE SYMMETRY PRINCIPLE

##### UTILITARIANISM

- Ø It proposes that the greatest good occurs to the greatest number of people when wealth is transferred from the rich to poor in order to make every one's wealth equal.
- Ø Drawbacks: Taxation, through which wealth can be transferred from high income earners to low income earners, will cause the high income earners to work less resulting in less than efficient quantity of labor supplied.
- Ø Administrative costs in tax collection and auditing will further bring inefficiency.

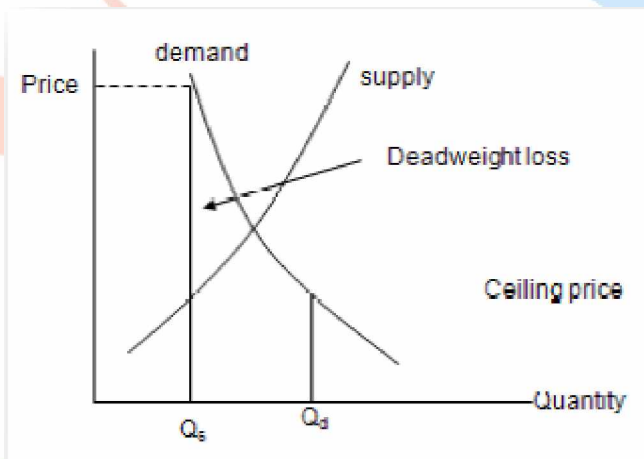
##### SYMMETRY PRINCIPLE

- Ø It is based on the idea that what an individual receives from an economy is equal to his contribution.
- Ø It is based on fairness of opportunity and not on equality of results.

## MARKETS IN ACTION

### PRICE CEILING

- ∅ It is the upper limit on the price which a seller can charge



Condition	Result
Ceiling Price > Equilibrium Price	No affect on price and quantity
Ceiling Price < Equilibrium Price	Shortage , Quantity Supplied < Quantity Demanded

- ∅ Price ceiling leads to dead weight loss
- ∅ In the long run, Price Ceiling leads to
  - Suppliers engaging in bribery, price discrimination, reduced quality of goods
- ∅ Example of Price ceiling is rent ceiling or rent control.

### BLACK MARKET

It is the illegal way of selling goods at prices that exceed legally imposed price ceilings. It leads to inefficiency, as contracts are not enforceable, Quality control deteriorates, etc

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## FLOOR PRICE

- ∅ It is the lower limit on the price which a buyer can offer for good or service

Condition	Result
Floor Price < Equilibrium Price	No affect on price and quantity
Floor Price > Equilibrium Price	Excess of supply , Quantity Supplied > Quantity Demanded

- ∅ It leads to dead weight loss
  - In long run, Floor Price leads to
    - Suppliers will produce more at floor price
    - Consumers will buy less of the product as equilibrium price is less than floor price and will look for substitute

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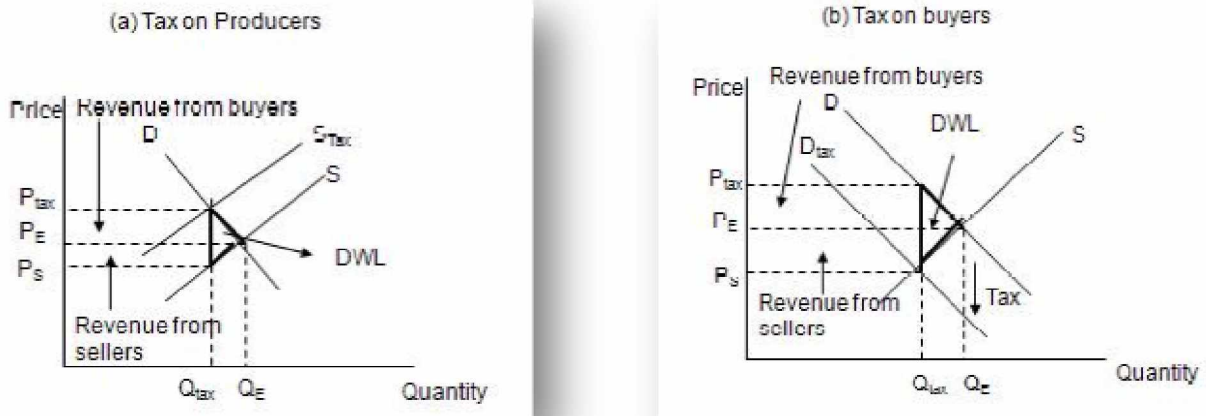
## MINIMUM WAGE

- ∅ It is an example of floor price
- ∅ At minimum wage , which is greater than equilibrium wage there would be excess supply of labor
- ∅ Firms will substitute labor with other economically efficient resources
- ∅ Unemployment increases as the number of labors who want to work below wage level increases
- ∅ But firms can not hire them at wage below the minimum wage rate

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## INCIDENCE OF TAX

- ∅ Tax on good or service will increase its equilibrium price and decrease its equilibrium quantity
- ∅ Fig (a) and Fig (b), illustrate effects of tax on producers and consumers respectively
- ∅ Under Tax, buyers pay  $P_{tax}$  and receive quantity  $Q_{tax}$  and suppliers receive  $P_s$ .
- ∅ This leads to deadweight loss (DWL)
- ∅ Tax Revenue is the amount of the tax times the new equilibrium quantity  $Q_{tax}$
- ∅ The incidence of a tax refers to who bears the cost of increase in price paid or decrease in quantity received



### ACTUAL AND STATUARY INCIDENCE OF TAX

- Ø Statuary Incidence
  - It refers to who is legally responsible for paying the tax
- Ø Actual Incidence
  - It refers to who actually bears the cost of the tax through an increase in the price or decrease in the price received
- Ø Statuary Incidence of tax on Producer ( fig (a) on previous topic)
  - The supply curve shifts to left and price increases and quantity decreases
  - Demand Curve does not move as incidence on Producers
- Ø Statuary Incidence of tax on Consumer ( fig (b) on previous topic)
  - It causes a downward shift in demand curve by the amount of tax
  - Supply curve does not move as incidence of tax is on consumer

### IMPACT OF ELASTICITIES OF SUPPLY ON INCIDENCE OF TAX

- Ø When tax incidence is shared between producers and consumers elasticities of supply and demand is determine the actual incidence of tax
- Ø If supply is less elastic, producers will bear higher burden.
- Ø The party with more elastic curve will be able to react more to changes imposed by tax and hence will be better able to manage burden

#### IMPACT OF ELASTICITIES OF DEMAND ON INCIDENCE OF TAX

- Ø If demand is less elastic than supply, consumers will bear the higher burden of taxes
  - Ø Inelastic demand leads to shift of actual incidence of tax from producers on to consumers
  - Ø Deadweight loss is reduced as elasticity of demand or supply decreases
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#### PRODUCTION QUOTA

- Ø They are used to regulate markets
  - Ø It is an upper limit on the quantity of a good that may be produced in a fixed time period
  - Ø It increases the market price and reduces the cost of production
  - Ø At the quota quantity, Marginal Benefit exceeds marginal cost.
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#### ILLEGAL GOODS

- Ø Sellers want extra price for penalty and buyers want to pay less, due to the fear of penalty
  - Ø Decrease in supply/demand for illegal good increases as the value of penalty increases
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## ORGANIZING PRODUCTION

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### KEY TERMS

#### Opportunity Cost

- Ø It is the returned earned by using the resources in their next most valuable use.
- Ø It include Explicit and Implicit costs

#### Explicit Costs

- Ø They are the measurable, observable expenses such as: Payments by a firm to purchase productive resources.

