H2 Economics

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Abstract

This document is written with the intention to provide readers with a brief summary of each topic in the Singapore GCE A-Level H2 Economics. The syllabus can be found here.

Part I

Microeconomics

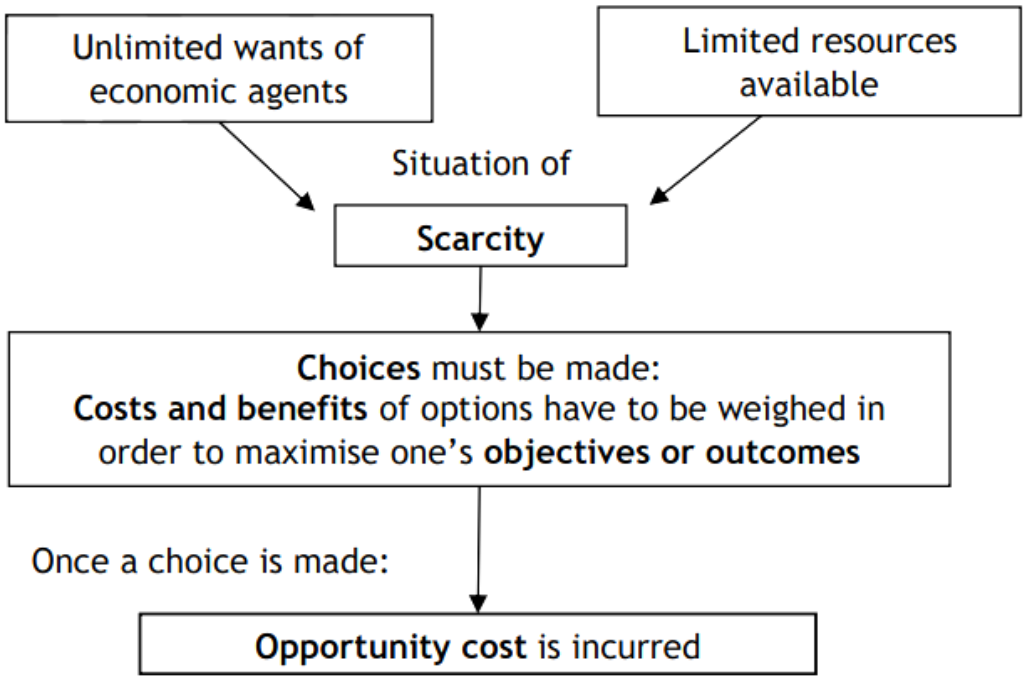
Theme 1: Central Economic Problem

1.1 Scarcity as the Central Economic Problem

Concepts and Tools of Analysis
☐ Scarcity, choice and opportunity cost ☐ Production possibility curve (PPC) ☐ Marginalist principle

Scarcity, choice and resource allocation

Central Economic Problem



scarcity	Limited resources (land, labour, capital, entrepreneurship) are insufficient to satisfy unlimited wants → economic problems of what & how & for whom to produce
choice	Choices have to be made on allocation of scarce resources, via price mechanism in free market
opportunity cost	Value of next-best alternative forgone

Factor of production (FoP):

Factor	Explanation	Returns
land	natural resources	income
labour	human resource available to work	salary
capital	man-made aid to production	return
entrepreneur	organise other three FoPs + take risk of production	profits

Production Possibility Curve (PPC)

Combinations of max amt of two goods produced in a certain period with fixed level of technology + all available resources fully and efficiently employed

Microeconomic		
Scarcity (production frontier)	**on/inside PPC** Attainable points	**beyond PPC** Unattainable points (desired due to unlimited wants + unattainable due to limited resources, i.e. scarcity)
Choice	**choose** among alternative combinations Which attainable combination (what + how much) to produce	
Opportunity cost	**negative slope** Produce more of one good → sacrifice some of other good	**concave to origin** Increasing opportunity cost as FoP is not equally suited for producing different goods
Productive efficiency	**on PPC** Productive efficiency (max possible production output)	**inside PPC** Productive inefficiency • Underemployment: inefficient use of resources • Unemployment: failure to use all resources
Allocative efficiency	**ONE point on PPC** maximise social welfare (consumer + producer) → achieve no wastage of resources	
Macroeconomic		

Full employment and unemployment	**<u>on PPC</u>** full employment of resources (fully utilise all resources) → produce max possible output	**<u>inside PPC</u>** unemployment of resources (X fully utilise all resources) → X produce max possible output
Actual economic growth	**<u>inside PPC → on PPC</u>** produce more of both goods	
Potential economic growth	**<u>outward shift</u>** productive capacity ↑ ● quantity & quality of FoP ↑ ● improvement in technology	**<u>inward shift</u>** productive capacity ↓ ● quantity & quality of FoP ↓

Investment-consumption choice

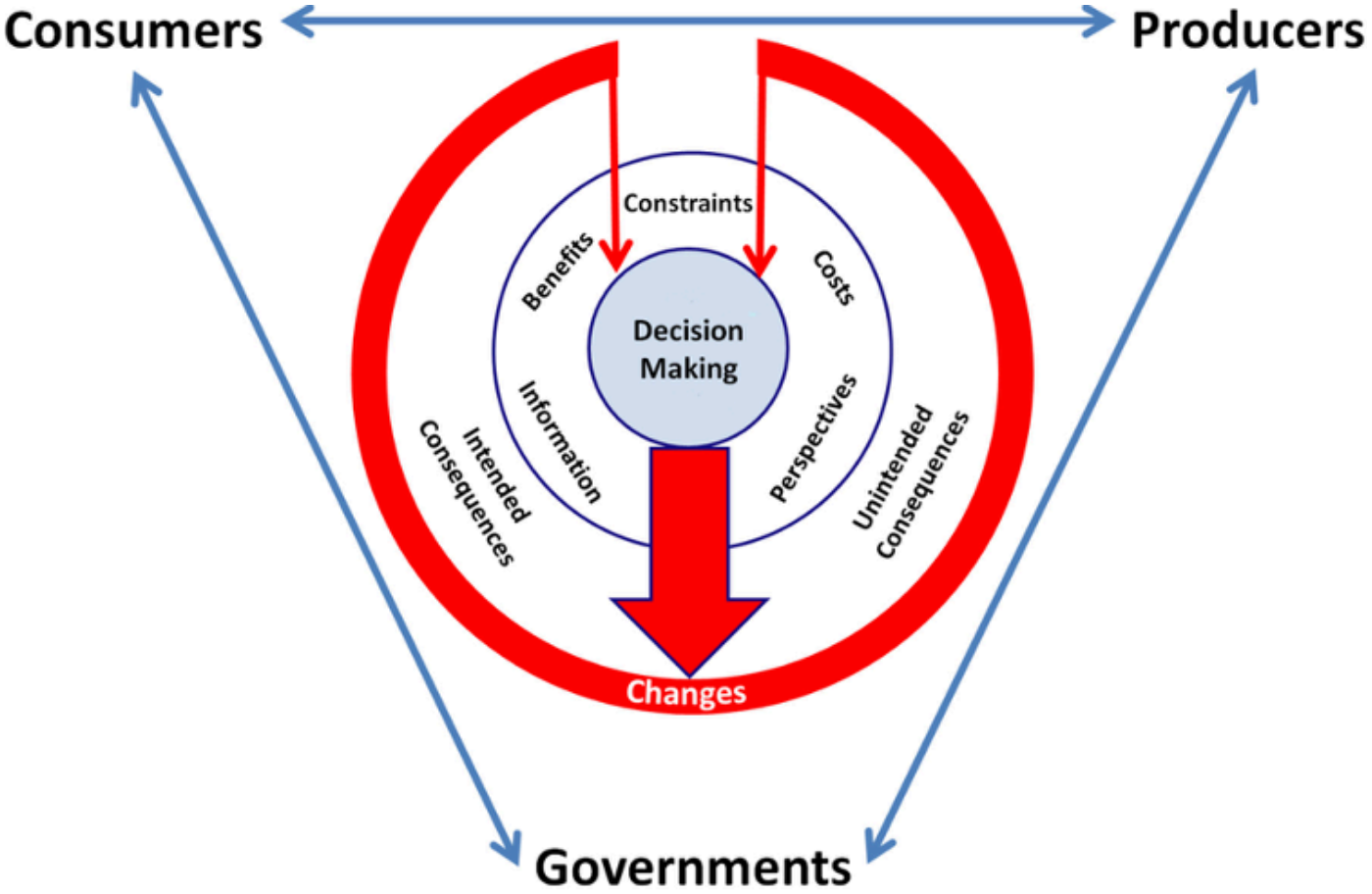
- Capital and consumer goods

Capital goods	**Consumer goods**
man-made goods used to <u>produce other goods</u>, not for immediate consumption	goods for final <u>consumption</u>, ready for use as they are
e.g. factories, machinery, tools, equipment	e.g. hawker food, clothing

