

# H2 ECONOMICS (9757)

## THEME 2: MARKETS

### 2.1 PRICE MECHANISM AND ITS APPLICATIONS

#### LAW OF DEMAND

THE LAW OF DEMAND STATES THAT IN A GIVEN TIME PERIOD, THE QUANTITY DEMANDED OF A PRODUCT IS INVERSELY RELATED TO ITS PRICE, CETERIS PARIBUS.

Derived from the Law of Diminishing Marginal Utility: **Beyond a certain point of consumption, as more and more units of a good or service are consumed, the additional utility a consumer derives from successive units decreases.**

DEMAND	QUANTITY DEMANDED
<b>Effective demand</b> is defined as the amount of good or service that consumers are both <b>willing</b> and <b>able to buy</b> at <b>each possible price</b> during a given period of time, ceteris paribus.	<b>Quantity demanded</b> refers to a <b>point</b> on the demand curve – the amount that consumers are willing and able to buy <b>at a given price</b> .
<ul style="list-style-type: none"> <li>Change in demand arises from <i>factors unrelated to the price of the good or service</i>.</li> <li><b>Shift of the demand curve</b> of the good or service</li> </ul>	<ul style="list-style-type: none"> <li>Change in quantity demanded is due to a <i>change in price of the good or service itself</i>.</li> <li><b>Movement along the demand curve</b> of the good or service.</li> </ul>

#### DETERMINANTS OF DEMAND

##### TIGERSIP

Tastes and Preferences

Income of the Consumers (normal vs. inferior goods)

Government Policies (grants, direct taxes)

Expectation of Price/Income/Others

Price of Related Goods (goods in joint vs. competitive demand)

Seasonal Factors

Interest Rates/Ease of Credit

Size and Composition of the Population

## LAW OF SUPPLY

THE LAW OF SUPPLY STATES THAT IN A GIVEN TIME PERIOD, THE QUANTITY SUPPLIED OF A PRODUCT IS DIRECTLY RELATED TO ITS PRICE, CETERIS PARIBUS.

Derived from Rising Marginal Cost of Production: As more units of a particular good is produced, the additional or marginal cost of production increases. This is because resources are not homogeneous – by increasing production of good A, increasingly less suited resources will be transferred over from the production of good B towards good A.

SUPPLY	QUANTITY SUPPLIED
<b>Supply</b> is defined as the amount of good or service that producers are both <b>willing</b> and <b>able to</b> offer for sale <b>at each possible price</b> during a given period of time, ceteris paribus.	<b>Quantity supplied</b> refers to a <b>point</b> on the supply curve – the amount that producers are willing and able to offer for sale <b>at a particular price</b> .
<ul style="list-style-type: none"> <li>Change in supply arises from <i>factors unrelated to the price of the good or service</i>.</li> <li><b>Shift of the supply curve</b> of the good or service</li> </ul>	<ul style="list-style-type: none"> <li>Change in quantity supplied is due to a <i>change in price of the good or service itself</i>.</li> <li><b>Movement along the supply curve</b> of the good or service.</li> </ul>

## DETERMINANTS OF SUPPLY

TIGERSO

State of Technology

Input Prices

Governmental Policies (indirect taxes, subsidies, regulations)

Expectations of prices

Price of Related Goods (goods in competitive vs. joint supply)

Number of Sellers in Market

Others (adverse weather conditions/political instability etc.)

## PRICE DETERMINATION

A **market** is any context where the exchange of goods and services take place.

EVENT	PRICE	QUANTITY
↑DD	↑P	↑Q
↓DD	↓P	↓Q
↑SS	↓P	↑Q
↓SS	↑P	↓Q

For simultaneous shifts, the effect on P and Q depend on the *relative extent* of shifts (whether one outweighs the other).

## RATIONAL DECISION-MAKING BY CONSUMERS AND PRODUCERS

Rational decision making by consumers and producers can be explained using the **marginalist principle**.

### APPROACH 1: MARGINAL BENEFIT AND MARGINAL COST

Price = MPC of *consumers*, MPB of *producers*

DD = MPB of *consumers* as the DD curve shows maximum price consumers are willing and able to pay for each unit of the good.

SS = MPC of *producers* as the SS curve shows the minimum price producers receive before they are willing and able to sell each unit of the good

As long as  $MPB > MPC$ , consumption/production of that unit of good will take place.

### APPROACH 2: CONSUMER AND PRODUCER SURPLUS

Alternatively, rational decision making by consumers and producers can be explained using the concept of **consumer and producer surplus**.

## 2013 A LEVEL ESSAY Q1

Economics assumes rational decision-making by consumers, firms and government.

(a) Explain what is involved in rational decision-making by consumers and by firms. [10]

INTRODUCTION	
BODY Rational Decision-Making By:	
Consumers	Firms
The self-interest of consumers revolves around maximizing the consumer surplus from the consumption of goods and services, given their <i>limited disposable income</i> .	The self-interest of firms revolves around maximizing the producer surplus derived from the sale of goods and services, given cost constraints.

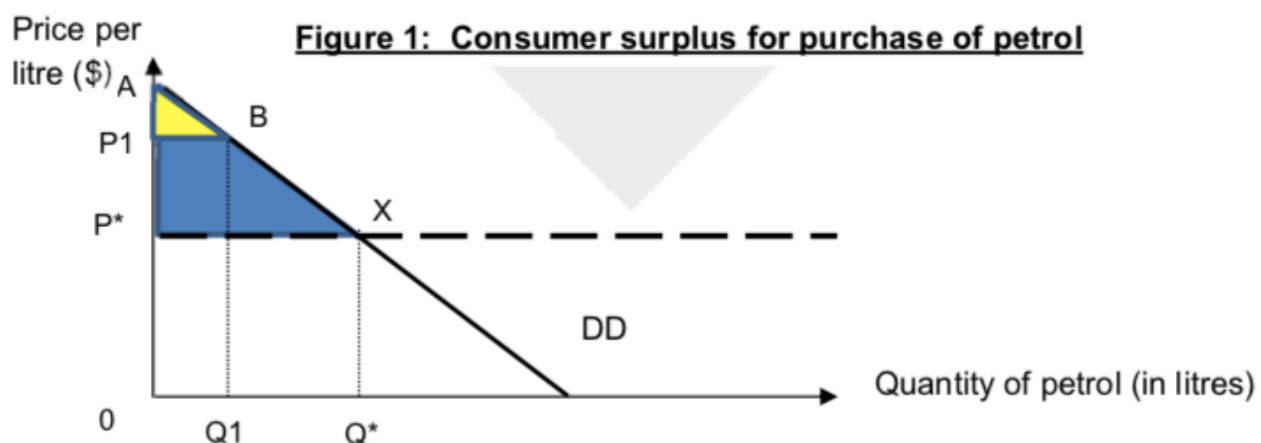
Thus, consumers are constrained by their <i>ability and willingness to pay for goods and services</i> .	Thus, producers need to decide <i>What to Produce, How to Produce and For Whom to Produce</i> , given the consumers' <i>ability and willingness to pay</i> .
<b>CONCLUSION</b>	

## INTRODUCTION

Key Words	In economics, the ultimate aim for <b>rational decision-making</b> entails maximising consumer surplus for the consumers and maximizing producer surplus for the firms (or producers).
Issue & Approach	<p>The process of rational decision-making by consumers and firms requires "thinking at the margin". That is, a rational economic agent would assess whether there is additional consumer surplus or producer surplus to be gained to decide whether to increase/decrease consumption or production.</p> <p>In part (a) of this essay, what is involved in rational decision-making for consumers and producers will be explained.</p>

## RATIONAL DECISION-MAKING BY CONSUMERS

- Rational consumers value each unit of good or service that they are able and willing to pay, according to their perceived satisfaction (utility) from consuming that unit of good or service. Based on this principle, the effective demand curve for a good can be constructed as shown in Fig 1 (DD). There are two criteria for effective demand for consumers. Ability to pay has to be backed by sufficient purchasing power, which is derived from limited disposable income. Willingness to pay depends on the consumers' tastes, preferences and degree of necessity for the good or service.
- Rational consumer decision-making can be analysed using the concept of consumer surplus. Consumer surplus refers to the difference between what consumers are willing to pay for a good and what they are actually charged for it.
- As long as the price consumers are prepared to pay exceed the price they are charged, additional consumer surplus is gained. Thus, they will continue to buy additional units as long as they gain additional consumer surplus. But as more units are bought, consumers will experience diminishing satisfaction (utility). Consequently, they are prepared to pay less and less for each unit. The rational consumers will stop buying until no further consumer surplus can be gained. Thus, the optimum level of satisfaction has been achieved.

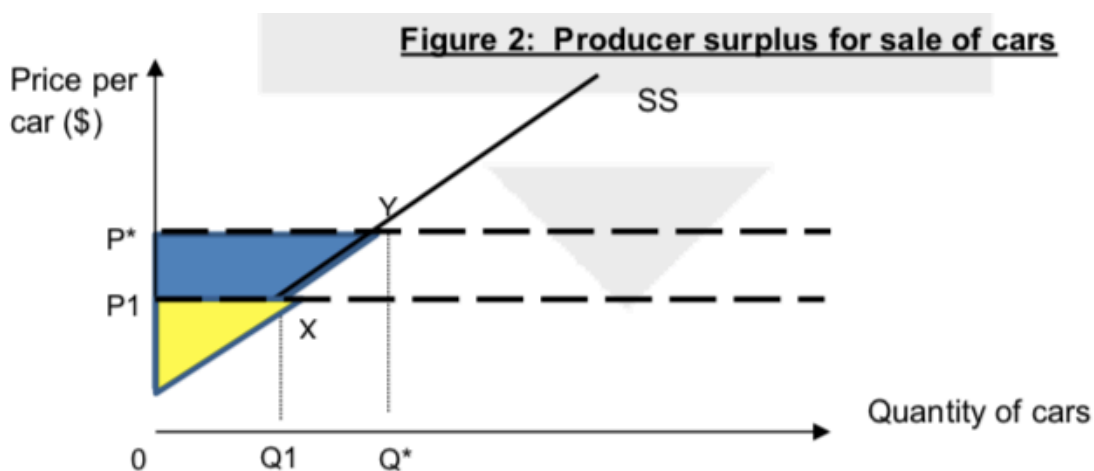


- The process of maximising consumer surplus can be shown graphically in figure 1 above. Let us take the case of a driver's annual purchases of petrol. The current price is  $OP^*$  per litre. If a driver were to use just  $OQ_1$  litres of petrol a year, he would use them for very important journeys, like for work, for which no convenient alternative exists. For such trips, he is prepared to pay up to  $\$OP_1$  per litre. For  $OQ_1$  litres, the additional consumer surplus is thus shown by area  $ABP_1$ .

- As the driver consumes more petrol, additional litres give less and less satisfaction as less important journeys are undertaken. His additional consumer surplus will reduce gradually. By the time, he gets to  $OQ^*$  litres, there is no additional consumer surplus to be gained.
- His total consumer surplus is at its maximum. He thus buys  $OQ^*$  litres of petrol. Therefore, consuming at  $OQ^*$  maximizes consumer surplus, which is represented by the area  $ABP^*$  under the demand curve (DD) and above the equilibrium price,  $OP^*$ .
- The above analysis for the rational decision-making by an individual consumer can be generalised for decision making for consumption of any goods in the context of a market.

## RATIONAL DECISION-MAKING BY PRODUCERS

- Rational producers set the minimum price for each unit of good or service that they are able and willing to sell, according to the additional (marginal) cost of from producing that unit of good or service. Based on this principle, the supply curve for a particular good can be constructed as shown in Fig 2 (SS).
- Rational producer decision-making can be analysed using the concept of producer surplus. Producer surplus is the difference between the actual price charged in the market and the price at which a producer is willing and able to put up the good/service for sale. The rational producers' aim is to maximise producer surplus, which will give them the incentive to produce those goods/services that can fetch higher prices.
- As long as the price producers are actually receiving from additional units of goods sold exceed the price at which a producer is willing and able to put up them for sale, additional consumer surplus is gained. Thus, producers will continue to sell additional units as long as they gain additional producer surplus. But as more units are produced and sold, producers will encounter rising additional (marginal) costs. Consequently, they are prepared to charge higher and higher price for additional units sold. The Rational producers will stop selling when no further producer surplus can be gained.



- The process of maximising producer surplus can be shown graphically in figure 2 above. Producer surplus is approximately represented by the area under the equilibrium price and above the supply curve.
- Figure 2 above shows that initially, consumers pay a price of  $OP_1$  for each car for  $OQ_1$  of cars. Car makers respond to this by channelling resources towards the production of  $OQ_1$  number of cars.
- For  $OQ_1$ , the additional producer surplus is thus shown by area  $OP_1X$ .
- When the price of cars is increased from  $OP_1$  to  $OP^*$  (say due to increase in demand for cars), profit-maximising producers respond to the price signal by channelling more resources towards the production of more cars to meet the shortfall.
- By responding to the higher price for cars to from  $OP_1$  to  $OP^*$ , the producer surplus increases, which is beneficial for the producers to area  $OP^*Y$ .
- By the time producers gets to produce  $OQ^*$ , there is no additional producer surplus to be gained. Their total consumer surplus is at its maximum.

- Therefore, producing at  $OQ^*$  (with price at  $OP^*$ ) maximizes producer surplus, which is represented by the area above the supply curve (SS) and below the equilibrium price,  $OP^*$ .
- The above analysis for the rational decision-making by producers of cars can be generalised for decision making for output of any goods in the context of a market.
- Assuming that producers are profit-maximising, they would use the **least cost method of production and be productive efficient**.

## CONCLUSION

As a result of **rational decision-making**, consumers and producers maximize their consumer surplus and producer surplus respectively.

