5. Change in seller's price expectations

If price is expected to rise, producers may temporarily reduce the amount they sell

- Build up stocks and only release when price increases
- Aimed to minimize loses / Increase profits

VERTICAL SUPPLY CURVE

Supply curve is a vertical straight-line

- \rightarrow <u>Perfectly price inelastic</u>
- \rightarrow Usually one of a kind antiques and items on auction

However supply can also change over time (e.g. when weather is ideal for agriculture). There would be a shift leftward / rightward in the supply curve

SAMPLE QUESTION & ANSWERS

Market for Rice:

Q1: Subsidy for production of biofuel



A: Subsidies from the production of biofuel helps to lower the <u>cost of production</u> of biofuel. Hence this causes the supply curve of biofuel to <u>shift right from SS_0 to SS_1 </u>, as producers are more willing and able to produce at each given price, ceteris paribus. Biofuel and rice are in <u>competitive supply</u> as they share the same <u>factors of production</u>. Therefore, the supply for rice falls and the supply curve <u>shifts to the left from SS_0 to SS_1 </u>

~ END ~

SECTION 2: PRICE ELASTICITY OF SUPPLY (PES)

INTRODUCTION

Definition: Measures the degree of responsiveness of quantity supplied of a good to a change in its own price, ceteris paribus

Formula:

In words PES =percentage change in quantity supplied percentage change in price

In symbols

 $\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$ PES =

 ΔQ is the change in quantity supplied; Q is the original quantity ΔP is the change in price; P is the original price

Sign of PES:

Always positive, showing that change of price and quantity demanded are directly related. Since It can vary from zero to infinity Supply is price elastic $(1 < |PES| < \infty)$ A given change in price brings that a more than proper it nate change in the quantity supplied, ceteris paribus Supply is price inelastic (0 < |PES| < 3.96A given change in T

A given change in price brings about a less than proportionate change in the quantity supplied, ceteris paribus

DETERMINANTS OF PRICE ELASTICITY OF SUPPLY

- S: Spare capacity
- N: Nature of production
- I: Inventory / Stocks
- T: Time period

1. Existence of spare capacity

If spare or unused capacity is available, it should be possible to increase production quickly

Not all machines fully utilized ٠

SECTION 3: INCOME ELASTICITY OF DEMAND (YED)

INTRODUCTION

Definition: Measures the degree of responsiveness of demand of a good to a change in the income of consumers, ceteris paribus

Note: Change in income causes a shift in the entire demand curve and not just a movement along the same demand curve (income is a non-price determinant)

Formula:

In words YED = percentage change in quantity demanded percentage change in income

In symbols

 $\frac{\Delta Q}{\Delta Y} \times \frac{Y}{O}$ YED =

 ΔQ is the change in quantity demanded; Q is the original quantity demanded ΔY is the change in income; Y is the original income

If a 5% increase in income leads to 10% increase in demand, the YED is 2 CO. UK Sign of YED: Can be positive or negative Positive Positive Inferior goods Normal goo Demand moves in same direction 🛃 the Demand moves in the opposite direction income of income

Magnitude of PED:

| YED > 1 | 0 < YED < 1 |
|---|---|
| Income elastic - Luxuries | Income inelastic - Necessities |
| • 1% change in income leads to a more than proportionate change in demand | • 1% change in income leads to a less than proportionate change in demand |

Determinants of Price Elasticity of Demand:

| N: | Nature of good |
|----|-----------------|
| L: | Level of Income |

SUBSIDIES

Definition: Fixed amount of money given to producers for each unit they sell

Aim: Lowers the unit cost of production (artificial)



Note: Singapore's Government Policy

Refrains from providing unnecessary subsidies, especially consumption subsidies that may result in distorting efficient market allocation of resources

- Believes in principle of free market allocation
- Best way to maximize economic efficiency and growth

PRICE CONTROLS

Objectives:

- 1. Keep price of good at a level that is affordable to majority
- Prevent exploitation by suppliers who charge high prices during shortages
 Stabilize prices and support incomes at higher level (wages)