- Consequence of investment VS consumption → standard of living

	produce <u>capital goods</u> via **investment**	produce <u>consumer goods</u> for **consumption**
current	less consumer goods for consumption → satisfy less needs and wants → <u>lower SoL</u>	more consumer goods for consumption → satisfy more needs and wants → <u>higher SoL</u>
future	more investment → greater productive capacity (more capital goods are used to produce other goods) → higher rate of potential economic growth → greater outward shift of PPC → <u>higher SoL</u>	less investment → smaller productive capacity (less capital goods used to produce other goods) → lower rate of potential economic growth → smaller outward shift of PPC → <u>lower SoL</u>

Decision-Making Process of Economic Agents



Decision making framework:

- Cognitive biases OR Rationality assumption, goal oriented
- Information - imperfect, distorted
- Perspectives
- Constraints
- **Weigh benefits and costs → marginalist principle*****
- Intended and unintended consequences
- Review decisions

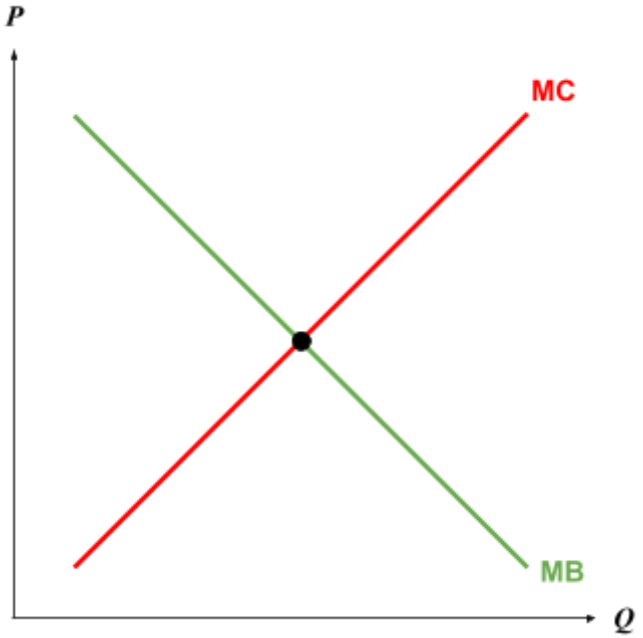
Economic agents

	Consumers	**Producers**	**Governments**
Self-interest	Maximise utility from buying G&S **MU = MC**	Maximise profits from producing then selling G&S **MR = MC**	Maximise social welfare when making policy decisions
	Total utility – Total spending	Total revenue – Total cost	Total social benefits – Total social cost
Constraints	limited income	afford to pay for limited amount of resources	limited budget
Decision making	what to buy	what to produce what resources to hire	how to allocate spending

Marginalist principle
Individuals make decisions on consumption of an additional unit of G&S based on additional benefit derived from it, to maximise total net benefit.

Marginal change: small incremental adjustment to existing plan of action

1. **Marginal benefit (MB)**: additional benefit from consumption of one more unit of G&S
2. **Marginal cost (MC)** : additional cost from consumption of one more unit of G&S



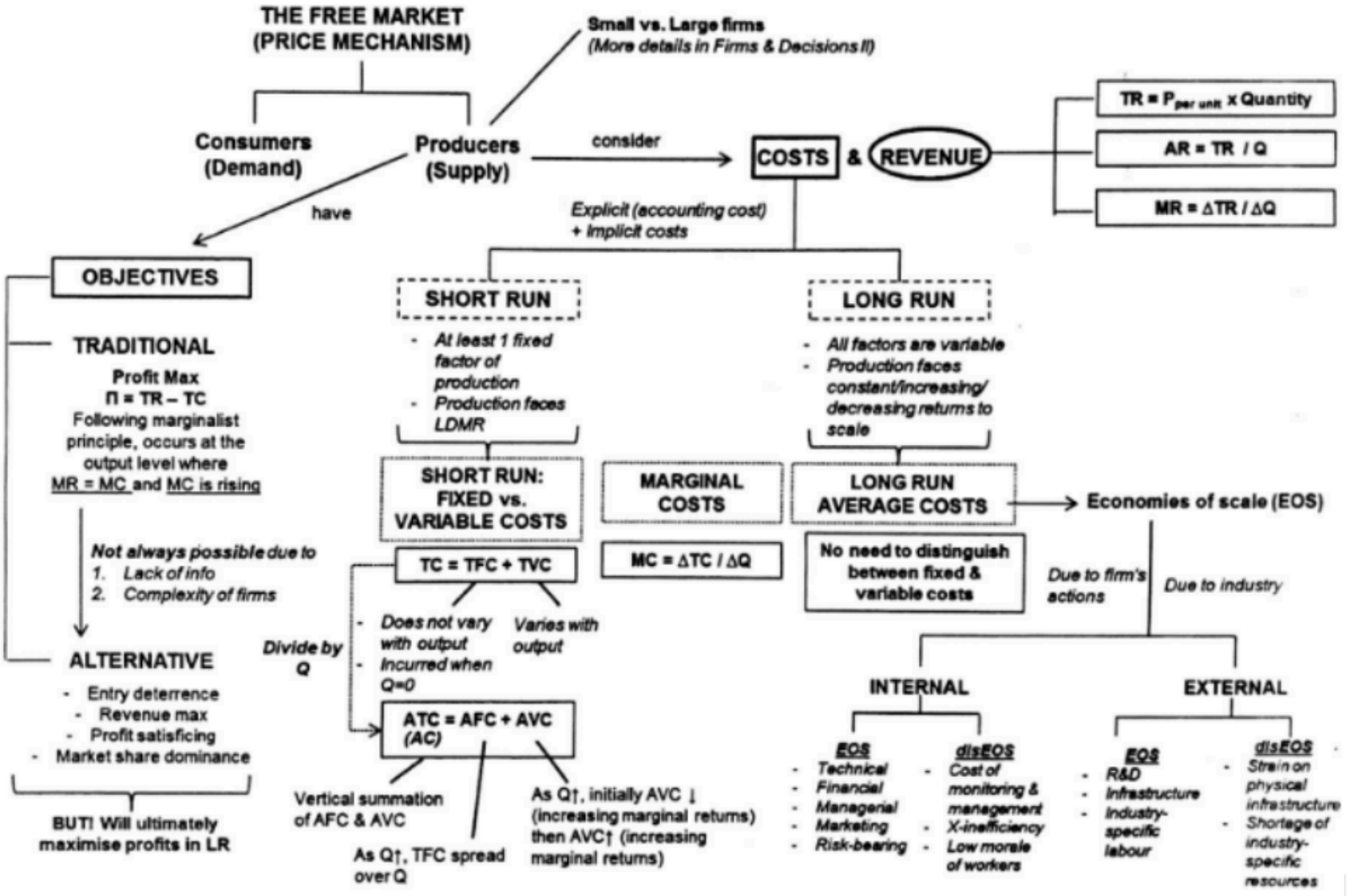
MB > MC	**MB = MC**	**MB < MC**

increase level of activity, next additional unit results in increase in net total benefit	optimal level of activity, next additional unit results in loss in net total benefit	decrease level of activity, next additional unit results in increase in net total benefit