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## THE LABOUR MARKET

**Derived** demand – demand for labour arises from the demand for final goods and services

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### SUPPLY DETERMINANTS

1. **Number of qualified people** e.g. larger pool of qualified people in a particular field =  $\uparrow$ SS of labour
2. **Non-wage benefits or costs of the job** e.g. working environment, job security, status, power, etc.
3. **Wages and non-wage benefits in alternative jobs**

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### DEMAND DETERMINANTS

1. **Demand for the final good** e.g.  $\uparrow$ DD for houses  $\rightarrow \uparrow$ P of houses  $\rightarrow \uparrow$ Qs of houses  $\rightarrow \uparrow$ DD bricklayers
2. **Changes in technology** e.g. use of computer controlled machine i.e. automation  $\uparrow$ DD for high-skilled technicians, but  $\downarrow$ DD for jobs that can be automated by machines

## PRICE ELASTICITY OF DEMAND

$$PED = \frac{\frac{\Delta Q_d}{Q_d} \times 100\%}{\frac{\Delta P}{P} \times 100\%}$$

The PED measures the **degree of responsiveness of quantity demanded of a good to a change in its price, ceteris paribus.**

### MAGNITUDE OF PED

#### 1. PED > 1

- Price elastic demand
- Change in price leads to a more than proportionate change in quantity demanded

#### 2. PED < 1

- Price inelastic demand
- Change in price leads to a less than proportionate change in quantity demanded

#### 3. PED = 1

- Unitary price elastic demand
- Change in price is **always** proportionate to the change in quantity demanded
- Depicted by a rectangular hyperbola demand curve (rectangular hyperbola = hyperbola with rectangular asymptotes)

#### 4. PED = ∞

- Perfectly price elastic demand
- A change in price leads to a change in quantity demanded by an **infinite** amount
- Depicted by a horizontal straight line demand curve
- e.g. goods where **perfect substitutes** exist: two identical vending machines placed side by side – if machine A ↑P of drinks by even a small amount, ↓Q<sub>d</sub> of machine A's drinks will drop to zero.

If the co-efficient of PED = infinity, then demand is perfectly elastic – there is one price at which consumers are prepared to pay

- If demand for a product is **perfectly elastic**, a change in market supply (shown on the right as an outward shift of supply) will not lead to any change in the equilibrium price. This demand curve applies to highly **competitive markets** where no supplier has any "pricing power"

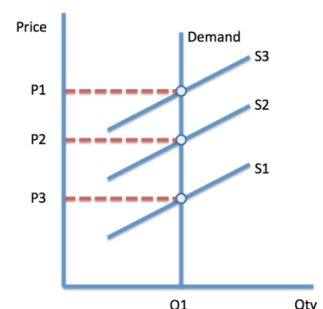


#### 5. PED = 0

- Perfectly price inelastic demand
- A change in price will **not** lead to any change in quantity demanded
- Depicted by a vertical straight line demand curve
- e.g. goods where **no substitutes** exist: drugs (heroin, etc.), insulin injections (to a diabetic patient), essential food items – if ↑P of heroin, Q<sub>d</sub> remains constant due to its addictive nature + no good substitutes exist

If the co-efficient of price elasticity of demand = zero, demand is perfectly inelastic i.e. demand does not vary with a change in price

- A perfectly inelastic demand curve is an extreme case for it implies that consumers are willing and able to pay any price for the product. If supply falls, equilibrium market price can rise without any contraction in the quantity demanded



*Note: Cases 4 and 5 are **highly unlikely** due to ceteris paribus assumption not holding true for most real life cases.*



## DETERMINANTS OF PED

### 1. Number and Closeness of Substitutes

↑**Availability and closeness of substitutes** → ↑**PED** as consumers could easily switch to lower priced substitutes.  
e.g. 'shoes' vs. 'Nike shoes'

### 2. Proportion of Consumer's Budget

↑**Share of consumer's budget** → ↑**PED** as a 1% increase in price results in a more substantial impact on remaining budget for other goods i.e. ↑opportunity cost.

### 3. Adjustment Time Period

↑**Time to adapt to a new price change** → ↑**ability to substitute away relatively higher priced products towards lower priced substitutes** → ↑**PED** as consumers take time to find suitable substitutes and implement changes in their consumption patterns.

## TOTAL REVENUE

$$TR = P \times Q$$

- For **PED < 1**, a rise in price will lead to a less than proportionate fall in quantity. Hence, TR increases and vice versa.
- For **PED > 1**, a rise in price will lead to a more than proportionate fall in quantity. Hence, TR decreases and vice versa.
- For **PED = 1**, a rise in price will lead to a proportionate fall in quantity. Hence, TR remains unchanged.



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## MARKETING STRATEGIES

### PRICE WAR

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For goods whose demand is price elastic, the firm is likely to lower its price in order to increase TR.

- This may trigger a price war with competitors if done continuously
- Detrimental and unsustainable to all firms in the market since there is a limit to how long a firm can keep lowering her price.

### PRODUCT DIFFERENTIATION

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#### 1. Product Development

Real differences in inherent characteristics of the product/service which are different from that of rival firms e.g. better services, new features, higher quality.

#### 2. Product Promotion

Create perceived differences between the product and its substitutes e.g. advertising, celebrity endorsement, expert reviews etc.

As a result, firms can charge  $\uparrow P$  without suffering significant  $\downarrow Q_d$ .

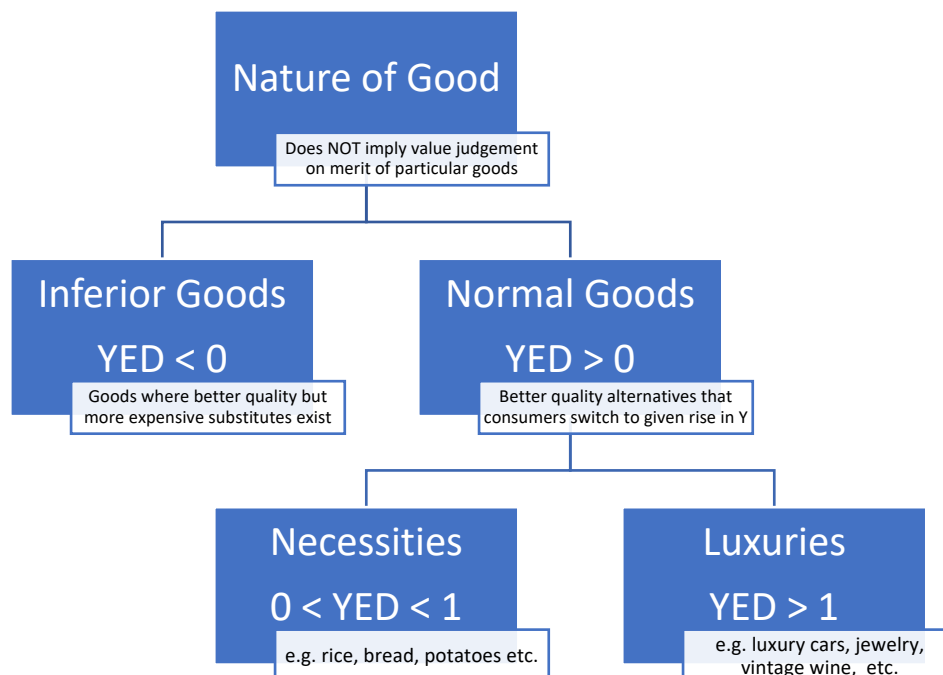
## INCOME ELASTICITY OF DEMAND

$$YED = \frac{\frac{\Delta Qd}{Qd} \times 100\%}{\frac{\Delta Y}{Y} \times 100\%}$$

The YED measures the **degree of responsiveness of demand for a good to a change in consumer income, ceteris paribus.**

*Note: YED measures extent of shift in the demand curve, not just Qd.*

## SIGN AND MAGNITUDE OF YED



## DETERMINANTS OF YED

1. **Degree of Necessity**  
Necessities tend to have a lower YED than luxuries.
2. **Income Levels**  
Low income groups and high income groups might have different perceptions of 'necessities' and 'luxuries'.
3. **Cultural Considerations**  
e.g. for Asian countries, rice is considered a staple/necessity. Hence, the demand for rice by Asians is relatively price inelastic compared to consumers from other parts of the world.

## CROSS ELASTICITY OF DEMAND

$$XED = \frac{\frac{\Delta Q_x}{Q_x} \times 100\%}{\frac{\Delta P_y}{P_y} \times 100\%}$$

The XED measures the **degree of responsiveness of the demand for one good to a change in price of another good, ceteris paribus**.

### SIGN AND MAGNITUDE OF XED

1. **XED > 0**
  - The two goods are **substitutes**
  - ↑closeness of substitutes → ↑XED
2. **XED < 0**
  - The two goods are **complements**
  - ↑closeness of complements → ↓XED
3. **XED = 0**
  - Independent of each other

## PRICE ELASTICITY OF SUPPLY

$$PES = \frac{\frac{\Delta Q_s}{Q_s} \times 100\%}{\frac{\Delta P}{P} \times 100\%}$$

The PES measures the **degree of responsiveness of quantity supplied of a good to a change in its price, ceteris paribus.**

### MAGNITUDE OF PES

#### 1. $PES > 1$

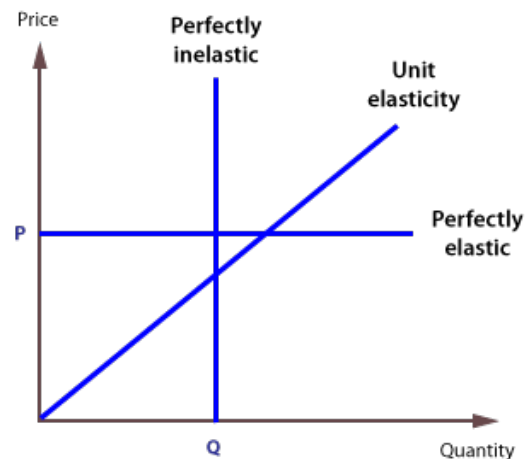
- Price elastic demand
- Change in price leads to a more than proportionate change in quantity supplied

#### 2. $PES < 1$

- Price inelastic demand
- Change in price leads to a less than proportionate change in quantity supplied

#### 3. $PES = 1$

- Unitary price elastic demand
- Change in price is **always** proportionate to the change in quantity supplied



*Note: supply curves for  $PES > 1$  always cuts the y-axis, while supply curves for  $PES < 1$  always cuts the x-axis.*

Examples of perfectly inelastic supply:

- Goods in fixed supply: Picasso paintings, vintage cars etc.
- Singapore's COEs (government decides quota of certificates)

### DETERMINANTS OF PES

#### 1. Availability of Spare Capacity

- Unused FOPs
- $\uparrow$  spare capacity  $\rightarrow \uparrow$  ability to increase output without a substantial rise in costs  $\rightarrow \uparrow$  production more quickly in response to a rise in price  $\rightarrow \uparrow PES$

#### 2. Level of Stocks/Ease of Accumulating Stocks

- Stocks: the goods or merchandise kept on the premises of a shop or warehouse and available for sale or distribution.
- If firms can easily store finished goods at low cost e.g. non-perishables, any sudden increase in demand can be met by running down stocks while any sudden fall in demand can be tackled by storing up goods  $\rightarrow \uparrow PES$

#### 3. Type of Industry

- Affects the length and complexity of production process (and subsequently ease of  $\uparrow Q_s$ )
- e.g. agricultural products may take several years to make substantial changes to quantity supplied
- e.g. producers of crude oil would have to spend substantial amount of time to explore oil sources, set up drilling facilities and obtain various approval etc. before crude oil can be extracted

#### 4. Factor Mobility

- $\uparrow$  factor mobility  $\rightarrow \uparrow$  ease of increasing input  $\rightarrow \uparrow$  ease of increasing output
- Geographical mobility = ease with which factors can be physically transferred from place to place. Enhanced if production areas are in close proximity.
- Occupational mobility = easy with which a producer is able to transfer his workers from the production of one good to another, irrespective of location. Enhanced if workers possess a variety of skills required for both products which are similar in nature.

#### 5. Length of Adjustment Time Period

- $\uparrow$  time period  $\rightarrow \uparrow$  ability to adjust to changes to price  $\rightarrow \uparrow$  PES

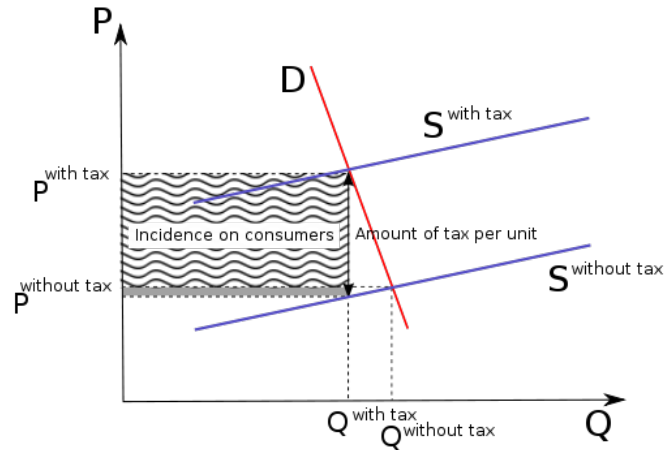
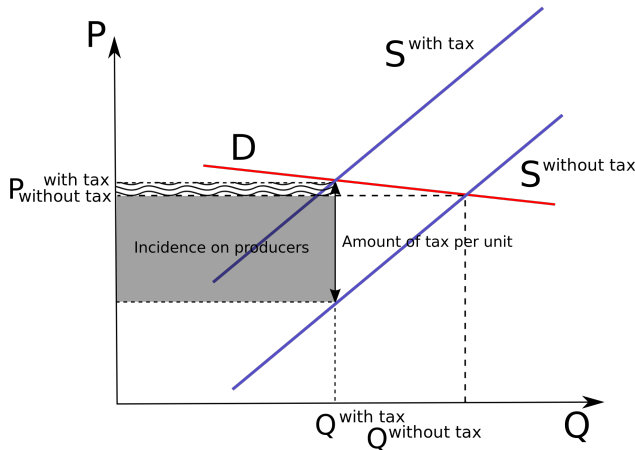
### LIMITATIONS OF ELASTICITY CONCEPTS

- 'ceteris paribus' condition is assumed, but other factors can influence the demand and supply of the good as well.
- Much of the elasticity data obtained are historical estimates of consumer behaviour.

### TAX INCIDENCE

Tax incidence = the eventual distribution of the tax burden between the producer and the consumer.

- The government gets to collect the full value of the tax levied
- The side of the market that is more responsive to price increase will find it easier to pass more of the tax burden to the other side of the market.
- Specific tax = fixed amount per unit of the taxed good, irrespective of its price
- Ad valorem tax = fixed percentage of the price of the good.



## VJC PRELIM 2016 Q2

Amidst rising income, the Malaysian government implemented Goods and Services Tax (GST), which is a broad-based 6 percent tax on goods and services.