Price floor and Price ceiling:

| | Price floor | Price ceiling | |
|------------------------|--|--|--|
| Definition | Legally established minimum price | Legally established maximum price | |
| | above the market equilibrium price | below the market equilibrium price | |
| Uses | Agricultural | Rent control | |
| | Minimum wages (effective when | Shortage of basic necessities | |
| | demand for labour is inelastic) | Inflation control | |
| Graph | | esale.co.uk | |
| Explanation | • Od units of labour erroys a higher | Inefficient allocation of resources | |
| 1 | wase Pite | • Shortage of $(Od - Os)$ | |
| | Surplus of $(O_x \rightarrow CQ_y)$ with of labour | • Sold at first come first serve basis | |
| | • Retrenchment of $(Oe - Od)$ results | Government has to ration | |
| | Black markets | | |
| Definition | nition Sellers ignore government's price restrictions and sell illegally at whatever price | | |
| | equates demand and supply | | |
| Graph & Explanation | | Exists because unsatisfied consumers are willing to pay very high prices When price ceiling is established: Shortage of (Qd – Qs) Rationing becomes necessary If all available supply is sold in black market, price rising to Pb Sellers earn extra income as shown in shaded area | |

SECTION 4: PUBLIC GOODS

Public goods are goods or services that are non-excludable and non-rival in consumption and thus not provided by the market

CHARACTERISTICS OF PUBLIC GOODS

There are two main characteristics to identify a public good

1. Non-excludable in consumption

- Impossible or prohibitively expensive to exclude non-payers from consuming it
- For example, once street lighting is provided, there is no inexpensive or practical way to restrict availability of service to only people who pay for their use
- Also for national defence, once an army is provided to defend the country, every citizen benefits • from its protection regardless of whether they pay for it
- 2. Non-rival in consumption
- Consumption by one does not reduce the amount available to others
- For example the use of street lighting by one will not reduce the amount of light available to others
- Benefit of street lighting can be shared jointly by people in the vicinity •

IMPLICATIONS OF PUBLIC GOODS ON ITS PROVISION BY THE MARKET ale.co

Non-excludability:

- Once a public good is provided, others can free ride
- winout havin A free-rider is anyone who receives the benefits opay from it •
- As anyone can enjoy all benefite in hour paying for it to rational consumer motivated by self interest will reveal his effective demand
- Hence there will not be price signale to indicate consumer preference, and thus producers will • not supply the good
- Therefore, the free-rider problem means that the market will not provide such a good

Non-rival:

- Marginal cost of providing a public good to an additional customer is zero
- Since the optimal or allocative efficient quantity to supply is where P=MC, the efficient price to charge would thus be zero
- This means that no private firm in the free market can supply profitably
- Hence the market fails to allocate resources to produce such goods ٠

Therefore – Without the profit incentive (non-rival) and price signals (non-excludable), the market fails in the provision of public goods. Thus there are provided for by the government

Solution – Government thus has to provide for the good as their objective is not to maximize profits

Limitations:

- Lack of information hard to determine optimal level of public demand for the provision of public goods
- Political pressures Make decisions based on political popularity and are sometimes affected by pursuit of self-interest amongst politicians (electoral pressures)

SECTION 6: MARKET DOMINANCE

It refers to markets in which a single or a few large sellers supply the product sold. Hence they will restrict the quality supplied to maximize their profits

Under imperfect competition, production is allocative inefficient because dominant firms produce at an output where price is above marginal cost (P > MC) [Draw monopoly diagram]

SOLUTIONS TO MARKET DOMINANCE

1. Prevention/Prohibition

- Laws that prevent formation of monopolies such as the Sherman Act in the US
- Prevent monopolization of a market by a firm, break up monopolies by reducing the patent period for a product etc.
- The Competition Commission of Singapore (CSS) acts against the abuse of dominant position • (predatory pricing, price-fixing or limiting production)

2. Deregulation

- Choose to deregulate the industry to subject the firms to competition to keep price more competitive and improve efficiency
- Such as deregulation in telecommunications industry in Singapore by licensing to Kobile One and Starhub Price Regulations: Marginal Cost (MC) Pricing 1053 •
- 3. Price Regulations: Marginal Cost (MC) Pricing
- ourginal co • Force the monopoly to charge a price equal to
- However, government may not k on exact price to equate to sarginal cost if firms withhold information
- Blistion innovation and investment in research and MC pricing mish ٠ discourage m development
- It also cannot be applied on natural monopolies as it results in hefty losses for them

SECTION 7: INEQUALITY IN DISTRIBUTION OF INCOME AND WEALTH

Definition: It is the extent of income disparity between high-income and low-income households, where a commonly used indicator is the Gini coefficient (from 0 to 1)

The issue hinges on inequitable or unfair distribution of resources rather than what is socially efficient allocation of resources

THE PROBLEM

Market system only responds to effective demand (willingness and ability to pay) for goods and services