Terminology

	marginal benefit	marginal cost
csr	**Marginal Utility (MU)** add. utility derived from consuming one more unit of G&S	**Marginal Cost (MC)** add. cost incurred for consuming one more unit of G&S
prs	**Marginal Revenue (MR)** add. revenue earned from selling one more unit of G&S	**Marginal Cost (MC)** add. cost incurred for producing one more unit of G&S
govt	**Marginal Social Benefit (MSB)** add. social benefit derived from society for consuming one more unit of G&S	**Marginal Social Cost (MSC)** add. social cost incurred by society for producing one more unit of G&S

Theme 2: Markets



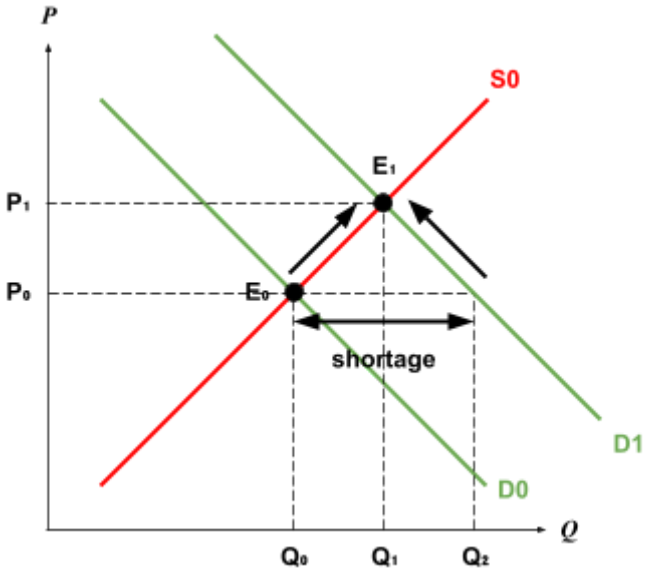
2.1 Price Mechanism

Concepts and Tools of Analysis
☐ Price mechanism ☐ Ceteris paribus ☐ Demand and its determinants ☐ Change in demand versus change in quantity demanded ☐ Supply and its determinants ☐ Change in supply versus change in quantity supplied ☐ Market equilibrium – Equilibrium price and quantity ☐ Market disequilibrium – Shortage and surplus ☐ Price elasticity of demand ☐ Price elasticity of supply ☐ Consumer expenditure and producer revenue

Price Mechanism

Price mechanism
Process of price determination in G&S through interaction of demand and supply → means of allocating resources in a market economy

Functions

1. **Signalling**	What and how much to produce? ● Csr exercise dollar votes: signal their preference for G&S thru the price that they are **willing and able** to pay (i.e. effective demand) ● Preferences transmitted to prs in the form of price received from csr, have information about consumers' DD ● Prs respond by producing G&S that csr demand to max profits → G&S that they are **willing and able** to supply (i.e. supply)
2. **Incentive**	How to produce? ● Producers use least costly method of production to produce G&S ● Producers incentivised to allocate more resources to increase production of G&S that fetch higher price to max profits
3. **Rationing**	For whom to produce? ● DD for G&S increase → shortage → price driven up → discourage demand → contraction of demand along demand curve to create new equilibrium → G&S rationed out to csr who are **willing and able to pay** for it (highest dollar vote) 

Demand and Supply

Demand
Quantity of G&S that consumers are willing and able to purchase at each possible price over a given period of time, ceteris paribus

Determinants of demand

- Price: movement along DD curve
- Non-price (**P + EGYPT-O**): shift of DD curve

Supply
Quantity of G&S that producers are willing and able to offer at each possible price over a given period of time, ceteris paribus

Determinants of supply

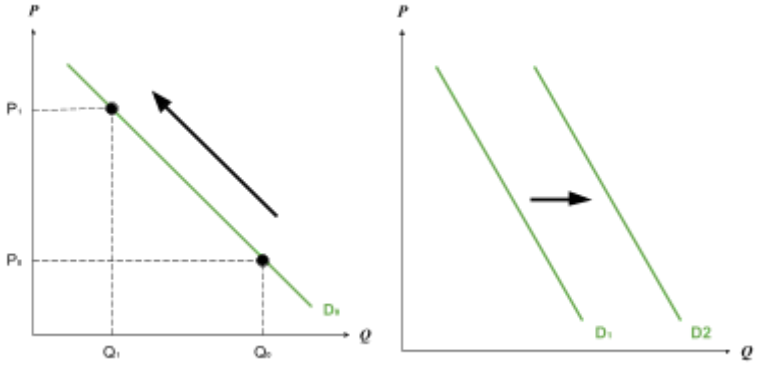
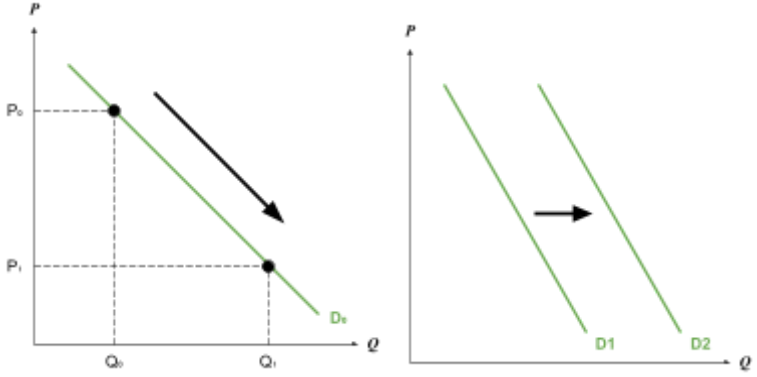
- Price: movement along SS curve
- Non-price (**GERMS-O**): shift of SS curve

Determinants of DD

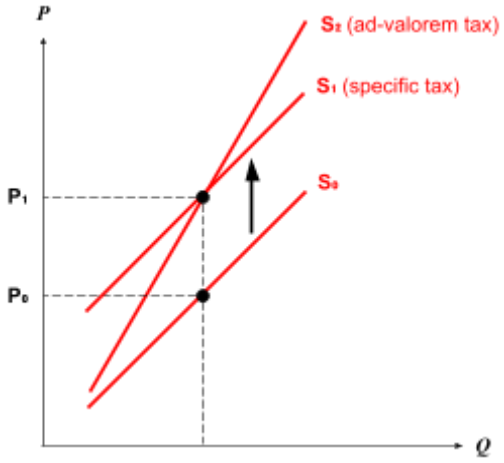
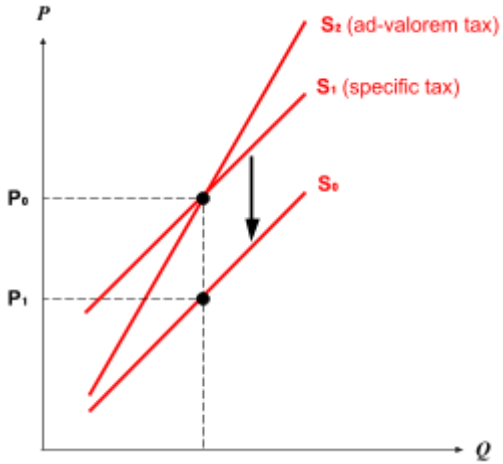
<table>
<tr><td>1. Price</td><td colspan="2">Law of demand states that Qdd is inversely related to P, ceteris paribus
● Law of diminishing marginal utility: As consumers consume more units of good (Qdd ↑), marginal utility derived from consumption of each additional unit ↓ = consumers willing to pay increasingly less for each additional unit consumed ⇒ Px ↓
● Income effect: Px ↓ = with fixed income, consumers' purchasing power ↑ = greater ability to buy more units of good ⇒ Qdd ↑
● Substitution effect: Px ↓ = good is relatively cheaper than its substitutes = with fixed income, utility-maximising consumers more willing to switch towards consuming good ⇒ Qdd ↑</td></tr>
<tr><td>2. Expectation of future prices</td><td>Expect future price to increase:
Utility-maximising consumers, with fixed income, want to avoid paying higher price to consume same good before price increase sets in ⇒ current DD ↑</td><td>Expect future price to decrease:
Utility-maximising consumers purchase good later when price is lower ⇒ current DD ↓</td></tr>
<tr><td>3. Govt policy</td><td colspan="2">Subsidy: on merit goods e.g. education/healthcare
● Good becomes more affordable → consumers' purchasing power increases ⇒ DD ↑