Source: Adapted from *The Straits Times* and *The Star Online*, 2015

Assess the impact of the abovementioned changes on the market for different goods in Malaysia. [25]

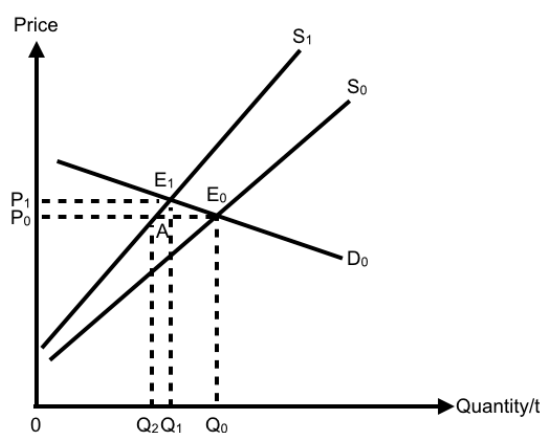
## INTRODUCTION

To analyse the impact of the abovementioned changes on the market for different goods, I would make use of the demand and supply model along with elasticity concepts to aid in the analysis of what happens to the markets in terms of price, quantity, and expenditure. The impact on different markets would differ based on the type of goods (luxury, necessities and inferior goods).

## BODY:

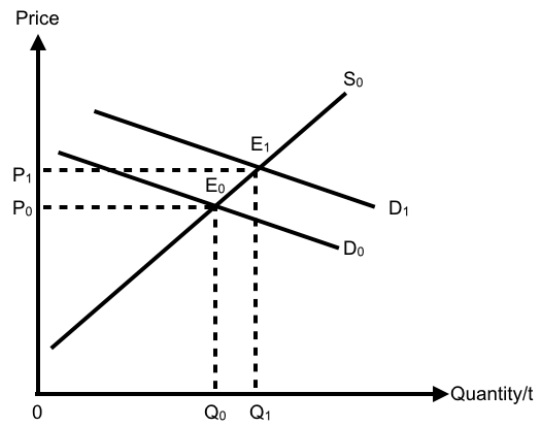
**Market 1: Branded bags (Luxury good)**

When GST is implemented, it will affect the market through the supply curve. GST will cause the marginal cost of production for branded bags to increase, represented by a leftward shift of the supply curve, which will cause equilibrium price to increase and equilibrium quantity to fall. The impact on total expenditure will depend on the price elasticity of demand for branded bags. The demand for branded bags is price elastic as it takes up a relatively huge proportion of consumers' income.



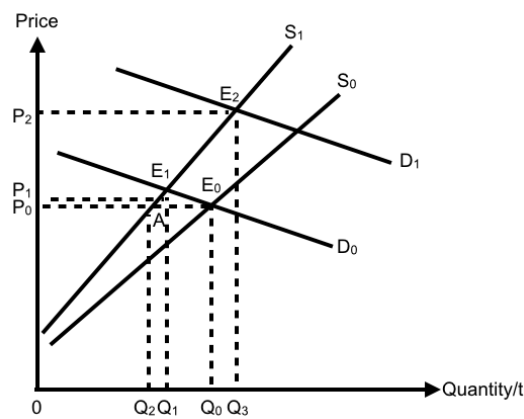
The initial equilibrium was at point  $E_0$ , where equilibrium price was  $P_0$  and quantity  $Q_0$ . Implementation of GST will cause supply to shift leftwards from  $S_0$  to  $S_1$ . At the initial equilibrium price of  $P_0$ , quantity demanded is  $Q_0$  and quantity supplied is  $Q_2$ , resulting in a shortage of  $Q_0Q_2$ . Frustrated consumers will be willing to pay higher prices and quantity demanded will fall, as fewer consumers are willing and able to pay a higher price. This price signal to the producers will cause them to increase the quantity supplied. Quantity demanded will fall and quantity supplied will increase until demand meets supply again at point  $E_1$ , where equilibrium price is  $P_1$  and quantity is  $Q_1$ . Given the price change of  $P_0P_1$ , we can see from the diagram that there is a more than proportionate change in quantity demanded of  $Q_0Q_1$ . The decrease in total expenditure resulting from a fall in quantity demanded ( $Q_1AE_0Q_0$ ) is greater than the increase in total expenditure resulting from an increase in price ( $P_1P_0AE_1$ ). Thus, total expenditure has fallen.

When there is an increase in income, it will lead to a more than proportionate increase in demand for branded bags, which are items that Malaysian consumers can do without during periods of falling income.



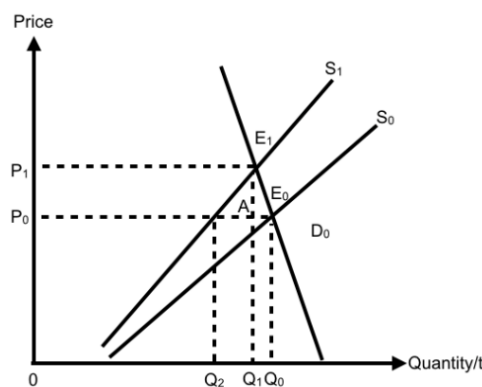
Initial equilibrium is at point  $E_0$ , with equilibrium price  $P_0$  and quantity  $Q_0$ . An increase in demand is represented by a rightward shift of the demand curve from  $D_0$  to  $D_1$ . This will cause a shortage and upward pressure on price, causing price to increase to  $P_1$  and quantity to  $Q_1$ . The resultant impact will be an increase in total expenditure from  $OP_0E_0Q_0$  to  $OP_1E_1Q_1$ .

Implementation of GST has caused expenditure to fall while increase in income has caused expenditure to rise. If the extent of increase in demand (from  $D_0$  to  $D_1$ ) is greater than the extent of fall in supply (from  $S_0$  to  $S_1$ ), then we will see an increase in total expenditure from  $OP_0E_0Q_0$  to  $OP_2E_2Q_3$ .



## Market 2: Canned Food (Necessity good)

Similar to the market for branded bags, implementation of GST will cause the marginal cost of production for canned food to increase, represented by an upward shift of the supply curve, which will cause equilibrium price to increase and equilibrium quantity to fall. The impact on total expenditure will depend on the price elasticity of demand for canned food. Canned food has limited substitutes that offer as much convenience and therefore, its demand is price inelastic.

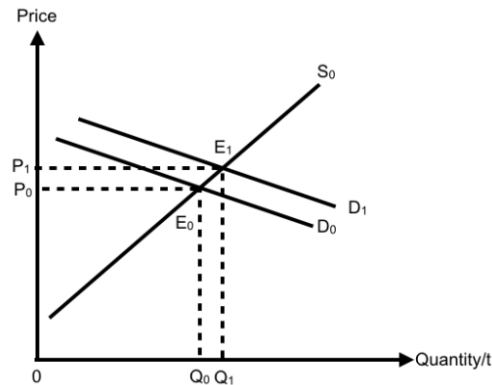


The initial equilibrium was at point  $E_0$ , where equilibrium price was  $P_0$  and quantity  $Q_0$ . Implementation of GST will cause supply to shift leftwards from  $S_0$  to  $S_1$ . There will be a shortage of  $Q_0Q_2$  and prices will increase from  $P_0$  to  $P_1$ . Given the price change of



$P_0P_1$ , we can see from the diagram that there is a less than proportionate change in quantity demanded of  $Q_0Q_1$ . The decrease in total expenditure resulting from a fall in quantity demanded ( $Q_1AE_0Q_0$ ) is smaller than the increase in total expenditure resulting from an increase in price ( $P_1P_0AE_1$ ). Thus, total expenditure has risen.

When there is an increase in income, it will lead to a less than proportionate increase in demand for canned food, which is deemed a necessity by Malaysians.

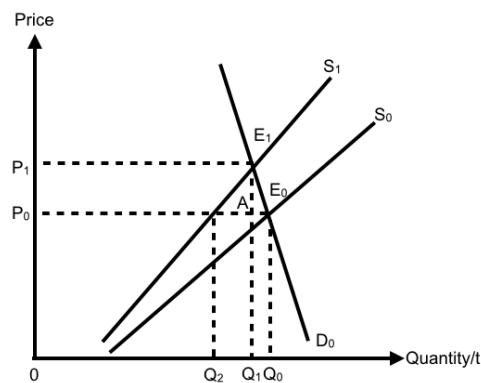


Initial equilibrium is at point  $E_0$ , with equilibrium price  $P_0$  and quantity  $Q_0$ . An increase in demand is represented by a rightward shift of the demand curve from  $D_0$  to  $D_1$ . This will cause a shortage and upward pressure on price, causing price to increase to  $P_1$  and quantity to  $Q_1$ . The resultant impact will be an increase in total expenditure from  $OP_0E_0Q_0$  to  $OP_1E_1Q_1$ .

The combined effect of GST and increase in income on the market for canned food is that total expenditure will definitely increase.

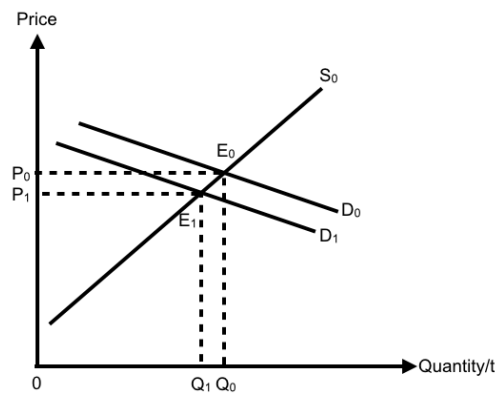
### Market 3: Non-smart phones/TVs (Inferior good)

Implementation of GST will cause the marginal cost of production for non-smart phones/TVs to increase, represented by an upward shift of the supply curve, which will cause equilibrium price to increase and equilibrium quantity to fall. The impact on total expenditure will depend on the price elasticity of demand for non-smart phones/TVs. Non-smart phones/TVs takes up a relatively smaller proportion of consumers' income so the demand is relatively price inelastic.



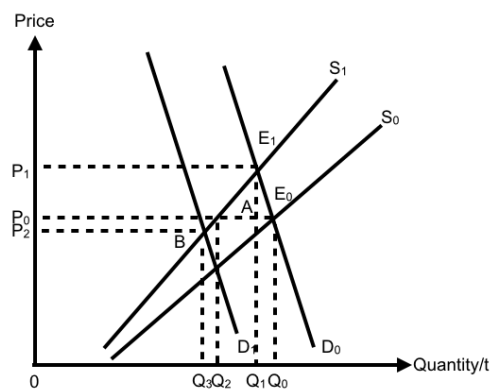
The initial equilibrium was at point  $E_0$ , where equilibrium price was  $P_0$  and quantity  $Q_0$ . Implementation of GST will cause supply to shift leftwards from  $S_0$  to  $S_1$ . There will be a shortage of  $Q_0Q_2$  and prices will increase from  $P_0$  to  $P_1$ . Given the price change of  $P_0P_1$ , we can see from the diagram that there is a less than proportionate change in quantity demanded of  $Q_0Q_1$ . The decrease in total expenditure resulting from a fall in quantity demanded ( $Q_1AE_0Q_0$ ) is smaller than the increase in total expenditure resulting from an increase in price ( $P_1P_0AE_1$ ). Thus, total expenditure has risen.

When there is an increase in income, it will lead to fall in demand for non-smart phones/TVs, which is deemed an inferior good by Malaysians.



Initial equilibrium is at point  $E_0$ , with equilibrium price  $P_0$  and quantity  $Q_0$ . A decrease in demand is represented by a leftward shift of the demand curve from  $D_0$  to  $D_1$ . This will cause a surplus and downward pressure on price, causing price to decrease to  $P_1$  and quantity to  $Q_1$ . The resultant impact will be a decrease in total expenditure from  $OP_0E_0Q_0$  to  $OP_1E_1Q_1$ .

Implementation of GST has caused expenditure to rise while increase in income has caused expenditure to fall. If the extent of decrease in demand (from  $D_0$  to  $D_1$ ) is bigger than the extent of fall in supply (from  $S_0$  to  $S_1$ ), then we will see an increase in total expenditure from  $OP_0E_0Q_0$  to  $OP_2BQ_3$ .



## CONCLUSION

Summary/Stand: The impact on the different markets will differ, depending on price and income elasticity of demand of the various goods. With more information about the impact on supply due to GST and impact on demand due to increase in income, we will then be able to draw a more substantial conclusion about the extent of change in revenue.

Something Special: With the implementation of GST, we would see that the standard of living for the lower income might decrease. For this group of people, the Malaysian government could implement other policies like grants to aid this group of consumers, in order to maintain their current standard of living. This is especially important for Malaysia because there might exist a large group of people who will be affected quite substantially due to the changes.

## DHS PRELIM 2016 Q1

In 2014, global GDP growth was 2.6%. Productivity in the Singapore hotel industry grew at a compound annual rate of 5.8% from 2010 to 2014.

- Explain how elasticities of demand can assist in understanding the effect of each of these changes on the hotel occupancy of luxury and budget hotels in Singapore. [12]
- In addition to the above events, Chinese tourists cancelled trips to Singapore following a serious air traffic accident in 2014. Discuss how the above developments would affect the revenue of luxury and budget hotels in Singapore. [13]

## PART (A)

### INTRODUCTION

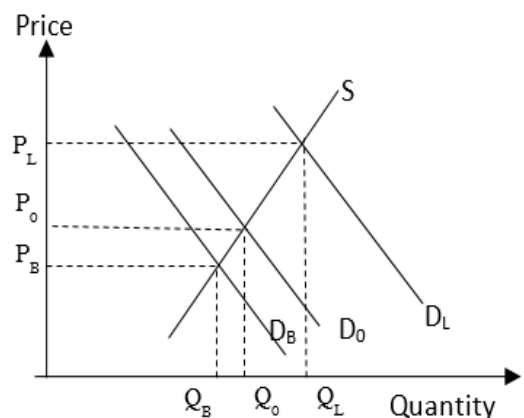
- Context:** Global GDP growth was 2.6% and productivity in the Singapore hotel industry grew at a compound annual rate of 5.8% from 2010 to 2014.
- Address the question:** This rise in income will impact on luxury and budget hotels differently **depending on their YED sign and value while the rise in productivity will increase the supply for both and the extent of the change in occupancy rate which is the output of these hotels will depend on the value of PED.**

### DEVELOPMENT

1: Explain how YED is used with a rise in GDP to explain the impact on Q.