#### Implicit Costs

- Ø Opportunity costs of a firm's use of resources that it owns. These costs do not involve direct payments.
- Ø Implied rate of Return is the opportunity cost to use its own capital
- Ø Economic Profit is the opportunity cost of owners entrepreneurial expertise

#### Economic Profit:

- Ø Difference between firms' total revenue & total cost.
- Ø Total costs includes both explicit and implicit costs

#### Accounting Profit:

- Ø Firm revenue minus expenses over given time period.
- Ø Expenses do not take implicit costs into account.

#### Short-Run in Production:

- Ø Time period short enough so not all factors of production can be adjusted. Typically plant size fixed.

#### Long-Run In Production:

- Ø Time period long enough so all factors of production can be adjusted.
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#### PRIMARY CONSTRAINTS IN PROFIT MAXIMIZATION

- Ø Technology Constraints
- Ø Information Constraints
- Ø Market Constraints

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#### TECHNOLOGICAL EFFICIENCY

- Ø It is achieved when a given output is produced using the least amount of specific inputs

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#### ECONOMICAL EFFICIENCY

- Ø It is achieved when a given output is produced using the lowest possible cost

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#### WAYS OF ORGANIZING PRODUCTION

- Ø Command systems
  - It is based on managerial chain of command
  - Manager's job is to process and supervise the people who report to him
  - Command or decision making flows from top to down in the hierarchy
- Ø Incentive systems
  - Performance based rewards are given to motivate the work force.
  - Typically used in organizations with big sales team
- Ø Blend of two systems are used in most organization

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#### PRINCIPAL AGENT PROBLEM

- Ø Incentives of principal (purchaser of service) and agent (seller of service) can diverge if principal cannot observe agent's performance.
- Ø Agent will pursue own goals, which may only partially overlap with the goals of the principal who has purchased the agent's services.

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#### SOLUTIONS TO PRINCIPAL AGENT PROBLEM

- Ø Ownership: Giving ownership interest in the firm. Typically used with Senior management
- Ø Incentive Pay : Remuneration is based on performance
- Ø Long Term Contracts :Typically used with CEO, to encourage them to develop long term strategies

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## TYPES OF BUSINESS ORGANIZATION

- ∅ Proprietorship:
    - Business owned by an individual who possesses the ownership rights to the firm's profits and is personally liable for the firm's debts.
    - Advantage : simple decision making process, profits are taxed once
    - Disadvantage: The owner's entire wealth is exposed to risk.. Raising capital can be difficult
  
  - ∅ Partnership:
    - Business owned by two or more individuals who possess the ownership rights to the firm's profits and is personally liable for the firm's debts.
    - Advantage : decision making is diversified among partners, profits are taxed once
    - Disadvantage: The owner's entire wealth is exposed to risk. raising capital is easier as more than one partner is present
  
  - ∅ Corporation:
    - Business owned by shareholders who have the ownership rights to the firm's profits but whose liability is limited to the amount of their initial investment in the firm.
    - Advantage: Limited liability of owner. Capital raising is easy
    - Disadvantage: Complex structure can make decision making slow. Double Taxation, one at corporate level and then at individual ownership level
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## CONCENTRATION MEASURES

Concentration of market refers to distribution of firms market shares

### FOUR FIRM CONCENTRATION RATIO

- ∅ It is the percentage of total industry sale of four largest firms in the industry

Ratio	Market
Below 40%	Competitive
Above 60%	Oligopoly



## HERFINDAHL INDEX

- Ø It is the sum of squared percentages of market share of all the firms in the industry

Index	Market
Below 1000	Highly Competitive
Above 1800	Not competitive
Between 1000 & 1800	Moderately Competitive

Limitation of Concentration measures due to unaccountability of :

- Ø Geographical scope of the market
- Ø Barriers to entry and Firm Turnover
- Ø Relationship between a market and an industry is not always close

## ECONOMIC ACTIVITY CO-ORDINATION

Market Co-ordination:

- Ø It is attained by outsourcing the various market transactions.
- Ø It is a common practice in Manufacturing industry

Firm coordination

- Ø It occurs when firms can coordinate economic activities more efficiently than market can
- Ø It is due to lower transaction cost, economies of scale, economies of scope and economies of team production achieved by the firm

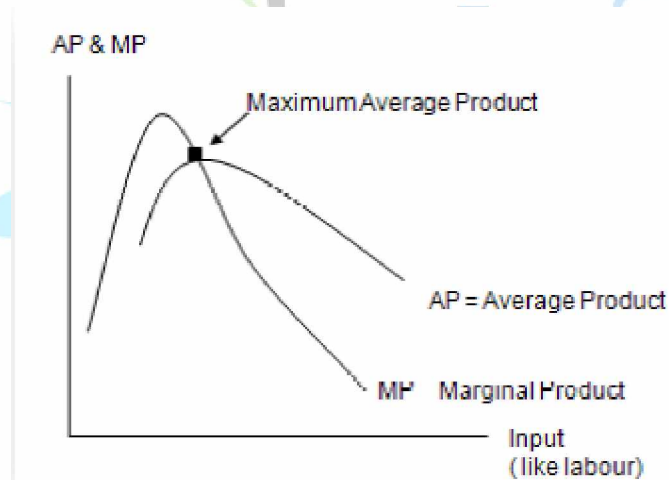
## OUTPUT AND COSTS

### LAW OF DIMINISHING RETURNS

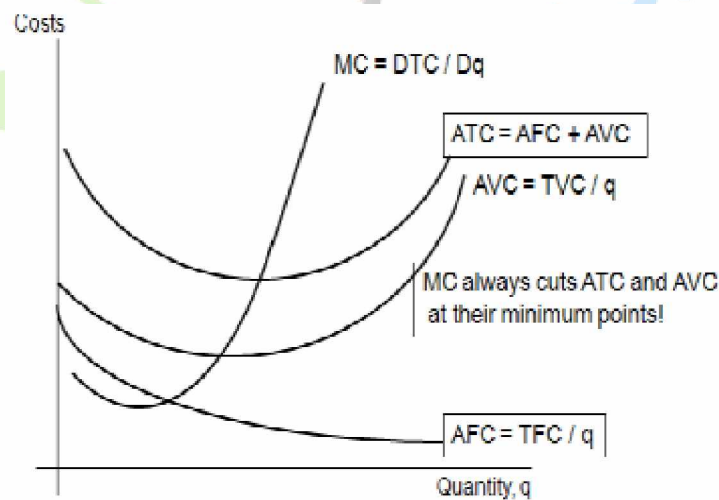
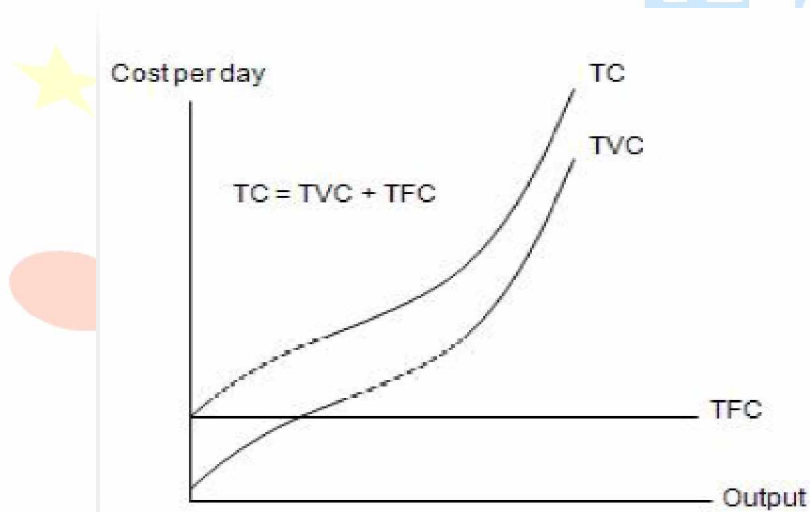
As more and more units of one resource is added for production, holding the quantity of other inputs constant, the output continues to increase at a decreasing rate.