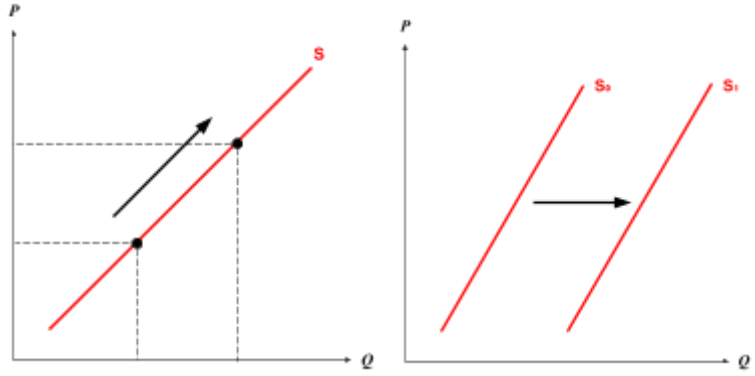
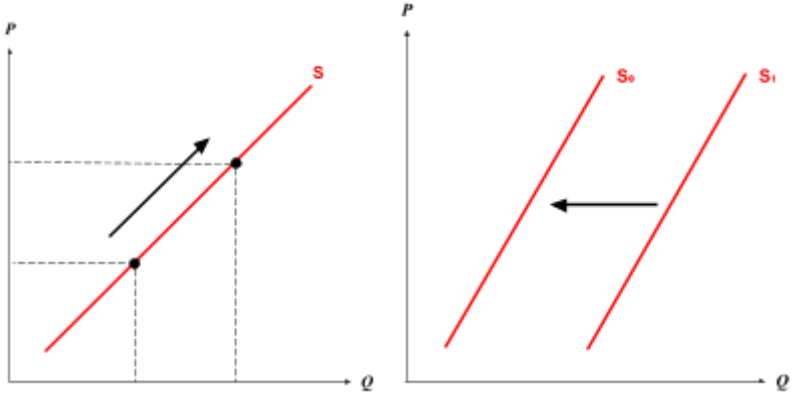
Interest rate: on big ticket items e.g. house/car that involve instalments
● Low interest rate → low opportunity cost of taking loans (interests repaid) → consumers more w/a to take loans to finance their purchase of good ⇒ DD ↑

Exchange rate:
● Currency appreciates → local goods become more expensive as compared to foreign goods → foreigners less willing and able to purchase local goods ⇒ DD for local goods ↓
● Currency depreciates → local goods become cheaper as compared to foreign goods → foreigners incentivised to purchase more units ⇒ DD for local goods ↑</td></tr>
<tr><td>4. Income level</td><td>Normal good:</td><td>Inferior good:</td></tr>
</table>

<table>
<tr><td></td><td>Income increase → crs' purchasing power increases → more willing and able to purchase goods at each price level ⇒ DD ↑</td><td>Income decrease → crs' purchasing power decreases → switch towards consuming goods which they derive lower utility ⇒ DD ↓</td></tr>
<tr><td rowspan="2">5. Price of related goods</td><td>Competitive demand:
● Substitutes are a pair of goods from which consumers derive similar utility
● Price of substitute increases, becomes relatively more expensive than good → with fixed income, utility-maximising crs incentivised to switch towards purchasing good instead of substitute → Qdd of substitute ↓ & DD for good ↑
  </td><td>Joint demand:
● Complements are a pair of goods that are consumed jointly
● Price of complement decreases → with fixed income, crs have greater purchasing power → more w/a to purchase complement → Qdd for complement ↑ & DD for good ↑
  </td></tr>
<tr><td colspan="2">Derived demand:
DD for good increase ⇒ DD for FoP ↑</td></tr>
<tr><td>6. Taste and preferences</td><td colspan="2">Advertising campaign:
increase desirability of good + build brand loyalty = DD ↑</td></tr>
</table>

Determinants of SS

1. **Price**	**Law of supply** states that Qss is directly related to P, ceteris paribus • Law of diminishing marginal returns: units of output ↑ marginal cost of production ↑ (FoP are imperfect substitutes of each other) = increase in price that producers are willing to accept in order to supply additional unit of good (in order to cover marginal cost incurred) = Px ↑ • Profit-maximising: Selling price of good ↑ = profits from supplying additional units of goods ↑ = producers more willing to increase Qss ⇒ Qss ↑	
2. **Govt policy**	Indirect tax: MC increase relative to MR → profit-maximising producers w/a to supply same unit of goods only at higher price to cover higher MC incurred ⇒ **SS ↓**  	Indirect subsidy: MC decrease relative to MR → profit-maximising producers incentivised to increase quantity supplied at each price to capture marginal profit ⇒ **SS ↑** 
3. **Expectation of future prices**	Expect future price to increase: Producers temporarily hold back quantity of goods released into the market at each price level, build up stocks → sell goods at higher price in the future to	Expect future price to decrease: Producers release larger quantity of goods into the market at each price level, in order to maximise current

	capture profits ⇒ **current SS ↓**	profits, as selling goods at lower price in the future leads to lower profits ⇒ **current SS ↑**
4. **Price of related goods**	**Joint supply**: • Two goods are produced together (by-products) e.g. crocodile meat & leather • Increased production of one good = increased production of other good • Px of cow hide ↑ = profit-maximising producers ↑ Qss of cow hide (to cover higher MC incurred at higher o/p) = slaughter more cows = beef comes from cows ⇒ **SS of beef ↑** 	**Competitive supply**: • Two goods share same FoP e.g. wooden chair & table • Increase production of one good → divert limited amount of FoP away → decrease production of other good ⇒ **SS ↓** 
5. **Marginal cost of production**	Price of FoP ↓ → MC decrease relative to MR → profit-maximising producers incentivised to increase SS to capture marginal profit ⇒ **SS ↑**	Technology e.g. automation → increase productivity, less input required to produce same level of output → MC decrease relative to MR → profit-maximising producers incentivised to increase SS to capture marginal profit ⇒ **SS ↑**
6. **Number of sellers**	More producers w/a to enter market at every price level ⇒ **SS ↑**	

7. **Natural factors**	Climatic conditions ● Abundant rainfall, absence of pests → farmers able to increase agricultural production ⇒ **SS** ↑	Natural phenomena ● Droughts, floods, earthquakes → farmers less w/a to supply crops to market ⇒ **SS** ↓ (supply shock)

Market equilibrium and disequilibrium

- Equilibrium market price and quantity determined by interaction of demand and supply

Market equilibrium: Qdd = Qss
- no further pressure on P and Q to adjust
- no tendency to change