- Define YED.
- Explain YED is useful to explain **whether demand will rise or fall and the extent of change for luxury and budget hotel when there is a rise in income.**
- Luxury hotels (Justify  $YED > 1$ ):  $\uparrow Y \rightarrow \uparrow \uparrow DL \rightarrow \uparrow \uparrow PL + \uparrow \uparrow QL$
- Budget hotels (Justify  $YED < 0$ ):  $\uparrow Y \rightarrow \downarrow DB \rightarrow \downarrow PB + \downarrow QB$   
(Extent of fall depends on level of income)

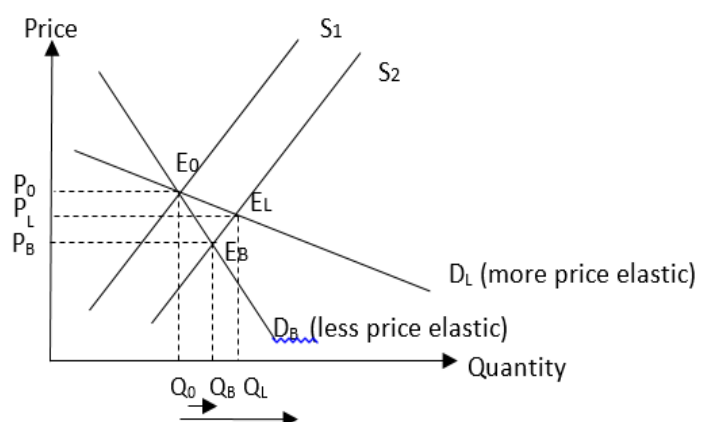
*Note: Justify YED value with nature of goods & level of income and not proportion of income!*



2: Explain how PED is used with a rise in productivity to explain the impact on Q.

- Define PED.
- Explain PED is useful to explain **the extent of the rise in Q when there is a rise in productivity that reduces the cost of production and increases SS.**
- Luxury hotels (Justify  $PED > 1$ ):  $\uparrow SS \rightarrow \rightarrow \downarrow PL + \uparrow \uparrow QB$
- Budget hotels (Justify  $PED < 1$ ):  $\uparrow SS \rightarrow \rightarrow \downarrow \downarrow PB + \uparrow \uparrow QB$

*Note: Justify PED value based on proportion of income. If it's based on number of substitutes, the value may be reverse (DHS answers).*



### CONCLUSION

- Both YED and PED are useful in assisting in understanding the effect of a rise in GDP and productivity on the hotel occupancy of luxury and budget hotels in Singapore.
- YED helps to understand the direction and extent of change in occupancy when GDP increases.

- PED on the other hand helps to understand the extent of the rise in occupancy when there is a rise in supply due to a rise in productivity.

## PART (B)

**Context:** In addition to the above events, Chinese tourists **cancelled trips to Singapore following a serious air traffic accident** in 2014.

**Address the question:** All these 3 developments will affect the **revenue (PxQ) of luxury and budget hotels** in Singapore.

	Upscale hotel market: MBS, W Hotel, RWS	Budget hotel market: Fragrance Hotel, Hotel 81
Impact on demand	<ol style="list-style-type: none"> <li>Increasing income: higher purchasing power for normal good <ul style="list-style-type: none"> <li>Upscale hotel market will see a more than proportionate increase in demand (<math>YED &gt; 1</math>)</li> <li>However, the extent of increase in demand for luxury market is dependent on the income level of consumers. The higher the income level, the more luxury hotels are perceived to be a necessity.</li> <li>The growing middle class in Asia and Southeast Asia countries will still view luxury hotel as a luxury good. The increase in income growth is a recent phenomenon, thus the consumption of luxury goods is not part of their daily lifestyle.</li> </ul> </li> <li>Falling taste and preference for tourists to travel to Singapore <ul style="list-style-type: none"> <li>MH370 → consumers derive lower utility from air travel, thus they also consume less hotel services</li> </ul> </li> </ol> <p>Overall:  SR → demand might fall as the fear of air travel outweighs the rising income effect.  LR → with time, consumers might slowly forget about the tragic accident and regain confidence in air travelling again, thus increase their consumption of hotel rooms.</p>	<ol style="list-style-type: none"> <li>Increasing income: higher purchasing power for normal good <ul style="list-style-type: none"> <li>Budget hotel market might see a fall in demand as it is considered an inferior good (<math>YED &lt; 0</math>)</li> <li>However, this might not be true. As income in developing countries in Southeast Asia grow (e.g Myanmar), they will consume more travel packages, including budget hotels in Singapore. Budget hotels in the POV of tourists from developing Southeast Asian countries are viewed as normal goods.</li> </ul> </li> <li>Falling taste and preference for tourists to travel to Singapore <ul style="list-style-type: none"> <li>MH370 lowers consumers utility from air travel, as such they also consume less hotel services</li> </ul> </li> </ol> <p>Overall:  Demand for budget hotel will fall significantly The increase in income growth of Southeast Asian tourists might not be sufficiently large to overcome the falling demand from China.</p>
Impact on supply	<ol style="list-style-type: none"> <li>Increasing supply (overall): rising productivity will lead to lowering of marginal COP <ul style="list-style-type: none"> <li>Affects the total revenue to fall, <math>PED &lt; 1</math>: substitutes available for hotels like Airbnb, mid-tier hotels</li> <li>However, PED for upscale hotel are more inelastic: alternatives like Airbnb</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>Increasing supply (overall): rising productivity will lead to lowering of marginal COP <ul style="list-style-type: none"> <li>Affects the total revenue (TR will increase), <math>PED &gt; 1</math>: substitutes available for hotels like hostels</li> <li>Budget hotels are more easily substitutable away with hostels. Demand is more price elastic due to consumers are more willing to</li> </ul> </li> </ol>

	<p>and mid-tier hotels isn't a strong substitute for upscale hotel, whose consumers prefer the amenities (gym and pool) and personalised service (butler) available.</p> <ul style="list-style-type: none"> <li>• Total revenue will fall as the increase in <math>Q_{dd}</math> is less than proportionate given a fall in price: <math>PED &lt; 1</math></li> </ul>	<p>pay a lower price to stay in a hostel and does not mind using a common bathroom and entertainment room.</p>
Net impact on equilibrium price, qty and total revenue	<p><b><u>SR:</u></b> demand has decreased but supply has increased</p> <ul style="list-style-type: none"> <li>• Equilibrium price will decrease, however, impact on equilibrium qty depends on the relative magnitude of decrease in demand and increase in supply</li> <li>• The fall in demand is likely to outweigh the increase in supply → consumers with rising income and the fear for flying are more incentivised to cancel their trips → total revenue will fall</li> </ul> <p><b><u>LR:</u></b> demand and supply have increased</p> <ul style="list-style-type: none"> <li>• Equilibrium qty will increase, however, impact on equilibrium price depends on the relative magnitude of increase in demand and supply</li> <li>• The increase in demand is likely to outweigh the increase in supply → total revenue will increase</li> </ul>	<p>Demand has decreased but supply has increased</p> <ul style="list-style-type: none"> <li>• Equilibrium price will decrease, however, impact on equilibrium qty depends on the relative magnitude of decrease in demand and increase in supply</li> <li>• The increase in income growth among consumers from developing countries is significant, they do not see budget hotel in Singapore as inferior good but normal good, able to cushion the overall fall in demand → total revenue will increase</li> </ul>

## 2.2 FIRMS AND DECISIONS

### COSTS AND PROFITS

**Explicit Costs** are production costs which are explicitly incurred – payment to factors not owned by the firm.

e.g. wages, interest on borrowed capital and charges on plants/equipment.

**Implicit Costs** are opportunity costs on factors owned by the firm. The firm does not have to pay out money to use them.

e.g. rent a firm *could have* received by renting them out to another firm.

$$\text{ACCOUNTING PROFIT} = \text{TR} - \text{EXPLICIT COSTS}$$

$$\text{ECONOMIC PROFIT} = \text{TR} - \text{EXPLICIT COSTS} - \text{IMPLICIT COSTS}$$

### PROFIT-MAXIMISATION

**Standard economic theory of the firm assumes the firm's objective is profit-maximisation / loss-minimisation.**

**MR = MC** determines level of output and price at which  $\pi$  is maximised.

	Amount of Profits	Type of Profits
TR > TC	$\pi > 0$	Supernormal
TR < TC	$\pi = 0$	Normal
TR = TC	$\pi < 0$	Subnormal

#### Limitations

- Firms lack sufficient or accurate information to set prices at profit maximising level.
- Pricing decisions are often made based on the firm's evaluation of estimated demand for a good or service, rather than based on precise information on the actual demand for the good or service.
- Even if precise information on actual market demand is available:
  - They are historical in nature.
  - They are quickly outdated and become unavailable.

### ALTERNATE OBJECTIVES/THEORIES OF FIRM

#### PROTECT OR GAIN MARKET SHARE

##### 1. Entry Deterrence

- Prevent potential rival firms from entering the industry
- Firms might deliberately charge lower prices or carry out extensive product differentiation to strengthen their brand → ↑ barriers to entry

##### 2. Market Share Dominance

- Drive existing rival firms out of the industry
- Firms might deliberately charge lower prices or carry out extensive product differentiation to strengthen their brand
  - Predatory pricing
  - Can be employed if the firm has sufficient past profits to cope with possible losses incurred in the process or enjoys economies of scale as a result of its larger size

## MANAGERIAL THEORIES

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### Revenue-Maximising

- Hard to collect MC, MR data. → difficult to find profit max point → aim to ↑ sales to ↑ revenue.
- Managers might focus on increased sales rather than profit maximisation because wages/salaries are often linked to sales target, particularly for sales managers and commission-based employees. Sales can also justify a larger workforce, bringing them power or prestige.

### Profit-Satisficing

- Only in the context of separation of ownership (principals) from control (agents)
- Managers of the firms may not have the same objectives as the owners of the firm.
- Shareholders → max profits, while managers → max personal utility.
- Managers might be concerned with discretionary expenditure like fringe benefits. → result in higher costs and causing profit to be less than that of profit maximisation
- Managers might also content with a profit-satisficing level of output to avoid undue stress or perceived challenges from expansion

## BEHAVIOURAL THEORIES OF FIRM

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### Profit-Satisficing

- Large firms are complex organisations made of many decision makers, many of whom have different objectives
  - Marketing manager might focus on sales, while production manager might want improvement in working conditions.
  - Environmentalists concerned with sustainable production that does not harm environment
- Firms aim for a satisfactory level of profit and pursue other objectives at the same time.
- Firms might adopt standard operating procedures to help in making decisions, which arise as a compromise among competing points of view and once adopted, are changed only reluctantly.
  - However, these compromises will persist for long periods of time despite changes in conditions affecting the firm → e.g. a profit maximising strategy might not remain viable after conditions changed

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## PRODUCTION COSTS IN THE SHORT RUN

### SHORT RUN VS LONG RUN

**Short Run** is a time period during which there is at least one fixed factor.

**Long Run** is a time period long enough for all factors to be varied.

**Variable Factors** are factors of production whose quantities can be changed within the time period to change output.

**Fixed Factors** are factors of production whose quantities cannot be changed within the time period to change output. The costs will stay the same regardless of output.

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### LAW OF DIMINISHING MARGINAL RETURNS

THE LAW OF DIMINISHING MARGINAL RETURNS STATES THAT AS MORE AND MORE OF A VARIABLE FACTOR ARE USED TOGETHER WITH A FIXED FACTOR OF PRODUCTION, THE MARGINAL PRODUCT OF THE VARIABLE INPUT WILL INITIALLY INCREASE BUT EVENTUALLY FALL.

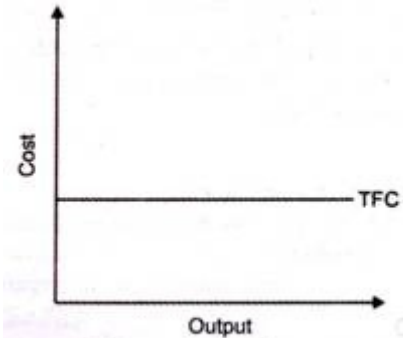
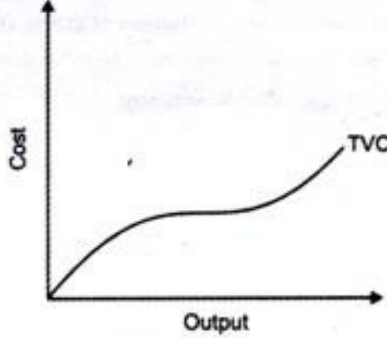
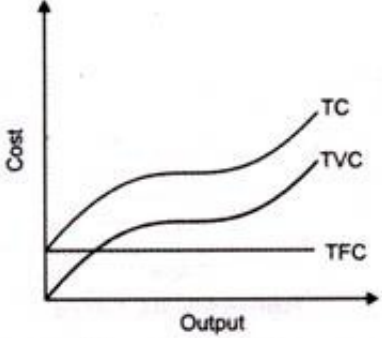
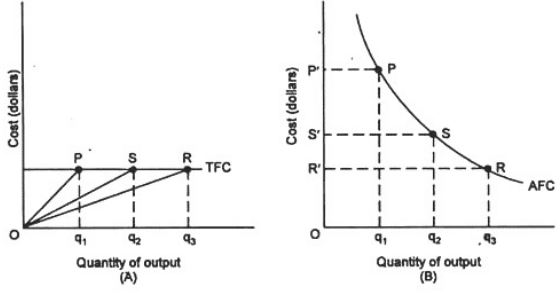
$$\text{Marginal Product, } MP = \frac{dTP}{dVF}$$

**Before Overcrowding Sets In**

- $MP \uparrow$  as  $VF \uparrow$  (gradient of TP-VF graph becomes steeper)
- Level of specialisation increase
- Increased utilization of resources

**After Overcrowding Sets In**

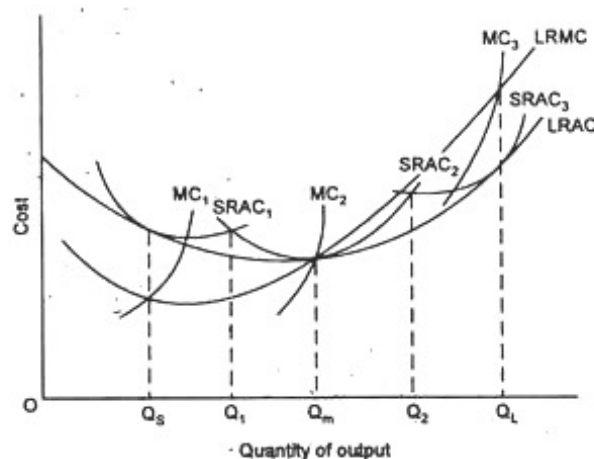
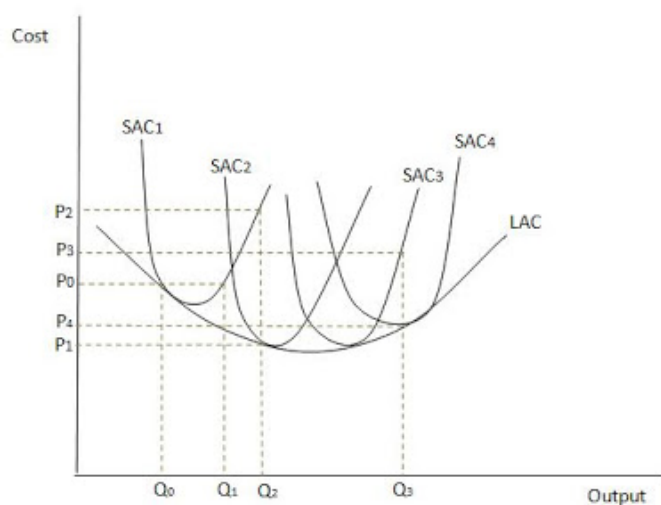
- $MP \downarrow$  (but still +ve) as  $VF \uparrow$  (gradient of TP-VF graph becomes gentler)
- Overutilization of resources and congestion