### FEW CRITICAL DEFINITIONS

- ∅ Total Product (TP) is total output produced
- ∅ Marginal Product (MP) is the increase in product from using one additional unit of input
- ∅ Average Product (AP) is total output produced divided by the units of a variable input
- ∅ Total Costs (TC) is the sum of all costs associated with the generation of output. It consists of Total Fixed costs and total variable costs
  - Total Fixed Costs (TFC) is Sum of costs that do not vary with level of output.
  - Total Variable Costs (TVC) is the Sum of costs that change with the level of output.
- ∅ Marginal Cost (MC) Change in total cost required to produce an additional unit of Output



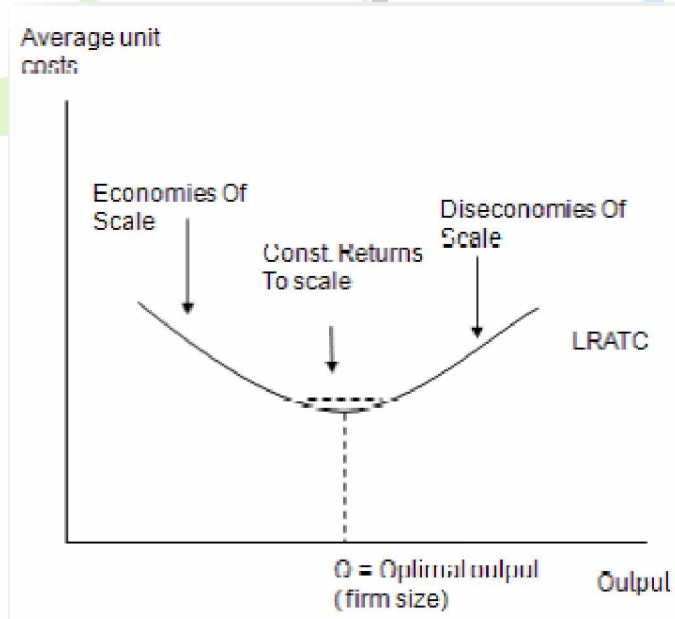
## AVERAGE COSTS



1. AFC curve is downward sloping
2. Due to law of diminishing returns MC declines initially and then increases.
3. When MC is below ATC, producing additional units of output will bring down the ATC curve.
4. ATC & AVC are U-shaped Curves
5. Distance between AVC and AC is equal to AFC Curve.
6. MC always Cuts AVC and ATC at their minimum points.

## ECONOMIES AND DISECONOMIES OF SCALE

- ∅ Economies of Scale:
  - Reductions in firm's per unit costs as all factors of production are increased in an optimal way.
  - Possible reasons: 1) Mass production, 2) specialization of factors of production, and 3) "learning by doing" scale economies.
- ∅ Diseconomies of Scale:
  - Increases in firm's per unit costs as all factors of production are increased in an optimal way.
  - Possible reasons: 1) coordination inefficiencies, 2) increasing difficulties in conveying information, and 3) increased principal-agent problems.
- ∅ Constant Returns to Scale:
  - No change in firm's per unit costs as all factors of production are increased in an optimal way.



## MACROECONOMICS

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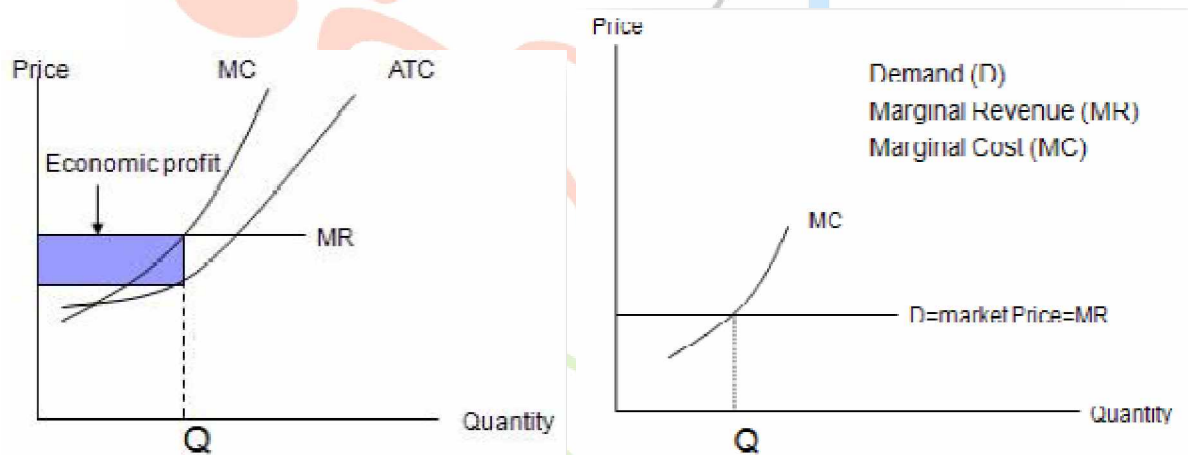
### TYPES OF MARKETS

- Ø Perfect competition or Price takers
  - Ø Monopoly or Price searchers with insurmountable barriers to entry
  - Ø Oligopoly or Price searchers with high barriers to entry
  - Ø Monopolistic competition or Price searchers with low barriers to entry
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## PERFECT COMPETITION

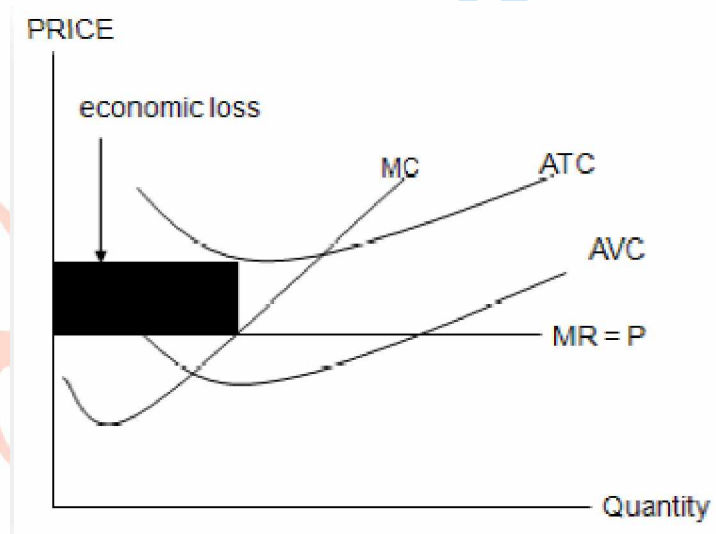
### MARKET CHARACTERISTICS

- Ø Homogeneous product
- Ø Large number of sellers: Each seller is small relative to the market and hence does not exert undue influence on pricing
- Ø No barriers to entry or exit
- Ø Perfect knowledge or information regarding the product/ price/ cost/ quality/ etc.