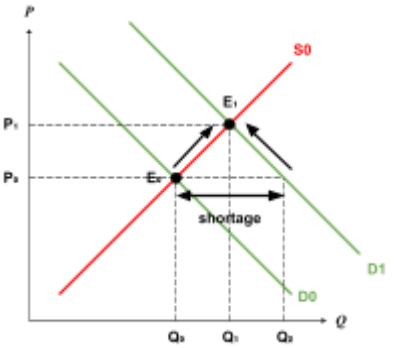
DD ↑	P ↑ Q ↑	SS ↑	P ↓ Q ↑
DD ↓	P ↓ Q ↓	SS ↓	P ↑ Q ↓

Simultaneous changes in DD & SS → effect on P & Q
- Increase / decrease as DD, SS reinforce each other
- Indeterminate, depends on relative magnitude of DD & SS shifts

- Market adjustment process

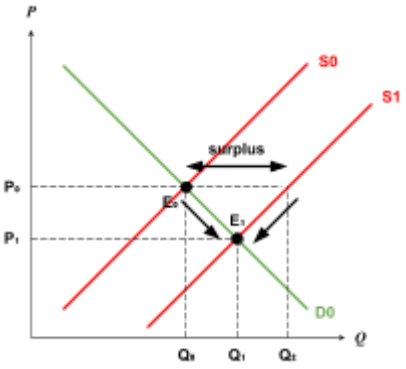
Shortage
- At original price P_0, Qdd > Qss → shortage of Q_2Q_1
- Buyers compete for the good, bid up price, price increase
- With fixed income, csr purchasing power decrease → Qdd ↓
- Units of o/p that can only be produced at higher marginal cost become profitable - profit-maximising producers incentivised to ↑ Qss to capture marginal profits
- **Upward** pressure on price until shortage is eliminated

P ↑ Q ↑



Surplus
- At original price P_0, Qss > Qdd → surplus of Q_2Q_1
- Producers cut prices to clear excess stock to reduce losses, price decrease
- With fixed income, csr purchasing power increase → Qdd ↑
- Units of o/p that can only be produced at higher marginal cost become unprofitable, prs ↓ Qss to avoid marginal losses
- **Downward** pressure on price until surplus is eliminated

P ↓ Q ↑



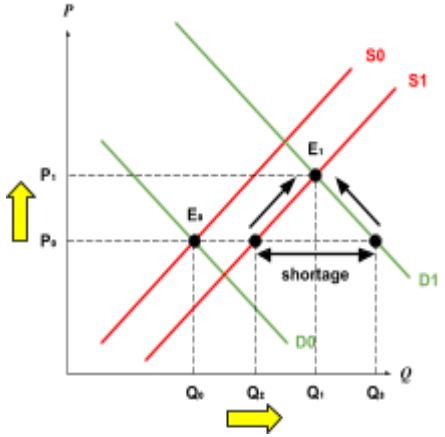
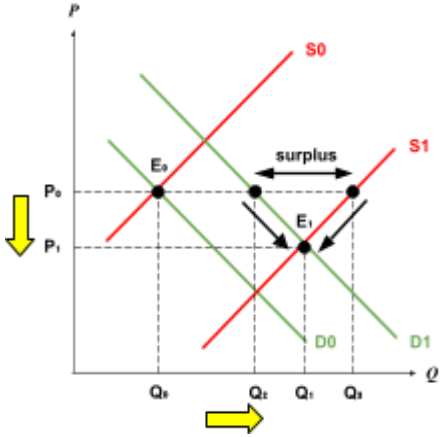
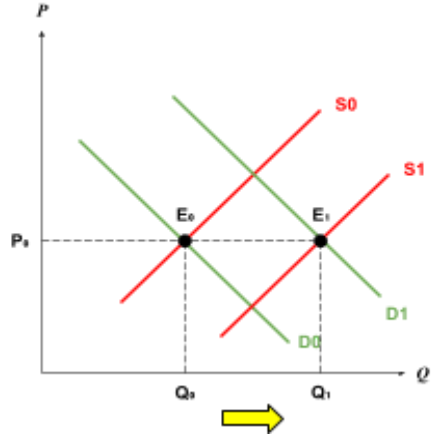
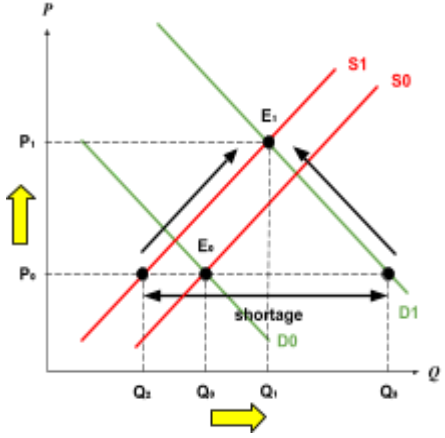
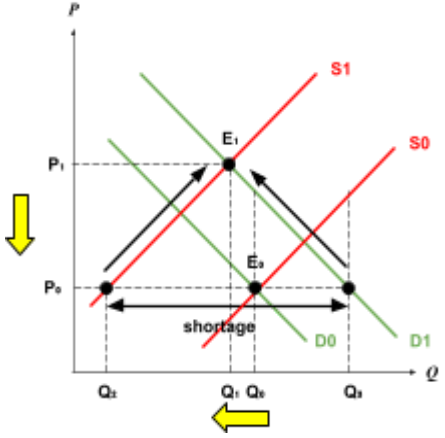
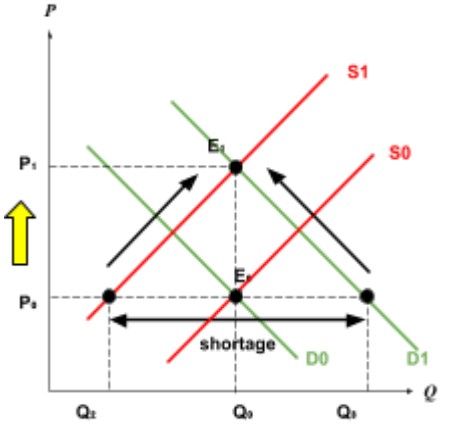
Consumer expenditure