- Thus goods and services do not necessarily flow to those who need them the most
- Favors those with buying or purchasing power ٠
- Thus the free market system fails to provide for those without means to pay for goods and services – results in market failure due to inequitable distribution of resources

INTERNAL ECONOMIES AND DISECONOMIES OF SCALE

Internal economies of scale:

Refer to a fall in unit cost of production when the firm increases output by expanding its scale of production (shift in AC)

Technical (plant) Economies

- 1. Specialization and Division of Labour
- As scale of production increases, there is greater scope for specialization of man and machines
- With division of labour, less training is needed allowing for increased productivity and less time • reduced due to need to switch between jobs
- ٠ Helps to lower unit costs (fall in AC)
- 2. Indivisibilities
- Some machines only come in fixed and large sizes (machinery)
- Firm producing on large scale will be able to spread the fixed costs of the machine over larger ٠ output levels, thus lowering unit costs
- 3. Research and Development
- Large firm has resources to support research, develop better products and cheaper techniques of production with large scale of production
- Able to spread huge R&D costs over a larger output, thereby lowering unit to ts ٠

Marketing Economies

- 1. Bulk purchase
- treatment
- Large firms have bargaining advantage and given proprential treatments They can also obtain goods at lower cert and matter thus lowering ant costs They can also obtain goods at lower cert and oetter terms with respect to quality and delivery,
- 2. Large scale advertising
- Advertising cost per unit may be lower due to larger output level

Administrative & Managerial Economies

- Administrative costs will not rise in proportion to the size of an order, thus administrative cost per unit of output, spread over a larger output, is much reduced
- Each managerial role can also be allocated to a specialist in that field
- ٠ Large firms can buy management service and retain best management with attractive pay, thus higher productivity and lower turnover costs

Financial Economies

- Large firm has more assets to offer as collateral and banks are more willing to offer loans or • extend credit to them
- They also enjoy better terms (lower interest rates) when they borrow, lowering unit costs
- They can also raise funds by issuing shares to the public, which is a cheaper alternative as no • interest payment is incurred

EXTERNAL ECONOMIES AND DISECONOMIES OF SCALE

External economies of scale:

Fall in unit cost of production experienced by the firm due to a growth in the industry

Economies of Concentration

These economies arise when many firms carrying out similar activities are located very closely

- 1. Trained workforce
- Demand for labour with necessary skills increases and training schools may be set up
- Pool of skilled workers is readily available and thus reduce costs that are originally incurred
- 2. Better infrastructure
- Due to concentration, facilities such as better transport, banking and telecommunication systems may be set up to serve the needs of the industry lowers operating costs

Economies of Information

- Common information services provided by trade association or central research centres through journals or newsletters
- Firms can obtain information cheaply by sharing the cost of research

Economies of Disintegration

- Possible for firms to split up the production process and specialize in a tigle process or the manufacture of a single component
- As they are individually produced, they can be produced at a much lower cost

External diseconomies of scale:

Rise in unit cost of production experienced by the first due to a growth in the industry

Higher in pat plu

• Demand for factors of production rises, resulting in higher input prices (raw materials), especially so if supply of factors are price-inelastic

Increased strain on infrastructure

• With the concentration and expansion of production, infrastructure will be stretched to its limit giving rise to congestion, overcrowding, pollution and other problems

Shifts in LRAC: Shift in LRAC can be explained by external economies and diseconomies of scale



SECTION 2: PROFIT OF FIRMS

Types of economic profit:

There are three types of profit – normal, supernormal and subnormal

- 1. Normal profit
- Minimum amount of profit a firm must acquire to induce the firm to remain in operation
- Where TR = TC and this is required to retain existing firms in the industry
- 2. Supernormal profit
- Level of profit above normal profit, attracts new firms into the industry, occurs when TR > TC
- 3. Subnormal profit
- Level of profit below normal profit, and forces the least efficient firms or marginal firms to leave the industry, occurs when TC > TR

PROFIT MAXIMISATION BASED ON MARGINALIST PRINCIPLES

Profits of a price taker:

Profit maximization occurs where MR = MC, where MC is rising



PRICE AND OUTPUT DETERMINATION IN COOPERATIVE MODELS

There are generally two types of cooperative models in an oligopoly

- 1. Cooperation among oligopolies where big firms find it in their interest to cooperate with rivals, such as research and development
- 2. Collusion among oligopolies collusion takes place where rival companies cooperate for their mutual benefit and it can either be explicit or tacit

The Cartel Theory (Explicit Collusion):