- Ø Optimal output will be one where marginal cost equals price ( ie  $MR = MC$ )
- Ø In the long run supply curve is a function of external returns to scale (rising, flat or declining LRSC)
  - Economic profit = 0 (firms will enter and exit as appropriate)
  - Optimal plant size
  - Implies that long run operating point is at the minimum point of its LRAC curve
- Ø In a perfectly competitive market, price is determined by the demand and supply curves (very short run)

## FIRMS UNDER ECONOMIC LOSSES



Price	Market
$P < ATC$ && $P > AVC$	If Temporary Continue to operate at a loss & Operate at the output where $P = MC$ (minimize the loss)
$P < AVC$	Shut down temporarily. Will just incur the fixed costs
If the low price is prolonged and lower than AVC	Go out of business

## KEY POINTS TO REMEMBER FOR PERFECT COMPETITION

- Ø In short run, increase in demand will increase both equilibrium price and quantity.
- Ø In short run, decrease in demand will decrease both equilibrium price and quantity
- Ø In the long run Each firm will produce equal quantity  $Q_0$  and Economic Profit is zero and  $MC = MR = P$  and ATC is Minimum

#### TECHNOLOGICAL CHANGES LEAD TO

- ∅ Lower cost of production
  - ∅ More supply at a higher price or same quantity of supply at reduced prices.
  - ∅ This shifts the industry supply curve to the right.
  - ∅ First mover to the adoption of new technology earn economic profit
  - ∅ Firms using older ( higher cost) technology will have economic losses and will be forced to adopt new technology or exit the industry.
  - ∅ New Firms which use new technology are attracted to the profit making industry.
  - ∅ Once all the firms adopt new technology (In long run), price will be equal to minimum average total cost and firms will have zero economic profit.
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## MONOPOLY

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### CHARACTERISTICS

- Ø There is only one seller of a product (with no substitutes) and hence no competition
  - Ø Monopolist has complete control over the market – i.e the quantity and the price that they wish to produce or charge
  - Ø Monopolist will attempt to find a price that will maximize profits
  - Ø Generally a monopolist will set a price that is higher and an output that is lower than in a perfectly competitive marketplace
    - Perfectly competitive operates at the point where  $\text{Price} = \text{MC}$ , while the monopolist operates at a point where  $\text{Price} > \text{MC}$
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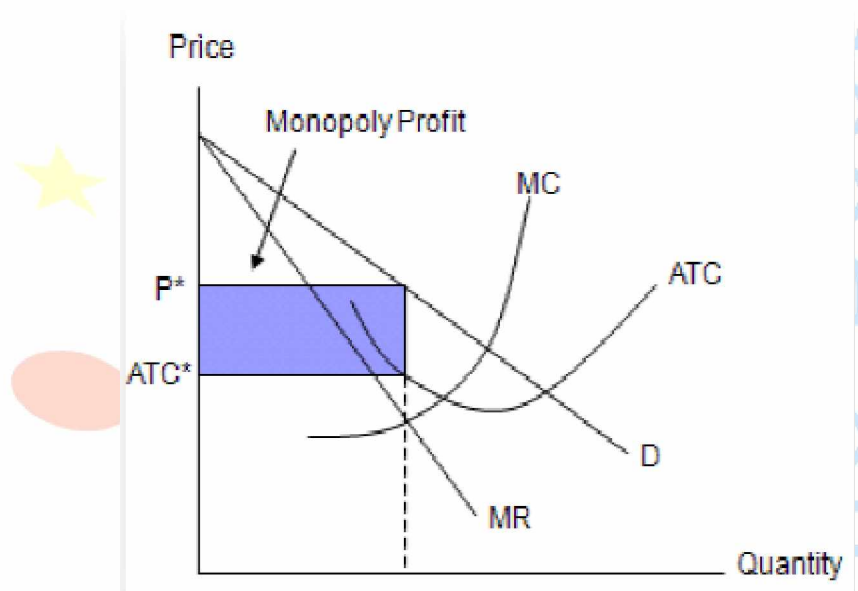
### BARRIERS TO ENTRY

- Ø Government licensing
  - Ø Proprietary product/ patent
  - Ø Economies of scale create a natural monopoly (optimal plant size matches quantity demanded)
  - Ø Control of essential resources for production or distribution
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### PROBLEMS WITH A MONOPOLY

- Ø Consumer options are limited – artificial scarcity created by one producer such that  $P > \text{MC}$
  - Ø Economic profits do not lead to more supply (unlike in a competitive industry)
  - Ø Inefficient allocation of resources and restraint on free trade
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## SHORT TERM COST & REVENUE



- Ø Monopolist will expand output until  $MR = MC$ .
- Ø Long Run Economic Profit can exist due to high Entry barrier.
- Ø Optimal output ( $Q^*$ ) is attained when  $MR = MC$ .
- Ø Price ( $P^*$ ) is obtained by taking optimal Qty ( $Q^*$ ) to demand curve.
- Ø For Economic Profit, the demand curve must lie above the firm's ATC curve at  $Q^*$ .
- Ø Economic Profit =  $(P^* - ATC^*) * Q^*$ .
- Ø For maximizing profit Monopolists experiment with different prices

## PRICE DISCRIMINATION

- Ø Seller charges different prices to different buyers for the same product
- Ø Can result in the transfer of consumer surplus to the product producer or seller
- Ø Condition for price discrimination
  - Downward sloping demand curve – Monopolist but not perfect competition
  - Two identifiable customer segments with varying elasticity's of demand
  - Seller must be able to isolate the two groups (and keep them from communicating or trading with each other)
  - Consumers whose demand is inelastic will be worse off and consumers whose demand is more elastic will be better off (in a price discrimination environment)
- Ø Overall the seller will be more profitable in this set-up

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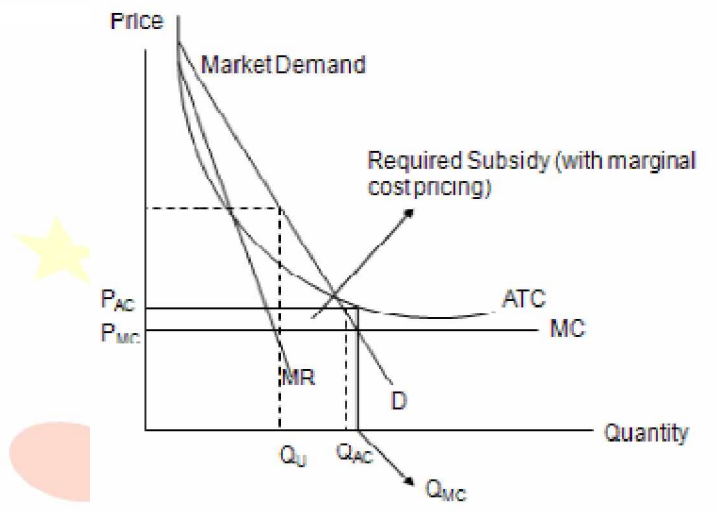
## NATURAL MONOPOLY

- ∅ Natural Monopoly is caused by
  - Economies of Scale : ATC of total industry is reduced when there is only firm
  - Economies of Scope: It occurs when a firm expands the range of goods it produces such that it's ATC is reduced.
- ∅ Regulators attempt to remove artificial barriers by :
  - Licensing requirements ,Quotas ,Tariffs
- ∅ Govt. Regulation try to improve resource allocation by regulating the prices charged by monopolies through :
  - Average cost pricing
  - Marginal cost pricing
- ∅ Regulators going wayward in handling market with high barrier to entry due to :
  - Lack of Information about firms ATC, MC or demand schedule.
- ∅ Cost Shifting: If regulators reduce prices, firms will allow costs to rise and the regulator will allow priced to rise.

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## AVERAGE V/S MARGINAL COST PRICING

- ∅ Average Cost Pricing
  - Price ( $P_{AC}$ ) and quantity ( $Q_{AC}$ ) is determined by the pt. where firms ATC intersects market demand curve
  - It results in increased output , decreased price and allocative efficiency and normal profit to monopolist ( $P_{AC} = ATC$  )
- ∅ Marginal Cost Pricing
  - Price ( $P_{MC}$ ) and quantity ( $Q_{MC}$ ) is determined by point where market demand curve intersects firm's MC curve
  - Monopolists face loss because price ( $P_{MC}$ ) is below ATC
  - Hence, to stay in the market, it requires Govt. subsidy to earn Normal profit.