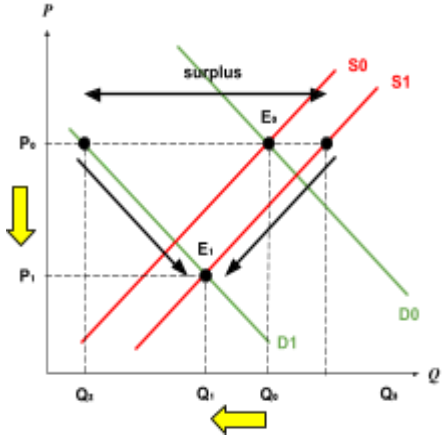
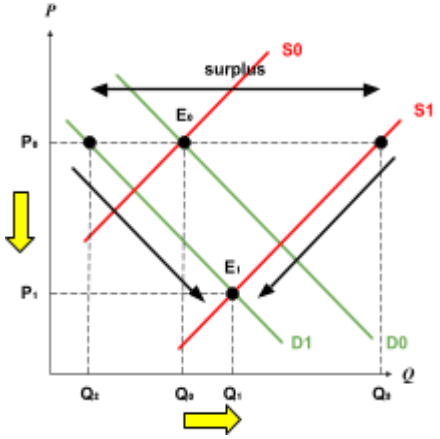
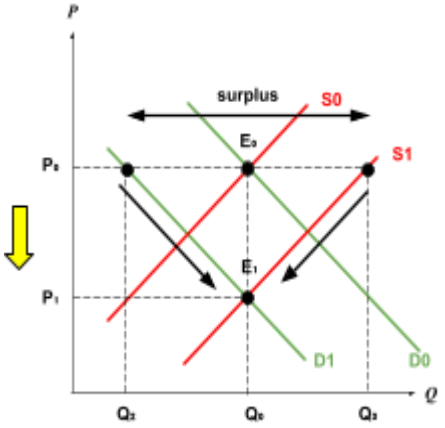
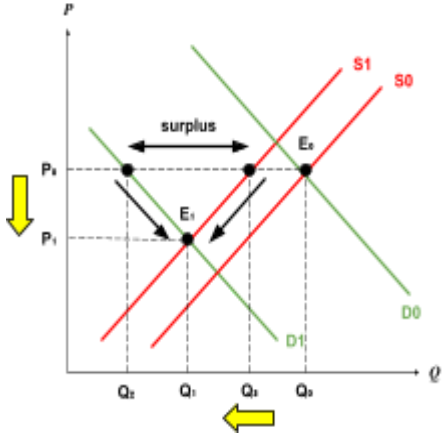
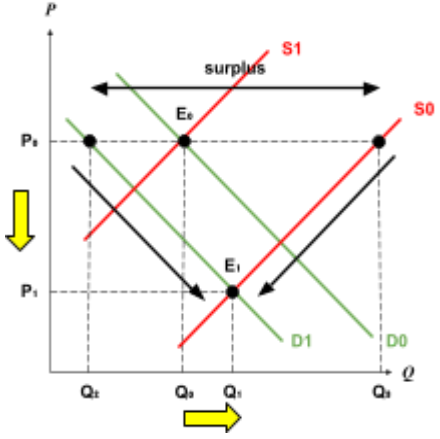
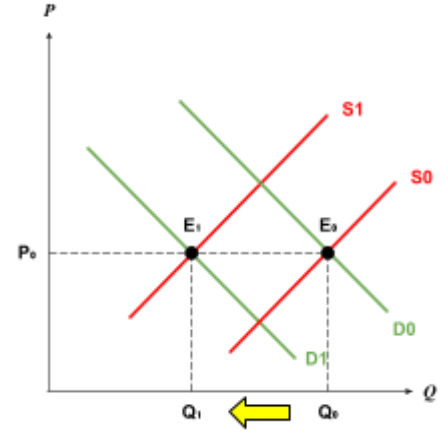
Total amount of money that consumers spend on G&S

Producer revenue
Total amount of money that producers receive from sale of G&S

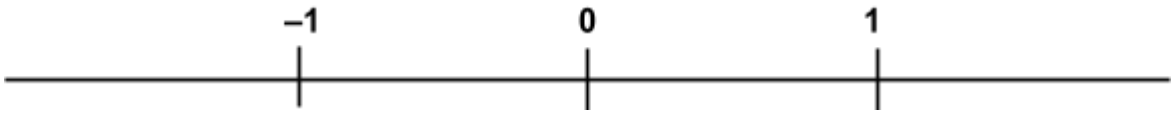
Without govt intervention, TE = TR

Changes in demand and supply

	|ΔDD| > |ΔSS|	|ΔDD| < |ΔSS|	|ΔDD| = |ΔSS|
DD ↑ SS ↑	**P ↑ Q ↑**	**P ↓ Q ↑**	**P = Q ↑**
			
DD ↑ SS ↓	**P ↑ Q ↑**	**P ↑ Q ↓**	**P ↑ Q =**
			

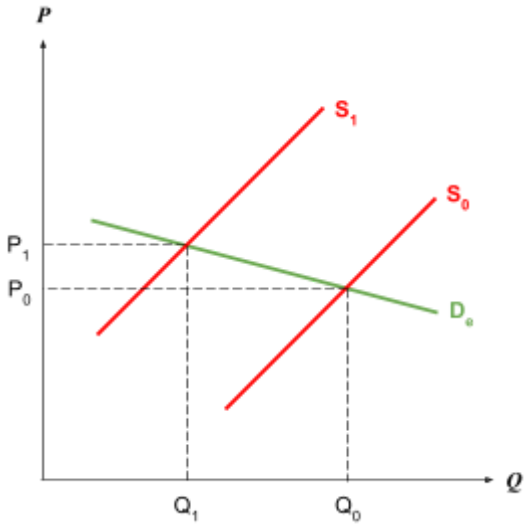
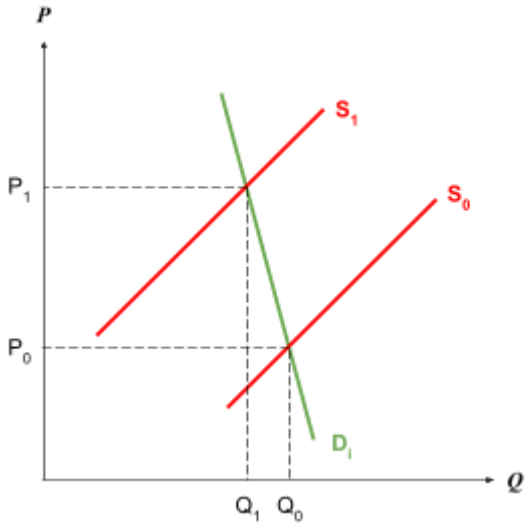
	|ΔDD| > |ΔSS|	|ΔDD| < |ΔSS|	|ΔDD| = |ΔSS|
DD ↓ SS ↑	**P ↓ Q ↓**	**P ↓ Q ↑**	**P ↓ Q =**
			
DD ↓ SS ↓	**P ↓ Q ↓**	**P ↑ Q ↓**	**P = Q ↓**
			

Elasticity concepts (DIRECTION + MAGNITUDE)



|PED|			inelastic	elastic
PES			inelastic	elastic
YED	inferior		necessity	luxury
XED	close complement	weak complement	weak substitute	strong substitute

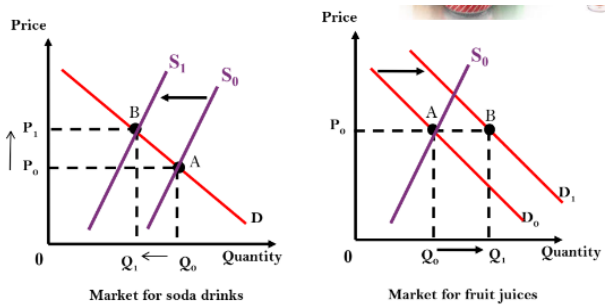
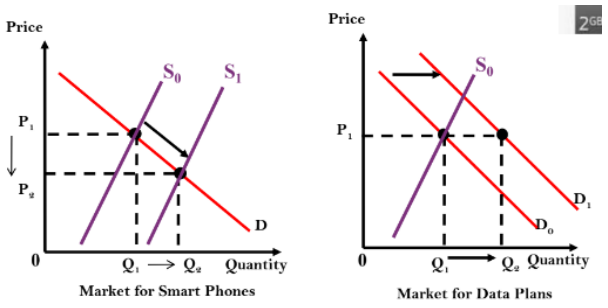
1. **Price Elasticity of Demand (PED)**

Price Elasticity of Demand (PED)	
Responsiveness of quantity demanded of good to change in its own price, ceteris paribus **[when there is CHANGE IN SS]**	
PED = %ΔQdd / %ΔP	
|PED| > 1	**|PED| < 1**
elastic P ↑ Qdd ↓ MTP	**inelastic** P ↑ Qdd ↓ LTP
	