<p>Total Fixed Cost (TFC)</p>	<ul style="list-style-type: none"> <li>• Cost of fixed factor</li> <li>• Does not vary with level of output i.e. unavoidable cost, indirect cost and overhead cost</li> <li>• TFC still incurred when <math>Q = 0</math></li> <li>• e.g. rental costs of buildings; the costs of leasing or purchasing capital equipment; the annual business rate charged by local authorities; the costs of employing <i>full-time contracted salaried</i> staff; interest payments on loans; depreciation costs</li> </ul>	
<p>Total Variable Cost (TVC)</p>	<ul style="list-style-type: none"> <li>• Cost of variable factor</li> <li>• Varies with level of output i.e. direct or avoidable costs</li> <li>• <math>TVC = 0</math> when <math>Q = 0</math></li> <li>• e.g. raw materials and components, packaging and distribution costs, the wages of <i>part-time</i> staff or employees <i>paid by the hour</i>.</li> </ul>	
<p>Total Cost (TC)</p>	<p><math>TC = TFC + TVC</math></p> <ul style="list-style-type: none"> <li>• The sum of all costs incurred in producing any level of output in the short run.</li> <li>• When <math>Q = 0</math>, <math>TVC = 0</math>, so <math>TC = TFC</math></li> </ul>	
<p>Average Fixed Cost (AFC)</p>	<p><math>AFC = \frac{TFC}{Q} \propto \frac{1}{Q}</math></p> <ul style="list-style-type: none"> <li>• AFC at any output <math>Q</math> = slope of straight line through the origin and the corresponding point on the TFC curve.</li> <li>• Slope of <math>OP &gt; \text{Slope of } OS &gt; \text{Slope of } OR</math></li> <li>• <math>OP' &gt; OS' &gt; OR'</math></li> </ul>	



<p>Average Variable Cost (AVC)</p>	$AVC = \frac{TVC}{Q}$ <ul style="list-style-type: none"> <li>• AVC at any output Q = slope of straight line through the origin and the corresponding point on the TVC curve.</li> <li>• Slope of OP &gt; Slope of OS</li> <li>• Slope of OS &lt; Slope of OR</li> <li>• AVC is minimum when the ray is tangent to the TVC curve</li> </ul>	
<p>Average Total Cost (ATC)</p>	$ATC = AFC + AVC$ <ul style="list-style-type: none"> <li>• <math>\uparrow</math> productivity of resources <math>\rightarrow \downarrow</math>ATC</li> <li>• When <math>\uparrow</math>AFC and AVC, <math>\uparrow</math>AC</li> <li>• When <math>\downarrow</math>AFC &gt; <math>\uparrow</math>AVC, AC<math>\downarrow</math> but more gradually</li> <li>• When <math>\downarrow</math>AFC &lt; <math>\uparrow</math>AVC, AC<math>\uparrow</math></li> </ul>	<p>Average Cost Curves</p>
<p>Marginal Cost (MC)</p>	$MC_n = TC_n - TC_{n-1}$ $MC = \frac{dTC}{dQ}$ $\because dTC = dTVC + dTFC, dTFC = 0,$ $MC = \frac{dTVC}{dQ}, \quad MC_n = TVC_n - TVC_{n-1}$ <ul style="list-style-type: none"> <li>• MC is the additional cost of producing one additional unit of output, equal to the gradient of TVC/TC curve</li> </ul> $AC_n = \frac{AC_{n-1}(n-1) + MC}{n}$ $AC_n = AC_{n-1} + \frac{MC - AC_{n-1}}{n}$ $\therefore \frac{dAC}{dQ} \approx \frac{MC - AC_{n-1}}{n}$ <ul style="list-style-type: none"> <li>• When MC &lt; AVC, AVC is falling.</li> <li>• When MC &gt; AVC, AVC is rising.</li> <li>• When MC = AVC, AVC is at minimum point</li> <li>• When MC = ATC, ATC is at minimum point</li> </ul>	

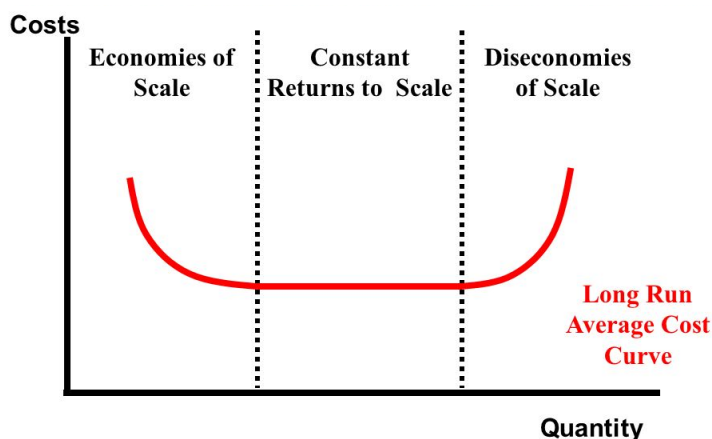
## PRODUCTION COSTS IN THE LONG RUN



- Each point on the LRAC curve is tangent to an SRAC curve. This point of tangency reflects the **lowest cost** of producing a particular output. (NOT necessarily the minimum point on SRAC)
- All SRAC curves lie on or above the LRAC curve
- In the long run, the firm chooses which SRAC curve to use. The LRAC curve represents the lowest possible per unit cost for each level of output.
- Each SRAC curve represents a different amount of fixed factor. e.g. number of factories

## LAW OF RETURNS TO SCALE

ACCORDING TO THE LAW OF RETURNS TO SCALE, A FIRM MAY PASS THROUGH A PHASE OF INCREASING RETURNS TO SCALE, CONSTANT RETURNS TO SCALE AND THEN A PHASE OF DECREASING RETURNS TO SCALE IN THE LONG RUN.



**Increasing Returns to Scale (IRTS)** = a given percentage increase in inputs lead to a larger percentage increase in output – **economies of scale**

**Constant Returns to Scale (CRTS)** = a given percentage increase in inputs lead to the same percentage increase in output – **zero economies of scale & optimum level of production**

**Decreasing Returns to Scale (DRTS)** = a given percentage increase in inputs lead to a smaller percentage increase in output – **diseconomies of scale**

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## INTERNAL ECONOMIES OF SCALE

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### TECHNICAL ECONOMIES

#### 1. Increased Specialisation

Large scale of production → worthwhile to break down into simpler tasks → division of labour. Workers become better at performing the repetitive task & less time wastage from shifting from task to task. In addition, more scope for use of specialized machinery → ↓cost per unit output

#### 2. Economies of Indivisibilities

Indivisibilities: the physical inability, or economic inappropriateness, of running a machine or some other piece of equipment at below its optimal operational capacity.

Larger machinery tend to be more technically superior → large firm is able to utilize large machines more intensively → ↓cost per unit output

#### 3. Economies of Large Dimension (The Container Principle)

For any capital equipment that contains things, the cost (which depends on surface area) varies less than proportionately with the output (which depends on the volume). e.g. double-decker bus vs single-decker bus, doubling size of plant, etc. → ↓cost per unit output

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### MANAGERIAL ECONOMIES

- Specialization of labour by employing specialists → ↑productivity and ↓cost per unit output
- Economies of management – number of managerial positions ↑ less than proportionately to an ↑ in plant size → ↓cost per unit output

*Note: Managerial economies of scale are similar to workforce specialization. The difference is that specialization occurs on a supervisory level.*

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### MARKETING ECONOMIES (COMMERCIAL ECONOMIES)

#### 1. Bulk Purchase

Large firm can buy supplies and raw materials in bulk to obtain a larger discount than small firms → ↓cost per unit output

#### 2. Bulk Marketing

Promote sales through bulk advertisement e.g. high cost of advertising on TV and newspapers can be spread over a large level of output → ↓cost per unit output

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### FINANCIAL ECONOMIES

#### 1. Credit Worthiness

Collateral: assets used to secure a loan

Large firms have more valuable assets due to high sales → offer better collateral to banks and other financial institutions → seen as more creditworthy (i.e. ↑ possibility of paying back) → get bank loans at lower interest rates & better conditions → ↓cost per unit output

#### 2. Other Sources of Funding

Only large firms can list their companies in stock exchange to raise capital when more funds are needed → larger firms are able to price their shares higher for their initial public offering → public issue of shares is cheaper way of raising capital → ↓cost per unit output

## RISK-BEARING ECONOMIES

### 1. Insurable Risk

Premium: price of insurance (in periodic payments)

Large firms are able to spread the premium for insurance over a larger amount of output → ↓ premium paid per unit output

### 2. Uninsurable Risk – risk arising from changes or fluctuations in demand or supply.

Large firms with many subsidiaries & branches bears a lower uninsurable risk than a single firm.

Large firms can protect themselves better by diversifying their product or by operating in a different market (local + overseas) → loss from producing one product in one market may be offset by profits from another.

Large firms can also diversify their sources for raw materials.

## INTERNAL DISECONOMIES OF SCALE

### MANAGERIAL DISECONOMIES

As the size of the firm increases, it becomes increasingly difficult to carry out the management functions of co-ordination, control and maintenance of morale:

- Large firms are subdivided into many specialised departments → increased likelihood of communication breakdown → ↓ coordination and productivity + wastage of resources
- Becomes more bureaucratic → restricted by rules and regulations → slow decision making process → unable to adjust quickly to the changing market conditions → ↓ productivity
- ↑ feelings of alienation among workers who feel insignificant in a large organisation → ↓ morale and productivity

These factors contribute to an increase in average cost of production with higher output levels.

## IMPLICATIONS OF INTERNAL ECONOMIES AND DISECONOMIES OF SCALE

**The larger the internal economies of scale, the bigger the size and the fewer the number of firms in an industry.**

**Minimum Efficient Scale** = minimum output level beyond which no more cost savings can be reaped in the long run.

Expressed as a **percentage of total size of the market or total domestic production.**

### Extensive Economies of Scale (High MES)

- **Low degree of competition** as there is only room for a small number of large size firms
- Significant possible cost savings
- e.g. telecommunication industries

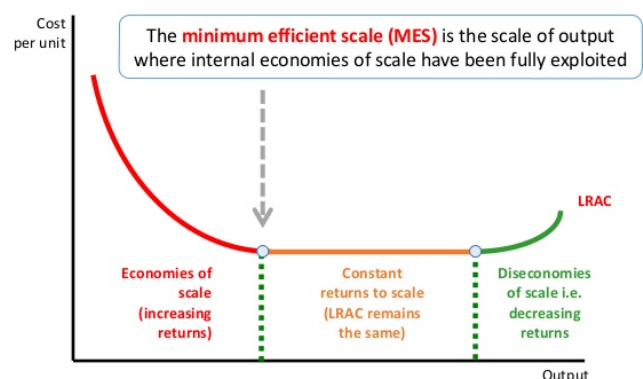
### Predominance of Diseconomies of Scale

- **High degree of competition** as there is only room for small and efficient producers
- Large firms cannot charge a competitive price due to high costs

*Note: diseconomies of scale outweigh economies of scale*

### Limited Economies & Diseconomies of Scale

## Minimum Efficient Scale (MES)



- **LRAC constant over large level of output**
- Firms of large AND small sizes co-exist in these industries
- e.g. retail trades and publishing industry

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## EXTERNAL ECONOMIES OF SCALE

- Cost savings enjoyed by firm as a result of expansion of industry
- Downwards shift of LRAC curve ( $\downarrow$ LRAC at ALL level of output)
- Result primarily from geographical concentration of firms in the industry

### 1. Development of Industrial Amenities and Better Transport System

- Industrial amenities e.g. water, electricity & gas will be developed by the relevant authorities and suppliers  $\rightarrow$   $\downarrow$  operating costs
- Government provides better public roads and transport system  $\rightarrow$   $\downarrow$  cost of transport of raw materials and finished products in and out of the plant/to and from the market
- Transport companies may respond by extending service routes into industrial estates

### 2. Development of Research Facilities

- Firms combine efforts to engage in research
- Government set up research centre to develop better methods and products of higher quality
- $\downarrow$  cost of R&D

### 3. Development of Ancillary Services

- Ancillary: providing necessary support to the primary activities or operation of an organization, system, etc.
- e.g. provide components, transport finished goods, trade in by-products, provide special services and facilities such as banking and insurance

### 4. Disintegration

- Individual firms specialise in a single process or manufacture of a single component
- Able to obtain components at low cost because they are being mass-produced for the industry.

### 5. Availability of Local Skilled Labour Force

- Expansion of industry  $\rightarrow$  talent with relevant skills are attracted into the area  $\rightarrow$   $\uparrow$  supply of labour  $\rightarrow$   $\downarrow$  cost of training labour for itself
- Government may set up technical colleges and vocational institutes, reducing training cost for the firms

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## EXTERNAL DISECONOMIES OF SCALE

- Increase in costs incurred by firm as a result of expansion of industry
  - Upwards shift of LRAC curve ( $\uparrow$ LRAC at ALL level of output)
1. Congestion on roads  $\rightarrow$   $\uparrow$  transportation/productivity costs
  2.  $\uparrow$  competition among firms  $\rightarrow$   $\uparrow$  DD factor inputs  $\rightarrow$   $\uparrow$  P of factor inputs

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## THE PREDOMINANCE OF SMALL FIRMS

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### DEFINITION OF A SMALL FIRM

Differs from industry to industry, depends on the following methods:

- Turnover (total revenue)
- Assets
- Number of employees
- Market share
- Market capitalization (total value of company)

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### DEMAND FACTORS

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#### NATURE OF PRODUCT

1. **Non-standardized products/services** e.g. law, healthcare, repair services (made to specific requests → cannot be mass produced)
2. **Prestige markets** e.g. luxury cars, exclusive clothing & high-quality jewellery ( $\uparrow P \rightarrow \downarrow Q_d$ )
3. **Bulk and perishable goods** → the market for the good is likely to be local rather than national due to high transportation costs.