### CHARACTERISTICS

- Ø Many independent sellers in the market place
  - Ø Product is somewhat differentiated giving sellers the ability to set prices
    - Fabric protection in garments industry
  - Ø Relatively easy to enter or exit
    - Economic profits will tend towards zero in the long run
  - Ø Price competition tends to dominate over other dimensions (although others are also relevant)
  - Ø Major driver for changes are general market forces rather than competitive moves
  - Ø Firms face downward sloping demand curve ( price searchers)
  - Ø Demand Curves are highly elastic as close substitutes are available
- 

### MONOPOLISTIC COMPETITION & MARKET EFFICIENCY

- Ø In long-run price > MC ( inefficient allocation of resources)
  - Ø In long-run ATC is not minimum ( inefficient scale of production)
  - Ø But, Monopolistic market is characterized by product differentiation , hence we need to analyze whether there is economically efficient amount of product differentiation.
- 

### PRODUCT INNOVATION, ADVERTISING AND BRANDING

- Ø Product Innovation
    - Firms continuously need to bring innovation product to the market to earn economic profit
    - Optimal amount of spending on innovation is when MC of additional innovation= MR of additional innovation
  - Ø Advertising Expenses
    - High expenses incurred in order to create perception of product differentiation.
    - Increase in ATC due to advertising is reduced when output increases
  - Ø Brand Name
    - It is associated with the quality of the product.
  - Ø Efficiency of monopolistic competition is unclear
-

Most common market structure in major industries

### MARKET CHARACTERISTICS

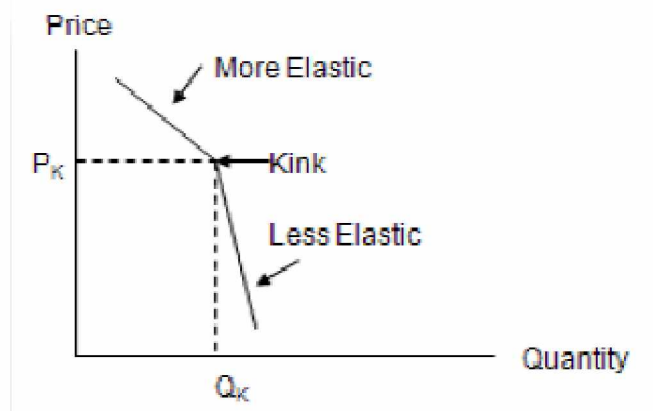
- Ø Few sellers for the product
- Ø Product may be differentiated or homogeneous
  - Often price, product quality and features, service, location, advertising are all relevant factors
- Ø Since Oligopolies can set their prices they are regarded as price searchers
- Ø Significant barriers to entry mostly due to large economies of scale
- Ø High but not insurmountable barriers to entry
  - Economic profits will be positive in the long run

### OLIGOPOLISTIC MODELS

- Ø Cartel: collusion such that industry  $MR = MC$ ; illegal; also cartel breakdown
- Ø Price leadership: dominant firm sets price such that  $MC = Price$
- Ø Non-price competition and implications of Game Theory
- Ø Mark-up pricing

### KINKED DEMAND CURVE MODEL

- Ø According to model, demand curve is more elastic above a certain price (kink in the demand curve) than it is below the price
  - Kink price  $P_K$  and quantity =  $Q_K$
- Ø Above  $P_K$  demand curve is considered to be elastic and below it is less elastic



#### DOMINANT FIRM MODEL

- Ø Assumption, one firm has significant cost advantage and relatively produces large proportion of the industry's output
  - Ø This dominant firm sets the price and other firms are essentially price takers
- 

#### OLIGOPOLY COLLUSION

- Ø Collusion is when firms make an agreement to avoid price competition
  - Ø Both firm's decide on reducing output and earning profits.
  - Ø Four possible outcomes are :
    - Both firms honor the contract
    - Both firms cheat
    - Either of the two firms cheat
- 

#### SUCCESS OF COLLUSION IS MAXIMIZED WHEN

- Ø Stable demand conditions
- Ø High entry barriers
- Ø Cheating is easy to detect]
- Ø Few Oligopoly players in market
- Ø Legal enforcement of anti – collusion laws and penalties for colluding are less

ACCORDING TO PRISONER'S DILEMMA *CHEATING* IS THE BEST COURSE OF ACTION FOR EACH FIRM IN COLLUSIVE AGREEMENT IRRESPECTIVE OF WHAT THE OTHER FIRMS DO

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## DEMAND AND SUPPLY IN FACTOR MARKETS

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### MARGINAL REVENUE, MARGINAL REVENUE PRODUCT, DEMAND CURVE FOR RESOURCE

- Ø Marginal Revenue
    - The additional revenue by selling one more unit of output
  - Ø Marginal Revenue Product (MRP)
    - The additional revenue by selling marginal product from employing one more unit of productive resource
  - Ø A profit maximization firm will keep increasing labor up to the point where :
  - Ø  $MRP_{Labor} = Price_{Labor}$ 
    - This leads us to downward sloping MRP curve which is the short run demand curve for productive resource or input
- 

### FACTORS THAT INFLUENCE DEMAND FOR LABOR

- Ø The price of the firm's output
- Ø Change in price of another factor of production
- Ø Technology

Concepts that may be tested

- a. The price increase of the firms output will increase the Marginal revenue and hence the MRP of labor. This leads to an increase in demand of Labor.
  - b. A price increase of a complementary product will decrease the demand of labor and a price increase of substitute product will increase the demand of labor
- 

### ELASTICITY OF DEMAND FOR LABOR

- Ø Elasticity of Demand is more elastic in long run then in short run as in short run factors of production remain fixed
  - Ø Factors that influence Elasticity of Demand for labor :
    - Labor Intensity Elasticity of Labor is higher for firms with labor intensive processes as labor would be a large proportion of total cost for labor intensive firms
    - Elasticity of Demand for the product The greater the elasticity of demand for the product (good), larger is the elasticity of demand for the labor to produce it (refer notes)
    - Substitutes of capital for labor Effect of capital as substitute on labor demand depends the degree to which labor can be replaced by capital. Typically in manufacturing industry elasticity of demand is more elastic as automation is able to replace large number of workers
-



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### PHYSICAL & FINANCIAL CAPITAL

- Ø Physical Capital comprises of property, plant, inventory of finished goods etc.
- Ø Financial Capital is the money raised though issuing securities like stocks, bonds
- Ø Greater the demand for physical capital the greater the demand for financial capital in order to purchase the physical capital
- Ø A profit maximizing firm will invest new capital up to the point where:
  - $MRP_{\text{capital}} = \text{cost of capital}$ .

---

### RENEWABLE & NON-RENEWABLE RESOURCES

- Ø Renewable Resource
  - Supply of Renewable is perfectly inelastic and its price is determined by demand
- Ø Non – Renewable Resource
  - supply is perfectly elastic ,quantity supplied is determined by demand and its current price equals to present value of the expected next period value

---

### ECONOMIC RENT AND OPPORTUNITY COST

- Ø Opportunity Costs
  - The next best highest paying option is known as opportunity costs
- Ø Economic Rent
  - The difference between a factor of productions' earning and opportunity cost is economic rent

#### Economic rent under different supply

1. Supply Curve is perfectly Elastic: There is no economic rent, eg. Non-renewable resources
2. Supply Curve is perfectly Inelastic: The entire payment for the factor of production is economic rent. Eg. Renewable resource
3. Upward sloping supply curve: Economic rent is some portion of the total paid for the factor of Production

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## MONITORING CYCLES, JOBS AND THE PRICE LEVEL

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### BUSINESS CYCLE

These are the fluctuations in the general level of economic activity in an economy as measured by changes in variables such as real GDP, employment, and unemployment. Business cycles consist of distinct phases:

- Ø Business Peak
  - Ø Contraction
  - Ø Recessionary Trough
  - Ø Expansion
- 

### LABOR MARKET INDICATORS

- Ø Civilian Labor Force: Number of persons 16 years of age or greater who are either employed or are actively seeking work.
  - Ø Unemployed: Person who is not currently employed who is either (1) actively looking for a job or (2) waiting to begin or return to a job.
  - Ø Labor Force Participation Rate: Number of persons in the civilian labor force who are 16 years or older who are either employed or actively seeking work as a percentage of the total civilian population 16 years of age or older.
  - Ø Unemployment Rate: Percentage of persons in the labor force who are currently unemployed.
  - Ø Employment to population ratio: Percentage of the civilian work force who are employed
- 