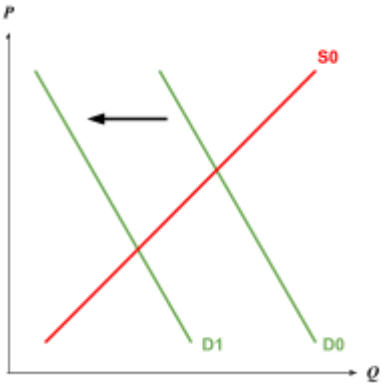
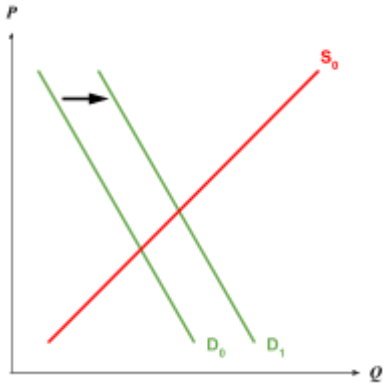
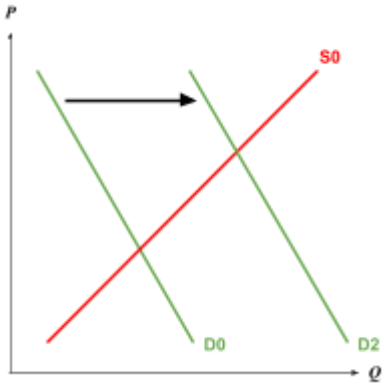
Determinants

Substitutes	Quantity + closeness of substitutes ↑ = csr readily switch to other relatively substitutes that satisfy the same want when Px ↑ = Qdd decrease MTP → **PED more elastic**
Time period	Short run: consumers may not be able to switch to alternative goods Long run: consumer adjust consumption patterns, seek other substitutes when Px ↑ → **PED more elastic**
Income proportion	Income proportion spent on good ↑ = purchasing power decrease more significantly when Px ↑ = Qdd decrease MTP → **PED more elastic**
Necessity	Degree of necessity ↑ = essential for survival, difficult to reduce consumption / completely do away in response to price change → **PED more inelastic**

2. Cross Elasticity of Demand (XED)

Cross Elasticity of Demand (XED)			
Responsiveness of <u>demand</u> for a good to <u>change in price</u> of another good, <u>ceteris paribus</u> (relationship b/w two goods) → movement along DD curve for one good causes shift in DD for another good			
XED = %ΔQdd$_A$ / %ΔP$_B$			
XED > 0		XED < 0	
<u>Substitutes</u> $P_B \uparrow DD_A \uparrow$ (same direction)  		**<u>Complements</u>** $P_B \uparrow DD_A \downarrow$ (opposite direction)  	
magnitude > 1	magnitude < 1	magnitude > 1	magnitude < 1
<u>Strong substitute</u> $P_B \uparrow Qdd_A \uparrow$ MTP	<u>Weak substitute</u> $P_B \uparrow Qdd_A \uparrow$ LTP	<u>Strong complement</u> $P_B \uparrow Qdd_A \downarrow$ MTP	<u>Weak complement</u> $P_B \uparrow Qdd_A \downarrow$ LTP

3. Income Elasticity of Demand (YED)

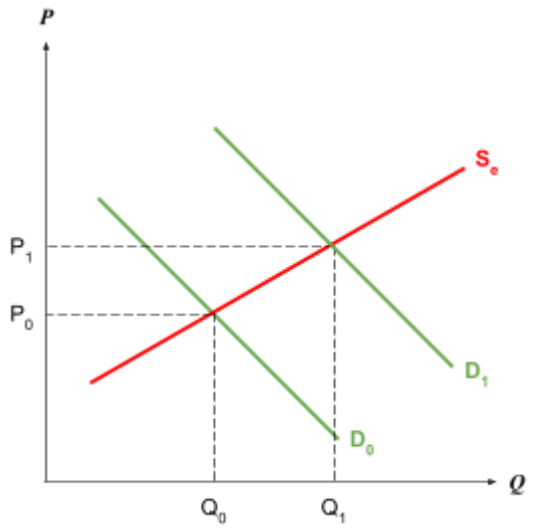
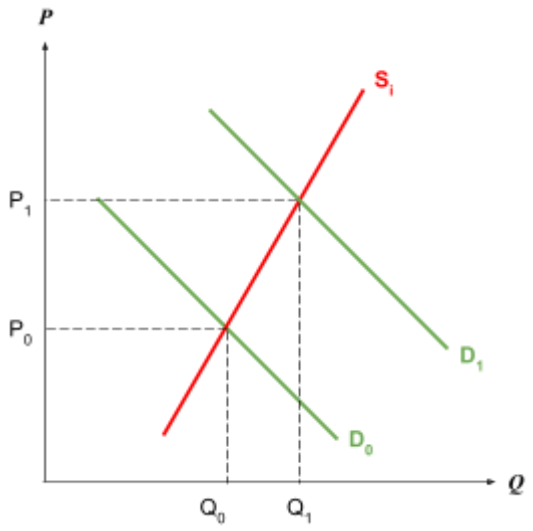
<table>
<tr><th colspan="3">Income Elasticity of Demand (YED)</th></tr>
<tr><td colspan="3">Responsiveness of <u>demand</u> for good to <u>change in income</u>, <u>ceteris paribus</u></td></tr>
<tr><td colspan="3">YED = %ΔQdd / %ΔY</td></tr>
<tr><th colspan="2">YED > 0</th><th>YED < 0</th></tr>
<tr><td colspan="2"><u>normal good</u>
Y ↑ DD ↑
(same direction)</td><td rowspan="2"><u>inferior good</u>
Y ↑ DD ↓
(opposite direction)
  </td></tr>
<tr><th>YED > 1</th><th>YED < 1</th></tr>
<tr><td><u>luxury</u>
Y ↑ DD ↑ to larger extent
(high dependence
on income level)
  </td><td><u>necessity</u>
Y ↑ DD ↑ to smaller extent
(little dependence
on income level)
  </td></tr>
</table>

Type of good depends on income level, context

Necessity	Income change induce LTP change in Qdd *at given price* ⇒ **<u>income inelastic</u>** • Y ↓ cannot be given up easily as essential for survival, DD ↓ to small extent • Y ↑ additional purchasing power not directed towards necessity, DD ↑ to small extent
Luxury	Income change induce MTP change in Qdd *at given price* ⇒ **<u>income elastic</u>** • Y ↓ luxury goods are the first to be given up, DD ↓ to large extent • Y ↑ additional purchasing power goes to create demand for luxury goods (assume expenditure on necessities have been accounted for), DD ↑ to large extent
Inferior	• Y ↑ greater purchasing power, consumers less willing to purchase inferior

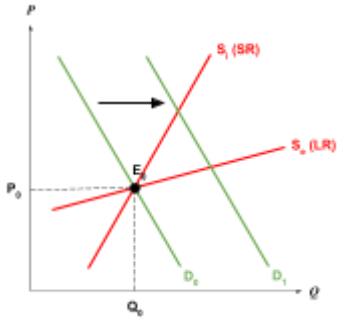
	goods as they are now able to switch to goods that yield higher level of utility ⇒ **DD** ↓

4. Price Elasticity of Supply (PES)

Price Elasticity of Supply (PES)	
Responsiveness of <u>quantity supplied</u> of good to <u>change in its own price</u>, <u>ceteris paribus</u> **[when there is CHANGE IN DD]**	
PES = %ΔQss / %ΔP	
PES > 1	**PES < 1**
<u>elastic</u> P ↑ Qss ↑ MTP	**<u>inelastic</u>** P ↑ Qss ↑ LTP
	