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#### CONVENIENCE TO CONSUMERS

- Consumers not willing to travel a long distance to buy certain goods and services
- e.g. grocery and some health services

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#### SUNRISE INDUSTRIES

- Change in tastes and preferences → changes in DD
- New demands arise → lack of competition initially (low barriers to entry) → new firms enter the market to meet DD → over time, larger firms will drive small firms out of business as they are able to produce at a lower cost.

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#### VERTICAL DISINTEGRATION

- As the industry grows, there are opportunities for small firms to provide support and subcontracting services or semi-finished products and components to the large firms.
- Smaller firms introduce significant economies of operations to larger firms → larger firms free up resources for marketing, quality control and product design → further expansion of the industry

*Note: In this sense, large firms encourage existence of small firms.*

## SUPPLY FACTORS

- **Diseconomies of scale set in early (low MES)** – cost  $\uparrow\uparrow$  as output  $\uparrow$  → diseconomies of scale **outweigh** the economies of scale → optimum size is small
- **Unwillingness to take greater risks or lost control** – i.e. high investment risks to start/expand into a large firm → unwilling to expand. Expansion of firm means owners sacrifice their control over it → owner enjoys maximum autonomy in a small firm
- **Banding/cooperation among small firms** – allow independent small firms to compete with larger ones by liaising with other firms to put together a whole product / buy material in bulk
- **Lack of finance** – small firms are less credit worthy than big ones from the P.O.V. of banks
- **Lack of skilled labour** – more serious in a tight labour market

## GOVERNMENT POLICY

**Antitrust laws**, also referred to as "competition laws," are statutes developed by the U.S. Government to protect consumers from predatory business practices by ensuring that fair competition exists in an open-market economy.

### Regulatory bodies

- ban anti-competitive practices that tend to lead to the dominance of certain firms
- supervise the mergers and acquisitions of corporations

## MARKET STRUCTURE

### TYPES OF MARKET STRUCTURE



	PERFECT COMPETITION	MONOPOLISTIC COMPETITION	OLIGOPOLY	MONOPOLY
NO. OF SELLERS	Infinite number of small firms independent of each other	Many small firms independent of each other	Few dominant firms	Sole Seller
NATURE OF PRODUCT	Homogeneous	Slightly differentiated	Homogenous/Differentiated	Unique product
EASE OF ENTRY/EXIT	NO BTE	NO/Low BTE	High BTE	Very High BTE
AVAILABILITY OF INFORMATION	Perfect Information	Imperfect Information		
EXAMPLES	<ul style="list-style-type: none"> <li>• Agricultural market</li> <li>• Stock market</li> </ul>	<ul style="list-style-type: none"> <li>• Hawker stores in Singapore</li> <li>• Neighbourhood bakery</li> </ul>	<ul style="list-style-type: none"> <li>• Telco's in Singapore</li> <li>• Bus/Rail transport</li> <li>• Fast food</li> </ul>	<ul style="list-style-type: none"> <li>• Public Utilities</li> </ul>

## MARKET CONCENTRATION RATIO

The percentage of total sales (or production in the market that is accounted for by some specified number of largest firms in an industry.

A **five firm concentration ratio** measures the percentage of total sales accounted for by the largest 5 firms against total industry output.

- $\uparrow \text{MCR} \rightarrow \downarrow \text{competition} \rightarrow \text{oligopoly/monopoly}$
- $\downarrow \text{MCR} \rightarrow \uparrow \text{competition} \rightarrow \text{monopolistic competition/perfect competition}$

Low Concentration	Medium Concentration	High Concentration
0%-50%	50%-80%	80%-100%
PC / MC	MC / Oligopoly	Oligopoly / Monopoly

## BARRIERS TO ENTRY

BARRIERS TO ENTRY REFER TO ANY IMPEDIMENT THAT PREVENTS NEW FIRMS FROM COMPETING ON AN EQUAL BASIS WITH EXISTING FIRMS IN AN INDUSTRY.

Barriers to entry determine the **degree of competition** faced by firms in an industry.

BTEs are a cause of a firm's market power.

$\uparrow \text{BTE} \rightarrow \downarrow \text{ability of rival firms to enter and compete} \rightarrow \downarrow \text{competition} \rightarrow \downarrow \text{PED} \rightarrow \uparrow \text{ability to } \uparrow \text{P.}$

## ECONOMIES OF SCALE (EOS)

$\uparrow \text{minimum efficient scale} \rightarrow \downarrow \text{cost per unit} \rightarrow \text{small firms cannot compete} \rightarrow \text{only one/few large firms survive} \rightarrow \text{monopoly/oligopoly}$

This tends to happen on its own unless there is government intervention and such a market is sometimes referred to as a **natural monopoly** or **natural oligopoly**.

e.g. **high sunk costs** in markets like utilities and rail transportation  $\rightarrow \text{LRAC} \downarrow \text{over entire range of market demand} \rightarrow$  there is only room for one firm in the industry as average cost is lowest when a **single firm supplies the entire market**.  $\rightarrow$  single firm can supply a good or service to an entire market at lower cost than  $\geq 2$  firms can.

## CONTROL OF KEY RESOURCES OR DISTRIBUTION OUTLETS

- Exclusive ownership of factors of production/raw materials crucial to the production process
  - Control vital inputs  $\rightarrow$  deny access to these inputs from their rivals
- Firm controls outlets through which products are sold, the firm can prevent potential rivals from gaining access to customers
  - Prior to 2001, the DeBeers Company had a monopoly in fine diamonds because 90% of all diamond producers worldwide market their diamonds through DeBeers.



## LEGAL BARRIERS TO ENTRY

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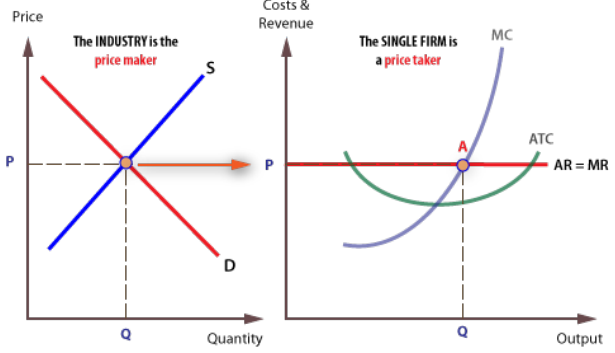
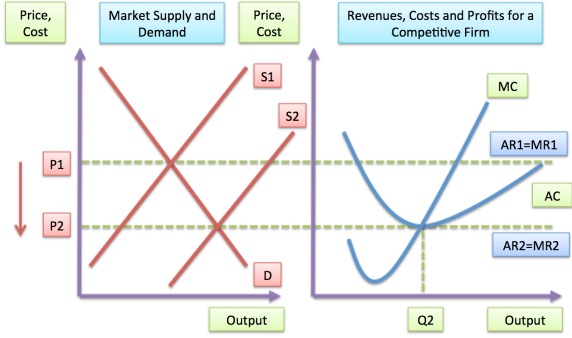
- **Patents**
  - Exclusive rights to produce or sell an innovative product
  - Prohibits anyone else from producing that invention w/o permission of patent holder
  - Granted by authorities to encourage technological innovation and reward original innovators for their efforts
  - Firm gains exclusive production rights for a specified period of time → remains temporarily in a protected position as monopoly
    - E.g. in 2016, Apple was awarded a patent for their 'force sensitive fingerprint sensing input'
- **Copyrights**
  - Intellectual property rights legally conferred on the works of writers, software programmers and music composers for a specified length of time → royalties need to be paid to gain copyright
- **Licenses**
  - Issued by government to confer monopoly status
  - License only allow one firm the exclusive right to supply a particular good or service
    - E.g. prior to 1997, SingTel had exclusive rights to operate the network and sell equipment in mobile telecommunications market.
    - Postal services, utilities, telecommunications and broadcasting services

## PRODUCT DIFFERENTIATION AND BRAND LOYALTY

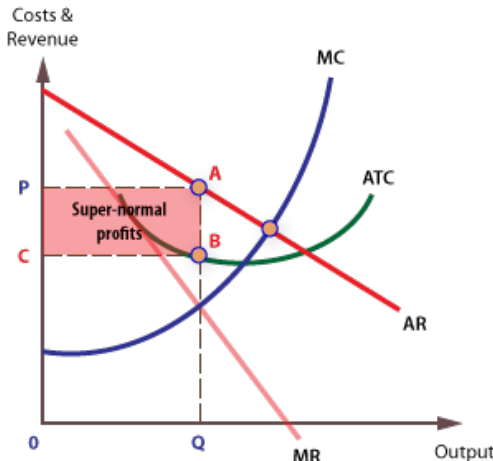
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- Product differentiation → strong brand name → more competitive prices → new entrants have to go through period of high advertising costs and low revenue to catch up with existing firms in the industry
- Firms deliberately charge lower prices as an entry deterrence → make temporary losses to prevent potential rivals from entering the market.

## PERFECT COMPETITION

Characteristics		Implications
Large Number of Firms	<ul style="list-style-type: none"> <li>Each firm's o/p represents <b>insignificant share</b> of total industry output</li> <li>No firm has the market power to influence market price of product by changing its output</li> </ul>	<ul style="list-style-type: none"> <li><b>Price taker</b></li> <li>Accepts the market price determined by market DD and SS.</li> <li>Horizontal DD curve → perfectly price elastic</li> </ul>
Homogeneous Product	<ul style="list-style-type: none"> <li>Products are <b>perfectly substitutable</b> by the products that any other firm in the same industry supplies</li> </ul>	
No BTE	<ul style="list-style-type: none"> <li>New firms can enter the market easily and incumbent firms can exit the market at low cost</li> <li>Large number of small sellers</li> </ul>	<ul style="list-style-type: none"> <li>Firms can only earn normal profits in the long run</li> </ul> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;"><b>Adjusting to the Long Run Equilibrium Price</b></p> <p style="text-align: center;">The entry of new firms causes market supply to increase</p> </div> 
Perfect Info	<ul style="list-style-type: none"> <li>Producers fully aware of prices charged, costs and tech adopted by other sellers</li> <li>Consumers have complete knowledge of price and quantity and the standardised nature of products sold by different sellers</li> </ul>	<ul style="list-style-type: none"> <li>Firms have little incentive to engage in R&amp;D</li> <li>Any new innovation will soon be adopted by other firms given the assumptions of perfect information and no BTEs.</li> </ul>

## MONOPOLY

Characteristics		Implications
Sole Seller	<ul style="list-style-type: none"> <li>Firm's DD curve is also the industry DD curve</li> </ul>	<ul style="list-style-type: none"> <li>High degree of market power to influence price of his good</li> <li>Downward sloping DD curve is price inelastic.</li> </ul> 
Unique Product	<ul style="list-style-type: none"> <li>Monopolist sells unique product with no close substitutes</li> </ul>	
High BTE	<ul style="list-style-type: none"> <li>Potential competitors are not able to enter freely into the industry to compete on an equal basis with existing monopoly</li> </ul>	<ul style="list-style-type: none"> <li>Retain market power and continue to earn supernormal profits in the long run</li> </ul>
Imperfect Information	<ul style="list-style-type: none"> <li>Potential competitors not fully aware of technology or skills which are available to the incumbent to produce and sell the product</li> <li>Consumers are not aware of the different prices monopolist may charge to different consumers</li> </ul>	<ul style="list-style-type: none"> <li>Firms have incentive to engage in R&amp;D</li> </ul>

## MONOPOLISTIC COMPETITION

Characteristics		Implications
Large Number of Firms	<ul style="list-style-type: none"> <li>Each firm has insignificant market share</li> <li>Each firm is too small to have a significant influence on the action of other firms in industry.</li> </ul>	<ul style="list-style-type: none"> <li>Difficult for firms to set a monopoly price</li> </ul>
Slightly Differentiated Product	<ul style="list-style-type: none"> <li>Each firm will be able to raise its price without losing all its customers</li> </ul>	<ul style="list-style-type: none"> <li>SOME market power → price setter. Downward sloping DD curve</li> <li>Products are close substitutes → DD price elastic → weak ability to raise prices</li> </ul>
No BTE	<ul style="list-style-type: none"> <li>Allows new firms to enter when there are supernormal profits to be made and existing firms can exit the industry when they are making subnormal profits</li> <li>Large number of firms in industry</li> </ul>	<ul style="list-style-type: none"> <li>Firms can only earn normal profits in the long run</li> </ul> <div> <b>Short Run Equilibrium with Monopolistic Competition</b>  P1 is the profit maximising price and Q1 is the equilibrium output </div> <div> <b>Long Run Equilibrium with Monopolistic Competition</b>  Profits are competed away as demand shifts inwards to AR2 </div>
Imperfect Info	<ul style="list-style-type: none"> <li>Competitors not fully aware of the technology or skills required to produce and sell the product</li> <li>Consumers lack information (e.g. price, quality, availability) of the products</li> </ul>	<ul style="list-style-type: none"> <li>Firms have little incentive to engage in R&amp;D</li> </ul>

## OLIGOPOLY

Characteristics		Implications
Few Dominant Firms	<ul style="list-style-type: none"> <li>Each firm produces a significant share of total market output → likely to have considerable influence over price of product</li> </ul>	<ul style="list-style-type: none"> <li><b>Mutually interdependent</b></li> <li>If any one firm changes its behaviour, this can have a major impact on the DD curve of the other firms</li> <li>Hence, firms are <b>rival-conscious</b></li> </ul>
Homogeneous Products	<ul style="list-style-type: none"> <li>Tends to process raw materials e.g. petroleum and steel to produce intermediate goods</li> </ul>	
Differentiated Products	<ul style="list-style-type: none"> <li>Tends to focus on goods sold for personal consumption e.g. automobiles, computers</li> </ul>	<ul style="list-style-type: none"> <li>Successful product differentiation gives firm greater market power to influence price</li> <li><b>Price-setter</b></li> </ul>
High BTE	<ul style="list-style-type: none"> <li>Potential competitors are not able to enter freely into the industry to compete on an equal basis with existing oligopolist</li> </ul>	<ul style="list-style-type: none"> <li>Retain market power and continue to earn supernormal profits in the long run</li> </ul>
Imperfect Info	<ul style="list-style-type: none"> <li>Potential competitors not fully aware of the technology or skills which is available to the incumbent to produce and sell the product</li> <li>Consumers are also not aware of the different prices that the oligopolist may charge to different consumers</li> </ul>	<ul style="list-style-type: none"> <li>Firms have incentive to engage in R&amp;D</li> </ul>

## BEHAVIOR OF OLIGPOLISTS

### COLLUSIVE

#### THE CARTEL THEORY

- Oligopolists may form a cartel (e.g. OPEC) to work together and act like a monopoly in an effort to capture the benefits that would exist for a monopolist.
- Raise the price of product through a coordinated reduction in quantity produced. OPEC does so by setting production levels for each of its member countries.
- Oligopolists' (**entire cartel**) AR and MR curves would be same as that of a monopolist. → higher profits
- Legislation may prohibit the formation of certain types of cartels. In addition, the cartel may encounter the problem of cheating. A firm may have the incentive to cheat if doing so  $\uparrow$  market share and profit at the expense of other firms. → cartel is in danger of collapsing*

#### THE DOMINANT PRICE LEADERSHIP THEORY

- Dominant firm's immense size and efficiency, due to large scale production, will result in smaller firms accepting its leadership
- The firms act as if they have an agreement to limit output and raise price even though no enforceable
- Tacit collusion
- Smaller firms  $\uparrow$  unit costs compared to dominant firm → price competition unlikely as smaller firms cannot undercut the price of the dominant firm which enjoys substantial EOS → price increases by the leader will also be followed
- Dominant firm is price leader, rest of the firms take this price as given, and respond to it by producing at a quantity where marginal cost is equal to this price.