### AGGREGATE HOURS AND REAL WAGE RATES

- Ø Aggregate Hours :
    - The total number of hours worked in a year by all employed people
    - Aggregate hours and the work week tend to increase during expansion and decrease during recession.
  - Ø Real Wage Rate :
    - These are money wage rate adjusted for changes in overall price level
    - It is calculated using total labor compensation, which includes wages, salaries and employer paid benefits.
-

## TYPES OF UNEMPLOYMENT

- Ø Frictional Unemployment:
  - Due to changes in the economy that prevent qualified workers from being immediately matched up with existing job openings. Frictional unemployment arises from incomplete information on the part of both employers and the unemployed.
- Ø Structural Unemployment:
  - Due to the structural characteristics of the economy that make it difficult for job seekers to find employment and employers to hire workers. Generally arises as result of mismatches between existing labor force skills and employer skill needs.
- Ø Cyclical Unemployment:
  - Due to business cycle fluctuations in overall economic activity. Unemployment rises during recessionary periods and falls during expansionary periods.

Few concepts that can be tested Full Employment: Level of employment that results when there is no cyclical unemployment but there is structural and frictional unemployment Natural Rate of Unemployment: Long-run average level of unemployment due to frictional and structural conditions in the economy's labor markets. Potential GDP: It is the (theoretical) level of output produce when unemployment is at the natural rate

REAL GDP < POTENTIAL GDP: CYCLICAL UNEMPLOYMENT INCREASES

REAL GDP > POTENTIAL GDP: CYCLICAL UNEMPLOYMENT DECREASES

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## CONSTRUCTION OF CONSUMER PRICE INDEX

It involves 3 steps

- Ø Select the CPI basket
  - Ø Monthly Price Survey
  - Ø Calculate the CPI
- 

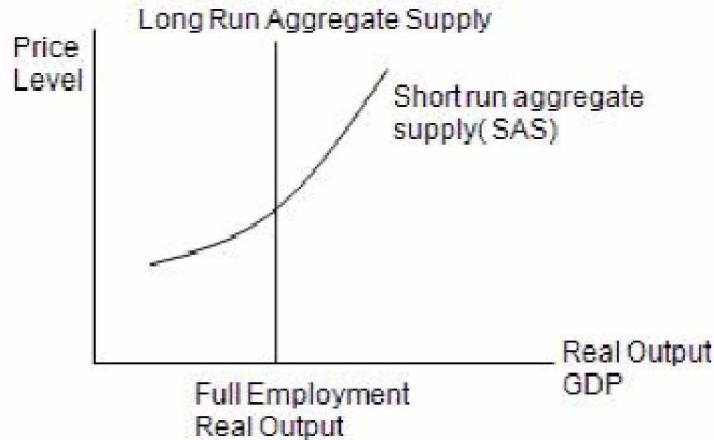
## INFLATION

- Ø It is the percentage change in price level from a year ago
  - Ø It is defined as :
  - Ø  $[(\text{Current CPI} - \text{year ago CPI}) / \text{year ago CPI}] * 100$ , where CPI is the consumer price index
-

## AGGREGATE SUPPLY AND AGGREGATE DEMAND

### AGGREGATE SUPPLY

- Ø It is the amount of goods and services produced by an economy
- Ø Aggregate Supply in Long Run ( Long Run aggregate supply)
- Ø It is the potential real output of the economy
  - It is affected by :
    - The quantity of labor in the economy
    - The quantity of capital in the economy
    - The technology that prevails in the economy
- Ø Aggregate Supply in Short Term
  - It is obtained by keeping real wage rate and prices of other productive resources constant



### AGGREGATE DEMAND

- Ø Components of Aggregate demand are :
  - Consumption (C)
  - Investment (I)
  - Government Spending (G)
  - Net Exports, which is exports – imports
- Ø Demand is downward sloping because Price Level increase causes:
  - Wealth Effect
    - Individuals' real wealth is reduced and hence will spend less

- Interest rate increase This leads to reduction in business investment and consumption. This is called substitution effect.

#### FACTORS THAT MOVE DEMAND CURVE

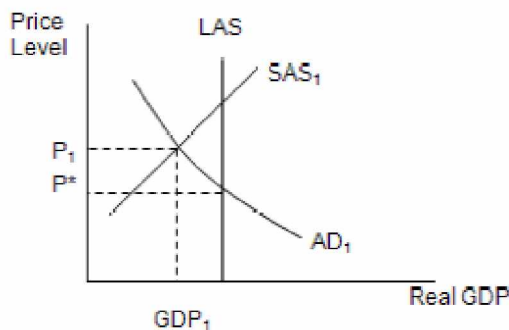
- Ø Expectations about Future incomes, inflation and Profits
  - Increase in Expected Inflation , Income and Profit will increase the Demand and vice versa for all of the three
- Ø Fiscal and Monetary policy
  - An expansionary fiscal policy increases the government spending component (G) of aggregate Demand.
  - A decrease in taxes or increase in public welfare transfer payments will increase the consumer consumption (C)
  - Expansionary Monetary policy will decrease the interest rate and hence increase investment spending, consumption leading to increase in Aggregate Demand
- Ø World economy
  - The consideration here is the net exports. If country's exchange rate increases ( currency appreciates), exports will decrease as it's goods will become more expensive and imports would be cheaper, hence the net export would decrease

#### MACRO ECONOMIC EQUILIBRIUM IN SHORT RUN AND IN LONG RUN

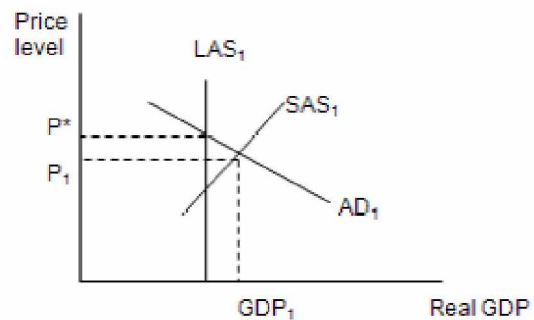
- Ø Changes in Price Level of final goods leads to long run Micro Economic Equilibrium
- Ø Long Run Equilibrium is at 75.
- Ø Short Run Disequilibrium
  - At price 80 : Recession  
There is excess supply of goods  
Downward pressure on prices will decrease production and prices to long run equilibrium at a price level of 75
  - At price 70 : Inflationary Gap  
There is excess demand of goods.  
Production and prices will increase and will arrive at long run Equilibrium at a price level of 75

## LONG RUN EQUILIBRIUM

- **Under Full Employment : Recession**
- Economy is at short run Equilibrium at  $GDP_1$  which is less than full employment (along LAS curve)
- Downward pressure on prices and resources prices bring down the equilibrium price level to  $p^*$



- **Over Full Employment : Inflation**
- Economy is at short run Equilibrium at  $GDP_1$  which is more than full employment ( along LAS curve)
- Upward pressure on prices and resources prices bring up the equilibrium price level to  $p^*$



## MAIN SCHOOLS OF MICRO ECONOMIC THOUGHT

- ∅ Classical Economists
    - Long run equilibrium real output would increase with increase in the labor Force, accumulated capital and with improvements in Technology
    - Adjustment of money wages to restore full employment equilibrium is rapid
  - ∅ Keynesian Economists
    - Changes in expectations shift aggregate demand
    - Due to downward sticky wages, the economy may not return rapidly from recession to full – employment real GDP.
    - Aggregate Demand is increased directly by expanding the money supply or increasing the government deficit
  - ∅ Monetarists
    - Maximum growth of real GDP is obtained by a policy of steady and predictable increases in the money supply.
    - They believe that economic cycles are caused by inappropriate monetary policy
-