It is a formal price agreement or output agreement where sellers agree to fix prices through manipulating the supply to the market – acts like a monopoly

It sets the monopoly price, the monopoly output and also how the monopoly profits are shared. However there is a key drawback of cartels

- The tendency for members within the cartel to cheat on agreed production quotas
- This is because each member, under the cartel agreement, produces at an output level where • MR>MC
- Hence it is possible to increase profits by increasing output until MR=MC ٠

Collusion of any kind will work best when: There is a small number of participants, strong element of trust, similar cost structures, clear leader and the government does not intervene

Firms might follow the pricing policy of a recognized leader who might be dominant firm or any firm adept at reading market conditions. Price only charges if the rise in costs affects the profit margin o that of monepol64 of 7

EFFICIENCY CONCEPTS Allocative efficiency Seal

ore **Productive efficiency:** More like y to be productive efficient from firm's perspective due to intense competition and thus greater incentive to cut cost. From society's perspective, similar to monopoly

EQUITY, INNOVATION AND CONSUMER CHOICE

| Equity | Similar to monopolies. | Similar to monopolies. |
|------------|--|--|
| Innovation | Have both incentive and ability to innovate | HOWEVER, pace of |
| | Incentive: In competitive oligopolies, there is price rigidity and non-price competition is preferred | innovation can be slow in collusive oligopolies especially when there is a lack of competition from potential |
| | Ability: Oligopolies like monopolists are able to | entrants. |
| | retain supernormal profits in the long run and thus | |
| | have the means to finance expensive R&D work. | |
| Consumer | Consumers have a variety of products to choose | BUT, oligopolies spend a lot |
| Choice | from and also a pool of producers to buy from. | on branding & advertising, |
| | | giving illusion to consumers |
| | | they have a wider choice but |
| | | the products may be similar. |

COSTS AND BENEFITS OF PRICE DISCRIMINATION

Costs of Price Discrimination:

Loss of Consumer Surplus

The main cost to society from price discrimination is the loss of consumer surplus to the consumers

- 1st degree entire consumer surplus is transferred
- 2nd degree partial consumer surplus is lost
- 3rd degree consumers with more price-inelastic demand experience fall in consumer surplus

It exacerbates inequity, as more profits are concentrated at the hands of a few monopolies or oligopolies at the expense of consumers paying a higher price. Yet if they invest in R&D for innovation and thus lower cost, it might be beneficial to society

Firms can also practice predatory pricing to drive competitors out of business

Benefits of Price Discrimination:

Higher Output and Allocative Efficiency under First Degree Price Discrimination



The monopolist charges each additional unit the maximum price that buyers are willing to pay

- Marginal revenue will always be equal to the price received for the last unit, where P=AR=MR
- In the absence of price discrimination, monopolist profit-maximizing output is at Q₁ and there is allocative inefficiency since P₁>MC
- But with perfect price discrimination, firm's demand curve is now the MR curve (MR=AR), and output is now at Q₂ and there is AE since P₂=MC

Provision of Goods for Lower Income Consumers

Under third degree price discrimination, lower income consumer group belonging to more priceelastic demand will be able to consume a good or service which they could otherwise not afford

This helps to improve equity





Without government intervention, firm produces at MC=MR at price P_E and output Q_E and government can use MC-pricing and price will drop to P_{MC} and output increase to Q_{MC}

Limitations

- Firm makes a loss of $AP_{MC}CB$ and government has to step in to cover the loss by subsidy to ensure the firm stays in the market
- This causes strain on government budget and firm may become over-reliant and less efficient

Evaluation by suggesting other policies

- They might want to use AC-pricing where AC=AR where a docative inefficiency remains but price is lower and output is higher
- Introduce a two-part tariff consisting affixed minimum fee to cover the fixed costs and a per-unit charge which varies with the quantity of service consumed
- It is thus possible to the regulated firm a remain in operation without making a loss like MCpricing in corrective fixed charge and the form of subsidy

Prevention, Regulations and Deregulation of Monopolies:

Prevention/Prohibition

Laws are designed to prevent the formation of monopolies and they prohibit the monopolization of a market by any firm, limits mergers between firms in an industry, breaks up monopolies by reducing the patent period for a product

Regulation

Government allows privately owned monopolies to exist by subjecting them to market forces to be more efficient. But they empowers commissions to regulate them

Deregulation

Government may choose to deregulate the industry to subject the incumbent firms to competition to keep price more competitive and improve efficiency (change in market structure to oligopoly)