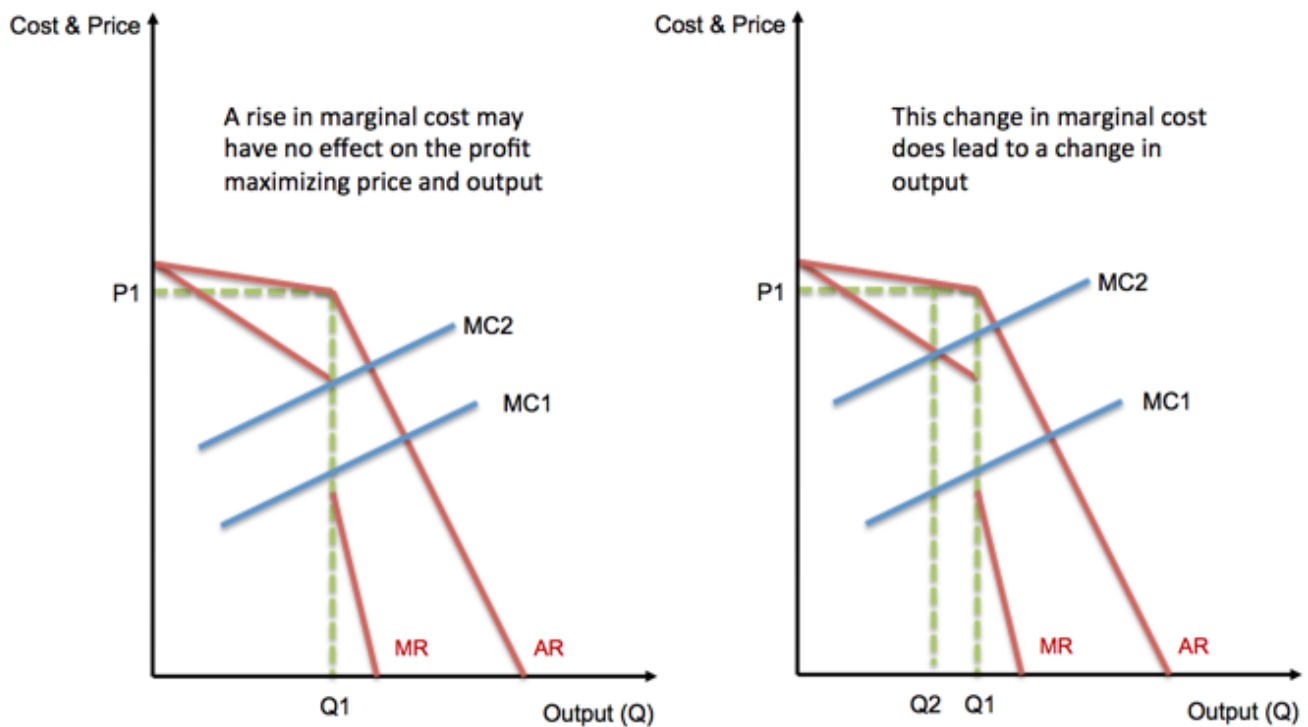
## COMPETITIVE: KINKED DEMAND CURVE THEORY

### Assumptions:

- if a firm  $\uparrow P$ , other firms will not follow
- if a firm  $\downarrow P$ , other firms will match the price cut

However, it fails to explain why the DD curve is kinked at that particular point, and assumptions are overly simplistic.

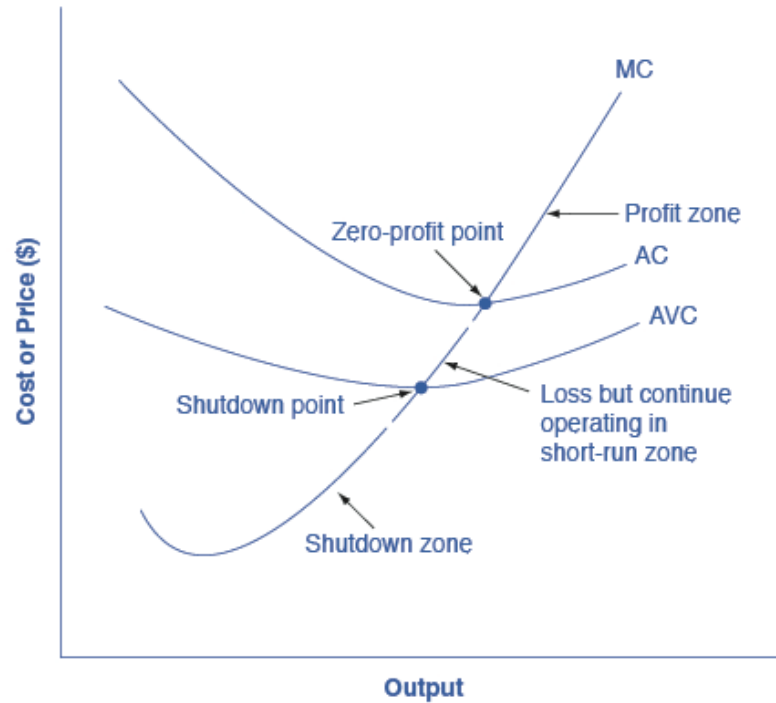
### Analysis Diagram: Changes in marginal cost



1. **Price rigidity:** if the change in MC is small, there will be no change in equilibrium price and quantity
2. The prices of an oligopolies is relatively insensitive to changes in MC
3. Hence, firms tend to focus on non-price competition as a means of reinforcing their market position and increasing supernormal profits → product differentiation

## SHUT-DOWN CONDITION

- To consider shutting down: *subnormal profits*
- **$AR < AVC$  or  $TR < TVC$**
- Applies to any firm regardless of market structure



### Shut Down:

$$TR = 0, TVC = 0$$

$$\therefore TC = TFC, \pi = -TFC$$

$$Loss = AC * Q - AVC * Q$$

### Continue Production

$$\pi = TR - TC$$

$$Loss = AR * Q - AC * Q$$

## PRICE DISCRIMINATION

- The presence of consumer surplus provides firms the incentive to increase their profits
- Price discrimination is defined as charging different consumers different prices for the same product, not due to cost differences.

### FIRST DEGREE PRICE DISCRIMINATION

The firm separates the market into each individual consumer and charges them the price they are willing and able to pay for that unit of the good. Thus, a different price will be charged for each and every unit sold.

e.g. auctions & car dealership

- Firms have incentive to produce more
  - DD curve becomes MR curve  $\rightarrow \uparrow Q$  where  $MC = MR$
- If successful, firm extract entire consumer surplus
- Monopolist's demand curve becomes the MR curve



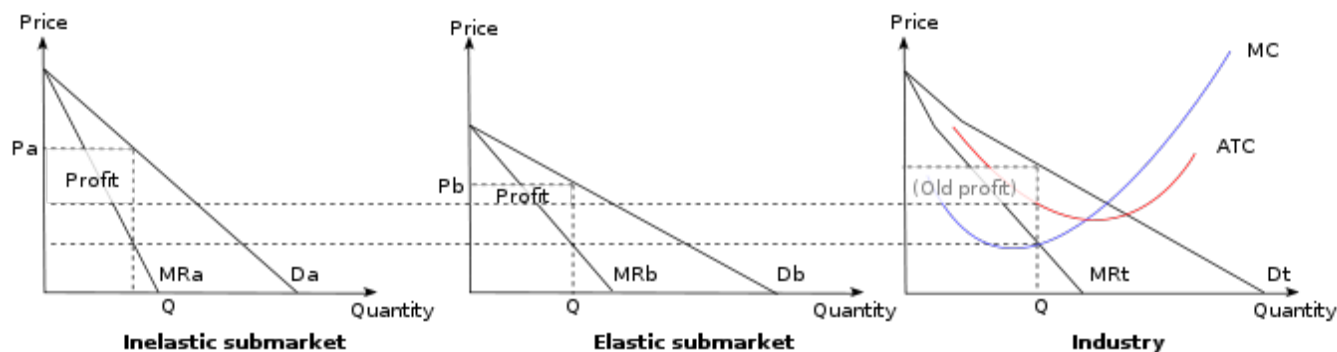
### SECOND DEGREE PRICE DISCRIMINATION

The firm separates the market into two or more groups and charges different prices based on the quantity purchased.

- Different prices for particular 'block' of the same product

### THIRD DEGREE PRICE DISCRIMINATION

The firm separates the market into two or more groups and charges different prices based on the price elasticities of demand.



- $Q_{dd} \text{ of good in market A} + Q_{dd} \text{ of good in market B} = Q_{dd} \text{ of good in industry}$
- Firm charges  $\uparrow$  price in Inelastic submarket and a  $\downarrow$  price in the elastic submarket
- If firm does not discriminate, there could possibly be no DD in some cases or little DD from the Elastic Submarket.



## CONDITIONS NECESSARY FOR PRICE DISCRIMINATION

1. Firm must **possess market power**
  - Downward sloping DD curve
  - Monopoly, Oligopoly, MC. PC has no market power → charge higher P than market P → lose all its customers to rival firms
2. Firm must be **able to segment the market**
  - Based on consumer's willingness to pay or responsiveness to changes in price

Ease of Practicing		
1 <sup>st</sup> Degree	2 <sup>nd</sup> Degree	3 <sup>rd</sup> Degree
<ul style="list-style-type: none"> <li>• Noe easy to put in a system to make consumers reveal their max. price</li> <li>• Sometimes require costly market research</li> </ul>	<ul style="list-style-type: none"> <li>• Consumers sort themselves into groups (self-select)</li> <li>• No effort to segment market</li> </ul>	<ul style="list-style-type: none"> <li>• Most common type of PD</li> <li>• May not be easily done, and law may place limits.</li> </ul>

3. Firm must be able to **prevent resale by one consumer to another**
  - Buyers in **low-priced market** must not be able to **resell the good** in the **high-priced market**.

Preventing Resale	
Measure	Examples
Provide unique service	Haircuts, dentist services
Product warranties	Car warranties (only attached to car owner)
Location / high transaction costs	Large fridge
Contractual clauses to forbid resale of the product	Airline tickets for a specific flight cannot be resold, especially for budget airlines.
Checking of identification	Checking of IC / citizenship
Segment market by <i>time</i>	Peak hours vs. non-peak hours

**Cost** of separating the market and preventing resale of good < **extra revenue** the scheme brings

= **Advantageous** to practise price discrimination

## IMPACT ON CONSUMERS

### COSTS TO CONSUMERS

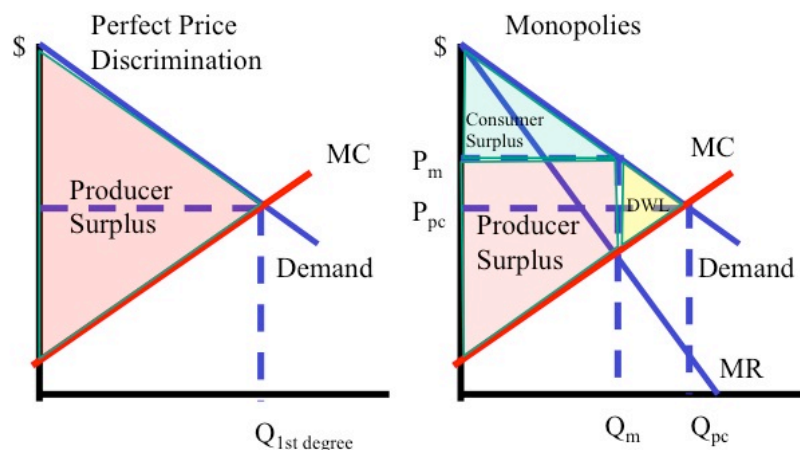
- ↓ consumer surplus due to ↑ price (Note for 3<sup>rd</sup> degree: only for market with more *inelastic* DD)
- Greater inequity as consumer surplus is transferred to the firm in the form of higher profits

*If the firm ploughs back the profits in terms of innovation or producing improved products, the consumers will ultimately benefit*

### BENEFITS TO CONSUMERS

- If AC is higher than AR at all levels of output, a firm would not want to produce a good. However, firms practising 1<sup>st</sup> degree price discrimination may produce goods or services which would otherwise not have been produced if they charged a uniform price
  - Consumer welfare ↑ due to ↑ in variety of goods and services available
  - Producers gain profits which would not have been possible without PD
- Lowered price for a segment of consumers under 3<sup>rd</sup> degree PD
  - ↑P in price-inelastic market, ↓P in price-elastic market → If consumers under the price-elastic market are *low-income*, it allows these consumers to be able to buy the good or service that they would not otherwise have bought if a single price was charged → ↑ consumer welfare

### IMPACTS ON SOCIETY (ALLOCATIVE EFFICIENCY)



- $Q_m \rightarrow$  allocative inefficiency as  $P_m > MC$
- $Q_s > Q_m \rightarrow$  higher output level is achieved
- Each additional unit between  $Q_m$  and  $Q_s$  can generate welfare for society if they were produced → 1<sup>st</sup> degree PD: recover DWL → ↑ societal welfare → allocative efficiency.