## MONEY, BANKS AND THE FEDERAL RESERVE

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### FUNCTIONS OF MONEY

- Ø Medium of Exchange
  - Ø Unit of account
  - Ø Store of value
  - Ø Money preserves value when inflation is low
- 

### FUNCTIONS OF DEPOSITORY INSTITUTIONS

- Ø Creating liquidity
  - Ø Financial intermediaries
  - Ø They monitor the risk of loans better
  - Ø Pool the default risks of individual loans by holding a portfolio
- 

### DEPOSITORY INSTITUTIONS

- Ø Commercial Banks
  - Ø Thrifts and thrift institutions
  - Ø Money market mutual Fund
- 

### FRACTIONAL RESERVE BANKING SYSTEMS

- Ø Fractional reserve banking system
  - Bank is required to hold a fraction of its deposits in reserve
- Ø Required reserve ratio
  - It is used to measure the reserve requirement and any deposit in excess of the required reserve can be loaned
- Ø Multiplier Effect
  - The process of lending, spending and depositing can continue until the amount of excess reserves available for lending is zero
- Ø Potential deposit expansion multiplier
  - It is the maximum potential increase in the money supply due to multiplier effect

MATHEMATICALLY=  $1 / \text{REQUIRED RESERVE RATIO}$

- Ø Potential increase in money supply

IT IS EQUAL TO POTENTIAL DEPOSIT EXPANSION MULTIPLIER \* INCREASE IN EXCESS RESERVES

---



## GOALS AND TARGETS OF FEDERAL GOVERNMENT

- ∅ Goals
    - To reduce the impact of expansion and recession that make up business cycle
    - Manage the money supply in such a way to keep inflation low and promote economic growth and full employment.
  - ∅ Policy rules to influence federal rate are
    - By monitoring the discount rate at which banks can borrow money from reserves from Fed
    - Increasing Bank Reserve requirements
    - Open market operations ( most commonly used)
-

## MONEY INTEREST, REAL GDP AND THE PRICE LEVEL

---

### THE QUANTITY OF MONEY THAT PEOPLE WANT/PLAN TO HOLD DEPENDS ON

- The Price Level
- The Interest Rate
- Real GDP
- Financial Innovation

Few concepts

1. The quantity of money demanded is proportional to the price level, other things remaining the same.
  2. Quantity of real money demanded is independent of the price level
  3. The higher the opportunity cost of holding money, other things remaining the same the lower is the quantity of real money demanded
  4. Higher the inflation, higher is the interest rate and higher is the opportunity cost of holding money
- 

### DEMAND FOR MONEY

It is determined by the following factors

- Interest Rate
- Inflation
- Real GDP Growth

Shifts in the Demand for Money

- Change in real GDP
    - A decrease in real GDP decreases the demand for money and vice versa
  - Financial Innovation
    - It decreases the demand for money
- 

### SUPPLY FOR MONEY

- It is determined by the central bank and it is independent of the interest rate.
- The supply curve is vertical
- Effects of Money Supply
- In short run, increase in Money Supply leads to decrease in nominal and real interest rates
- increase in money supply will increase in aggregate demand and will increase the real GDP and the price level

---

## QUANTITY THEORY OF MONEY

### Equation Of Change

MONEY SUPPLY \* VELOCITY = GDP = PRICE \* REAL OUTPUT

- Ø Velocity is the average number of times per year each dollar is used to buy goods and services

SYMBOLICALLY :  $MV = PY$

- Ø Where M = Money Supply, V = Velocity, P = Price and Y = real output

### Quantity theory of money

- Ø An increase in the money supply will cause proportional increase in prices (inflation)
- Ø Velocity and output were determined by institutional factors other than money supply and were considered constant
- Ø According to monetarist the money supply should be increased only at a growth rate of real output in order to maintain price stability

## INFLATION

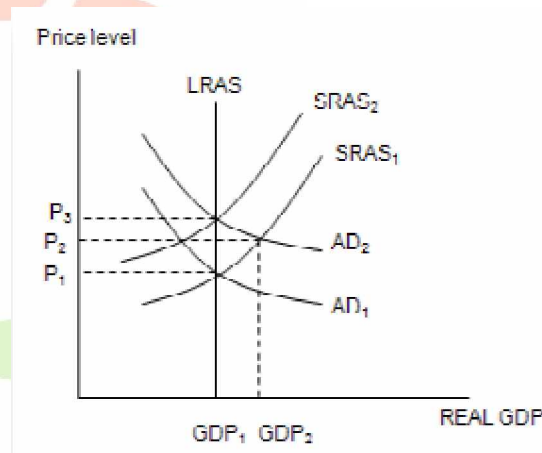
INFLATION RATE IS DEFINED AS THE PERCENTAGE CHANGE IN THE PRICE LEVEL FROM A YEAR AGO  

$$\text{INFLATION} = \frac{[(\text{CURRENT PRICE LEVEL} - \text{YEAR AGO PRICE LEVEL}) / \text{YEAR AGO PRICE LEVEL}] * 100}{}$$

### DEMAND PULL INFLATION

It results from

- Ø Increase in money supply
- Ø Increased government spending
- Ø Increase in exports

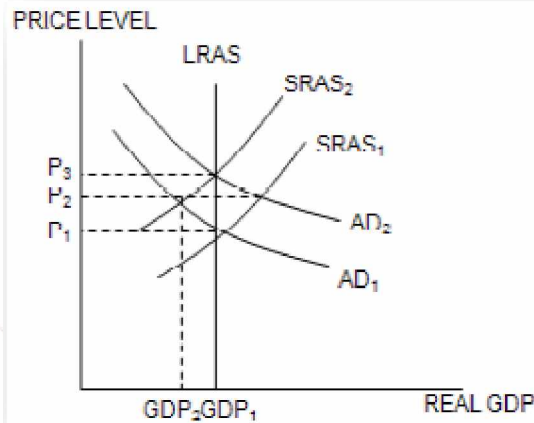


- Ø An increase in money supply increases aggregate demand to AD<sub>2</sub>
- Ø This leads to increase in output to GDP<sub>2</sub> (above full potential GDP) and an price increase to P<sub>2</sub>
- Ø Unemployment rate fall below its natural rate, putting upward pressure on real wages.
- Ø It leads to decrease in short run aggregate supply
- Ø This brings GDP to its natural state and will further increase price to P<sub>3</sub>

### COST PUSH INFLATION

It results from a decrease in aggregate supply which is due to

- Ø Increase in real wage rate
- Ø Increase in price of an input resource



- Ø The reduction in supply from  $SRAS_1$  to  $SRAS_2$  increases the price level to  $P_2$
- Ø This reduces the output to  $GDP_2$
- Ø Policy response that stimulates aggregate demand will bring output to the long run potential  $GDP_1$
- Ø This results in price increase to  $P_3$
- Ø Persisted increase in price level will be inflation

#### UNANTICIPATED INFLATION

- Ø It is an unexpected decrease in the purchasing power of currency in the future
- Ø PV of a rupee, which is to be received in future, is decreased.

#### IMPACT ON LABOR MARKET

- Ø When rise in inflation is unexpected, real values of the wages decreases
- Ø When decrease in inflation is unexpected, real values of the wages increase

#### IMPACT ON FINANCIAL CAPITAL

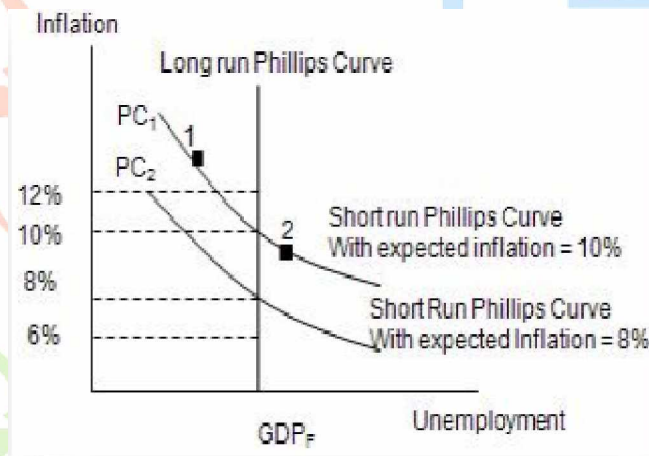
- Ø Unexpected rise in Inflation: Fixed rate mortgages, fixed rate annuities and other fixed future payments decrease in value, Individuals/ institutions that have borrowed money gain in the transaction
- Ø Unexpected decrease in Inflation: It leads to the opposite effect

## PHILLIPS CURVE

Short Run Phillips curve intersects the long run Phillips curve at the expected rate of Inflation

Changes in Long run Phillips curve can be

- ⊘ Change in labor force
- ⊘ Changes that affect labor mobility
- ⊘ Advances in Technology



Inflation	Effects
Expected inflation=Actual	Economy remains at full employment and the price level rises.
Actual inflation > Expected Inflation	Price level increases more than expected. In short run, unemployment level drops below its natural level and moves along the Phillips curve to a point like 1
Actual Inflation < Expected Inflation	It is due to unexpected decrease in money supply. Unemployment level rise and moves along the Phillips curve to a pt 2.

---

#### IMPACT OF INFLATION ON NOMINAL INTEREST RATE

- ∅ If expected inflation is higher
    - Firms will expect higher returns because of expectation of higher prices for future output
    - Savers require greater rate of return as they evaluate the trade off between current consumption or equivalent future consumption
  - ∅ Increase in demand for financial capital and decrease in supply of financial capital increases the equilibrium nominal rate of interest
  - ∅ Higher rate of growth of the money supply lead to higher rate of inflation, higher rates of expected inflation and higher nominal interest rate
-

## FISCAL POLICY

---

### BUDGET SURPLUS

- Ø The federal budget is said to be balanced when tax revenues equal federal government expenditures
  - Ø A *budget surplus* occurs when government taxes exceeds expenditures, and a *budget deficit* occurs when government expenditure exceeds tax revenues
  - Ø Decisions are made to increase taxes or reduce expenditure during inflationary periods and vice versa during recessionary periods
- 

### GDP

- Ø GDP is defined as the total market value of all final goods and services produced within the country in a given period of time (usually a calendar year)
  - Ø Potential GDP refers to the highest level of real Gross Domestic Product output that can be sustained over the long term, given the existing supply of factors of production
  - Ø When real GDP equals potential GDP, the economy is said to be at full employment. Hence the GDP gap or the output gap is the difference between potential GDP and actual GDP or actual output
- 

### SOURCES OF INVESTMENT

- Ø Total investment is one of the major components of GDP
  - Ø Defined as expenditure for fixed productive assets and inventory
  - Ø Sources of financing for investments are:
    - National Savings
    - Borrowings from foreigners
    - Government Savings
  - Ø Directly impacts the growth in real GDP. As investments decline, less capital is created, causing the growth in real GDP to fall and conversely
  - Ø Fiscal policy decisions have a major impact on markets for investment capital. The incentive to save falls as taxes imposed on capital income rises
- 

### CROWDING OUT EFFECT

Larger budget deficits decrease the quantity of savings, which increase the real interest rate, leading the firms to reduce their borrowings of financial capital and their investment in physical capital. This adverse effect of budget deficit on private investment is called crowding out effect

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## GENERATIONAL EFFECTS OF FISCAL POLICY

- Ø Refers to the effect of postponing fiscal imbalances, defined as the present value of future expected government deficits
  - Ø Present value of government benefits to the current generation is not fully paid by the taxes levied on the current generation. In effect, current policy is to postpone the payment of taxes so the burden of government expenditure falls on future generation
- 

## DISCRETIONARY FISCAL POLICY

- Ø It refers to the spending and taxing decisions of a national government that are intended to stabilize the economy
    - During recession, actions can be taken to increase the government spending or decrease taxes or both
    - This strengthens the economy increasing aggregate demand, putting more money in the hand of corporations and consumers to invest and spend
  - Ø Discretionary fiscal policy decisions produce *multiplier* or magnified effects.
- 

## MULTIPLIERS

### Government purchases multiplier

- Ø It refers to the disproportionate effect of government purchases on aggregate demand. A dollar of government spending causes more than a \$1 change in aggregate demand

### Tax multiplier

- Ø It refers to the disproportionate effect of tax policy changes on aggregate demand. An increase in taxes causes a magnified negative effect on aggregate demand
- Ø The magnitude of the tax multiplier will be smaller than the government purchases multiplier because not all of the tax cut will be spent

### Balanced budget multiplier

- Ø It refers to the disproportionate effect that a combined government purchase and a tax program has on the aggregate demand. The combined program has no effect on the budget because the amount of government purchases is equal to the increase in taxes.
-

## LIMITATIONS OF DISCRETIONARY STABILIZERS

- ∅ Limitations of Discretionary Stabilizers
    - Recognition delay
    - Administrative or law making delay
    - Impact delay
  - ∅ Automatic stabilizers are built in fiscal devices triggered by the state of the economy
    - Minimize timing problems encountered by the discretionary fiscal policy stabilizers
    - Fall in two main category
    - Induced taxes
      - These are the taxes collected as the percentage of Income
    - Needs tested spending. It is the government spending for programs that pass through a needs test. Ex. unemployment
-

### PRICE LEVEL STABILITY & REAL GDP GROWTH

- ∅ Price Level stability
  - It is defined as stable inflation rate between 0 to 3 %.
  - Real wage real interest rate are equal to their expected values when inflation rate is stable.
  - It promotes saving and investment.
  - Government long term aim of strength of the economy is the outcome of it.
- ∅ Real GDP Growth
  - It is the measure of performance of the economy
  - Increase in sustainable Real GDP growth is outcome of increase in savings and investments
  - Sustainable real GDP growth is achieved when real GDP equals Potential GDP

### TYPES OF MONETARY POLICY

- ∅ Fixed Rule Policies
  - These are the actions of the Fed that are taken regardless of the health of the economy
  - Eg. Stable money supply growth
- ∅ Feedback rule policies
  - These are the actions taken by Fed in response to the changing health of the economy
  - Eg. Increase in Money supply if the employment rate rises above the natural rate
- ∅ Discretionary Policies
  - They are also based upon feedback mechanism but they do not follow a strict set of rules and are subjective
  - The most commonly used policy

### POLICY CREDIBILITY

Inflation	Effects
Credible Policy Change & Policy Change Announced	Inflation is less than it would have been Economy remains at full employment
Unannounced or Less Credible Policy Change	Reduced Output Reduction in inflation is not effective

## NEW MONTARISTS AND NEW KEYNESIAN FEEDBACK RULES

### New Monetarist feedback rule

- Ø It is based on quantity theory of money and emphasis on price level stability
- Ø Based on quantity theory of money :
- Ø Growth rate in M = growth rate in P + growth rate in Y – growth rate in V
- Ø Monetarist Feedback rule is based on adjusts slowly to changes in business cycle since it is based on loner term moving averages of the growth rates of real GDP and velocity

### New Keynesian feedback rule

- Ø It emphasis on both price level stability and business cycle stability
- Ø According to Keynesian rule, as inflation and inflation indicators increase and real GDP rises above potential GDP, the federal fund target rate is increased

Characteristic	Keynesian rule	Monetarists rule
Business Cycle	Immediate Response	Slow Response
Policy Variable	Federal Funds	Growth Rate of Money supply



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