## THE THEORY OF CONTESTABLE MARKETS

- A contestable market is an economic concept that refers to a market in which there are **only a few firms that**, because of the **threat of new entrants**, behave in a **competitive manner**.
- Oligopoly and Monopoly
- Theory: High BTE → ↑market power
- Reality: Behave *as if* they operate in competitive markets due to contestability.
- **Perfect Contestability**: when oligopoly & monopoly are seen to be making supernormal profit, the existence of potential short term entrants of competitors will drive down prices and return profits to normal levels

## DETERMINANTS OF CONTESTABILITY

- Access to same level of technology e.g. disruptive tech → Uber, Deliveroo, Obike, Airbnb → break down BTE
- No sunk costs → decrease risk factor and as a result ↓BTE
- Ease of Entry & Exit
  - **Hard to Overcome → Easy to Overcome:**  
Govt License & Patents → EOS & Sunk Costs → Access to Technology, Branding, Sunk Costs (depending on extent of sunk costs)

## PERFORMANCE OF FIRMS


### EFFECIENCY

#### 1. Allocative Efficiency

- Achieved when current combination of goods and services produced and consumed maximises societal welfare
  - Maximise consumer and producer surplus ( $MSB = MSC$ )
- $P = MB$ , since the price of a good reflects the **value consumers place** on the last unit of the good consumed. The MC measures the **opportunity cost** of the resources that go into producing the last unit of good.
- Achieved at the output level where  $MB = MC \rightarrow P = MC$ 
  - When  $P > MC$ , the **value that consumers place on an additional unit of the good** is **MORE** than the **opportunity cost of producing that unit**.
  - When  $P < MC$ , the **value that consumers place on an additional unit of the good** is **LESS** than the **opportunity cost of producing that unit**.

#### 1. Productive Efficiency

- Achieved when a firm chooses the least cost combination of inputs to produce the maximum level of output possible from those inputs.
- Occurs at **ANY point on the LRAC**

	Perfect Competition	Monopolistic Competition	Oligopoly	Monopoly
<b>Allocative Efficiency</b> P = MC	✓ P = MC	✗ P > MC (Underproduction)		
<b>Productive Efficiency</b> On LRAC Curve	✓		✗	
	<div></div> <p><i>Efficient</i> <span style="float: right;"><i>Inefficient</i></span></p> <ul style="list-style-type: none"><li>• Firms with ↑ degree of competition → more likely to be productive efficient</li><li>• Otherwise, they will be forced out of the market by more cost-competitive rival firms</li></ul>			


### DYNAMIC EFFICIENCY (INNOVATION)

Firm's ability and incentive to invest in R&D for the purpose of product and process innovation in order to reduce the average cost of production and/or to meet the changing needs and wants of consumers over time.

	Perfect Competition	Monopolistic Competition		Oligopoly		Monopoly
Ability	<div>✗</div> <div>Normal <math>\pi</math></div>	Short Run	<div>✓</div> <div>Supernormal <math>\pi</math></div>	<div>✓</div>		<div>✓</div>
		Long Run	Normal $\pi$			
Incentive	<div>✗</div> <div><ul style="list-style-type: none"><li>No possibility of supernormal <math>\pi</math> in LR</li><li>Any new innovation will soon be adopted by other firms given the assumptions of perfect information and no BTEs.</li></ul></div>	Short Run	<div>✓</div> <div>Possibility to earn supernormal <math>\pi</math> + threat of competition (ensure long-term survival)</div>	Yes	<div>✓</div> <div><ul style="list-style-type: none"><li>Strong BTE e.g. patents/copyrights → fruits of its R&amp;D efforts will be protected → <math>\uparrow \pi</math> will not be competed away</li><li>Strengthen BTE through innovation → <math>\downarrow</math>COP + product differentiation (threat of competition or contestability)</li></ul></div>	
		Long Run	<div>✗</div> <div>No possibility of earning supernormal <math>\pi</math></div>	No	<div>✗</div> <div><ul style="list-style-type: none"><li>Not vital to innovate because strong BTE ensures firm can still earn supernormal <math>\pi</math> in LR</li><li><math>\downarrow</math> competition → complacency → will not devote sufficient effort to <math>\downarrow</math> COP / come up with new and improved products for consumers</li></ul></div>	

## EQUITY

Concerned with distribution of income and wealth among individuals.  
i.e. between firm owners/managers and the rest of society.

	Perfect Competition	Monopolistic Competition	Oligopoly	Monopoly
Equity				
	<i>Most Equitable</i> <ul style="list-style-type: none"> <li>• Free entry &amp; exit</li> <li>• Normal profits in LR shared by many small firms in the market</li> </ul>	<ul style="list-style-type: none"> <li>• Ease of entry &amp; exit</li> <li>• Normal profits in LR shared by many small firms in the market</li> </ul>	<ul style="list-style-type: none"> <li>• Exacerbate inequity</li> <li>• Supernormal profits are concentrated in the hands of a few dominant producers at the expense of consumers who pay higher prices for a limited quantity of goods</li> </ul>	<i>Least Equitable</i> <ul style="list-style-type: none"> <li>• High BTE → supernormal profits</li> <li>• Income is redistributed from consumers to producers</li> <li>• Corporate stock ownership tends to be concentrated largely in the hands of higher-income groups / capital owners</li> <li>• Depends on <b>size</b> and <b>degree of market power</b></li> <li>• e.g. neighbourhood provision shop vs MNC</li> </ul>

## CONSUMER CHOICE

i.e. product variety

	Perfect Competition	Monopolistic Competition	Oligopoly	Monopoly
<b>Consumer Choice</b>	✗ Homogenous products	✓ Product differentiation → wide range of products that are similar but slightly differentiated in the market	✓ Product differentiation However, oligopolies tend to engage in multiple branding → sell similar products under different brand names	✗ No close substitutes
<b>Wastage of Resources</b>		<ul style="list-style-type: none"> <li>Advertising wastes society's scarce resources as large sums of money are spent to create insignificant or even meaningless differences among products</li> <li>Advertising is psychological rather than informational → creates no real value</li> </ul>	<ul style="list-style-type: none"> <li>Extensive competitive advertising</li> <li>Advertising costs may ultimately fall on consumers</li> <li>↓BTE compared to monopoly → less cost savings</li> </ul>	

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## MARKET DOMINANCE

### 2.3 MARKET FAILURE

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#### VJC ESSAY QUESTION 1

Scotland's new food authority is prepared to take the hard-line on tackling obesity, with a sugar tax on sugary drinks and food, junk food tax and junk food advertising ban under consideration.

- (a) Explain what is involved in rational decision-making both by consumers and by firms. [10]
- (b) Assess whether governments necessarily fare better than the free market in resource allocation for goods with high sugar content. [15]

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#### SUGGESTED ANSWER TO PART (A)

##### INTRODUCTION

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All economies face the problem of scarcity, a situation where there are unlimited wants but limited resources. Thus, choices have to be made for the best allocation of resources in an economy. Similarly, consumers and firms also face constraints and thus must also make choices. As opportunity cost is incurred when making choices, societies will choose the particular assortment of goods and services with the objective of gaining the highest level of satisfaction with the least possible cost. Both consumers and firms make rational decisions where they aim to maximise their self-interest. In the case of consumers, utility maximisation while in the case of firms, it is profit maximisation. This can be achieved by weighing up the opportunity cost arising from an activity against the benefits, by considering the marginal effects of change.

##### DEVELOPMENT - MARGINALIST PRINCIPLE APPLIED TO CONSUMERS

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A rational consumer seeks to maximise net total benefits from consuming a good. Rational decision-making by consumers involves considering the marginal benefits and the marginal costs of consuming the good. The marginal benefit (MB) is the satisfaction derived from consuming an additional unit of the good while the marginal cost (MC) is the price paid for the good.

A rational consumer will buy an extra unit of a good as long as marginal benefit exceeds the price of the good because it increases the level of net total benefits from consumption i.e. consumers will consume up to the point where  $MB=P$  where the total net benefits are maximised. Consumers will not consume the additional unit where MB is less than price as it lowers the net total benefits from consumption.

Since rational consumers will buy a product only if the MB exceeds or is at least equal to the price paid for it, it follows that the demand curve in a market represents the MB that consumers derive from consuming an extra unit of the good.

##### DEVELOPMENT 2 – MARGINALIST PRINCIPLE APPLIED TO FIRMS

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A rational firm seeks to maximise total profits from the production and sale of a good. Rational decision making by firms means that firms will base their output decision on the marginal revenue and marginal cost. In deciding how many units of a good to produce, a profit maximising firm will produce up to the point where the additional cost from producing one additional unit of output equates the additional revenue from selling it.

A rational firm will produce and sell an extra unit of a good as long as  $MR > MC$ . Because this means that by producing that unit, there will be a bigger addition to revenue (MR) than to cost (MC) and total profits will increase given that marginal profit is positive. When production by the firm is at an output where MC exceeds MR, producing that adds more to cost than to revenue



and hence reduce profit. Firms' profits can be increased by cutting back on production since marginal profit is negative. Firms thus produce up to the point where  $MR=MC$  where the total profit is maximised.

In perfect competition,  $MR=P$ . This means that the firms produce up to the point where  $P=MC$ . This also means that the firm's supply curve for the good, reflects the MC of the good.

## CONCLUSION

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The marginalist principle is adopted by both consumers and firms when they attempt to maximise their self-interest. When resource allocation is left to the price mechanism, goods are produced up to the point where demand matches supply. Since demand reflects MB and supply reflects MC, at the market equilibrium point, where demand matches supply,  $MB=MC$  and society's welfare is maximised.

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## SUGGESTED ANSWER PART (B)

### INTRODUCTION

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Allocative efficiency is achieved when the right amount of the right goods are being produced and productive efficiency occurs when the output is produced at the lowest cost. Under strict assumptions of perfectly competitive market, and for which no externalities are present, the interaction between rational producers and consumers result in an allocative efficient outcome and society welfare is maximised. However, should the market fail due to the presence of **information failure or externalities**, then the resource allocation will not be efficient and government intervention may result in a better outcome.

### THESIS: GOVERNMENT MAY FARE BETTER

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#### (1) Market fails as food with high sugar content is a form of demerit good

Food with high sugar contents tend to be over consumed due to consumer ignorance on the long term future costs to himself e.g. potentially high medical bills and lower quality of life when diagnosed with diabetes. Consumers over-value the true marginal benefits of consuming sugary foods and thus results in a divergence between his perceived private marginal benefit and the actual private marginal benefit from consumption of these sugary foods. Demand is higher than the level that is socially desirable and can foods with high sugar contents can be over-consumed and produced if left to the free market.

Rational decision making by consumers who consume by considering only their own private cost and benefit may not generate the socially optimum level of consumption due to the presence of externalities. In the case of the market for foods with high sugar content, there are likely to be negative externalities, which are costs of consumption experienced by parties other than the producers or consumers themselves. For example, the consumption of junk food leads to higher occurrence of obesity, which is usually accompanied by a host of diseases, less productive labour force.

With the presence negative externalities, social marginal benefits is lower than private marginal benefits. As a result, decision based on private marginal costs and benefits will result in over consumption of the good. Too much resources are allocated to the production and consumption of these junk food.

#### (2) Government intervention leads to allocative efficiency

Intervention by the government achieves the socially desirable outcome. For example, the tax on junk food is likely to raise the cost of production and thus the shift PMC to the left. Ceteris paribus, the higher price causes consumers to reduce consumption to socially ideal level of output and government thus fare better resources are better channelled to other markets and the deadweight loss to society is removed.

Likewise, advertising ban may limit the misinformation and "correct" the perception of these foods, causing the demand for these high sugar content foods to fall back to a more accurate level of actual PMB.

## ANTI-THESIS: GOVERNMENT MAY NOT FARE BETTER

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Government intervention may not always lead to an improved outcome compared with the free market. Government intervention may sometimes exacerbate a problem or produce unintended negative results making the cost of government failure considerably greater than the cost of market failure.

Whether or not government fares better depends on various factors:

### (1) Imperfect Information

- One factor which would affect the level of success of the government, even if it intervenes in the market with the intent of correcting market failure, is the accuracy of information. In the absence of perfect information to use when correcting the market failure, government may create more inefficiencies.
- For example, one solution to the overconsumption problem is to introduce indirect tax to raise MPC so as to get consumers to cut back consumption of high sugar content foods towards the socially optimum level. Without accurate information on the level of externalities and PED value, the government is not able to determine the indirect taxes required to bring the consumption level exactly to the socially optimum level.
- The government may overestimate the tax required. The new private equilibrium output will be at a lower output than the socially optimum amount.

### (2) Choice of policy considering the root cause of the failure and the trade-off

In addressing the market failures in the market for food with high sugar contents, the choice of policy is crucial in determining its success.

#### *Equity*

- In correcting the market failure using tax, government may end up worsening the problem of inequity. It is widely known that the poor spends a large proportion of their income on the “junk food” (for a few reasons, these foods tend to be relatively cheaper in both monetary terms and preparation time for these low income who takes on multiple jobs to survive). Therefore, a tax which artificially raises the market price may affect the low income more adversely than the high income who are not the main consumers, thereby achieving efficiency at the expense of equity.

#### **Root cause of market failure**

- While both negative externalities and information failure are possible causes of the overconsumption of the foods with high sugar content, to fare better than the market, the government has to address each of the 2 sources of failure in a targeted fashion. For example, between taxing unhealthy food and subsidising the healthier food option, the impact of the latter may be more effective in moving the low income towards the healthier food choices.
- Likewise, given that children are the main victims of the overconsumption of high sugar content food and drinks, it may be more effective to introduce campaigns which shift their tastes and preferences by educating them on the damage and longer term implication of consuming these goods than to simply regulate the advertising ban.

### (3) Administrative costs

Even if there were no serious information imperfection problem, government intervention can also produce inefficiency when administrative cost is high. Following from the above example, administrative cost of an indirect tax could include the wages paid to tax officers to monitor the companies. The reduction in deadweight loss from the cutback in consumption has to be weighed against the administrative cost incurred in the intervention. Should the administrative cost exceed the reduction in deadweight loss arising from overconsumption, government intervention makes the society worse off.

## SYNTHESIS AND CONCLUSION

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Weighing up the various factors, government is likely to fare better than market forces in the market for foods with high sugar content. There exists no visible incentives for firms to cut back on the production and sale of these high sugar foods or produce an equally priced healthier option for the market without clear government signals through intervention. If the government can collaborate with the firms to market fairly priced healthier food options and encourage the children in schools to eat healthily through, it might be more effective than market distorting measures such as taxes or politically unfavourable ones such as advertising bans.