Determinants

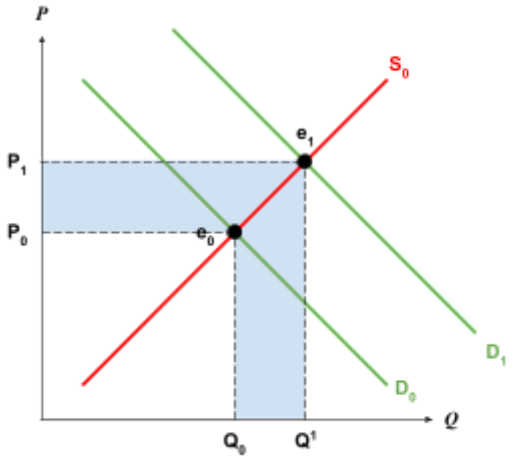
Mobility of FoP	FoP able to switch b/w different locations or uses = producer easier to increase Qss when P ↑ ⇒ **<u>PES more elastic</u>**	
	<u>Geographical mobility</u> FoP move b/w diff locations • Hire workers from other locations → able to increase Qss when price increase	<u>Occupational mobility</u> FoP move b/w diff industries • Low-skilled jobs → employ more units of labour within short period of time • High-skilled jobs → unable to employ more units of labour
Availability of stock	Non-perishable goods have longer shelf life, can be stored longer → when P ↑, producer release stocks increase Qss to earn profit ⇒ **<u>PES more elastic</u>**	Perishable goods have shorter shelf life, cannot be stored long → when P ↑, producer unable to release stocks to earn profit ⇒ **<u>PES more inelastic</u>**

Time period	Time period ↑ = producer has time to respond to price changes by altering quantity supplied ⇒ **PED more elastic** • Short run: fixed amount of FoP → limited ability to vary Qss • Long run: able to vary amount of FoP → able to vary Qss 
Existence of spare capacity	More spare capacity i.e. existing production capacity is not fully utilised (not operating at full capacity) → prs able to increase Qss when P ↑ ⇒ **PES more elastic**

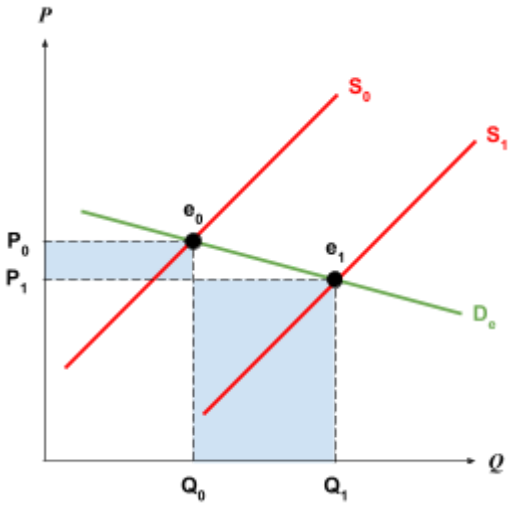
Without government intervention,
consumer expenditure = **producer revenue** = price per unit (P) * no. of units (Q)

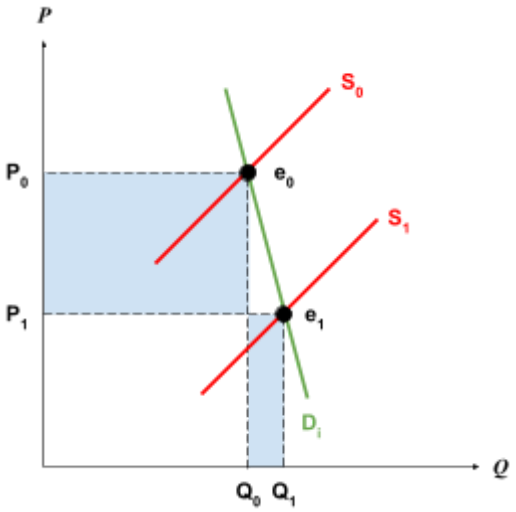
Given SS change, use PED to derive change in TE/TR
Given DD change, use PES to derive change in TE/TR

When DD increase, P increase Q increase → TE/TR increase



When SS increase, P decrease Q increase → change in TE/TR depends on PED





PED elastic:
increase in TE/TR due to increase in Q outweighs decrease in TE/TR due to decrease in P

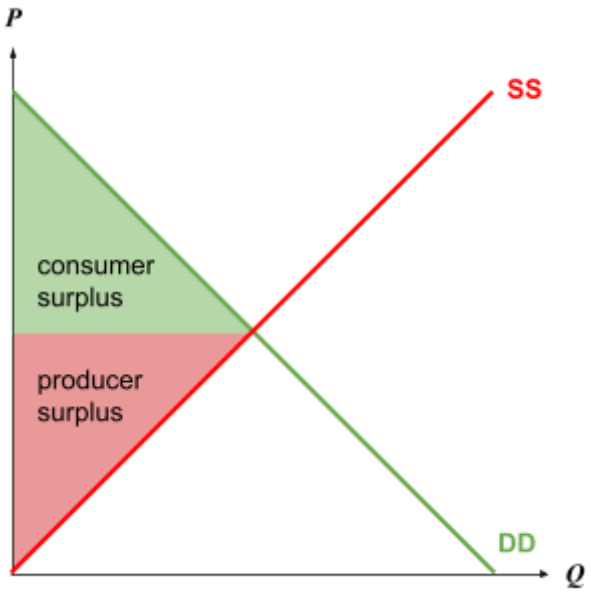
PED inelastic:
decrease in TE/TR due to decrease in P outweighs increase in TE/TR due to increase in Q

Application:

PED	Evaluation for Market failure/government intervention: Should governments intervene: Intervene in tobacco consumption: Impose tax decrease consumption. Apply PED? → Is this intervention effective? Impose tax? Increase COP, producers pass on tax burden to consumers. Consumers face higher cost of consumption/decrease in pp for tobacco consumption. Smokers addicted to tobacco consumption, consume daily basis, price inelastic. Not very effective. Governments can do? → Well-rounded/holistic measure to decrease tobacco consumption: Combine Taxes with Education.
PES	Application of PES: Producers: Price elastic or Price Inelastic in SS. Producer of Strawberry → Primary products are usually Price inelastic in SS. Due to weather condition/ The season when DD more strawberries: maybe buy more fertilizer→ PES helps in Planning in advance for production. Aim: Capture more revenue/profit Government: How to apply? Govt Provision? → Public Housing → PES Inelastic → Expect/know that the population is going to increase in the future. → Plan/try to increase SS of PH NOW
XED	Complements: Marketing strategy: Airline & Hotels. Tend to market their goods tgt to increase sales & revenue for both> increase tgt → Producer: Adidas shirt, → Rival competitors: Nike Shirt 1st → Identify who are our rival competitors in the market Nike shirt reduce price of their shirts. (2 Strategies to compete in the market: Price Competition, Product Innovation) → Cut price → Branding/Brand Loyalty→ Less positive/less of a substitute with Nike shirts.

Assumption: ceteris paribus condition (everything else kept constant)

2.2 Microeconomic Objectives and Policies



Consumer surplus
Difference b/w price that consumers willing to pay & actually pay

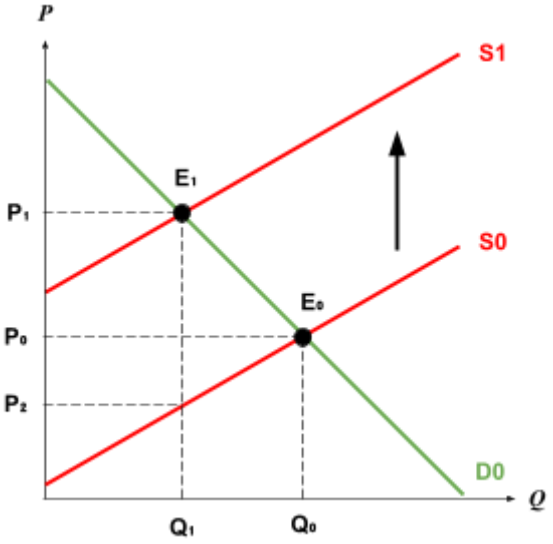
Producer surplus
Difference b/w price that producers willing to receive & actually receive

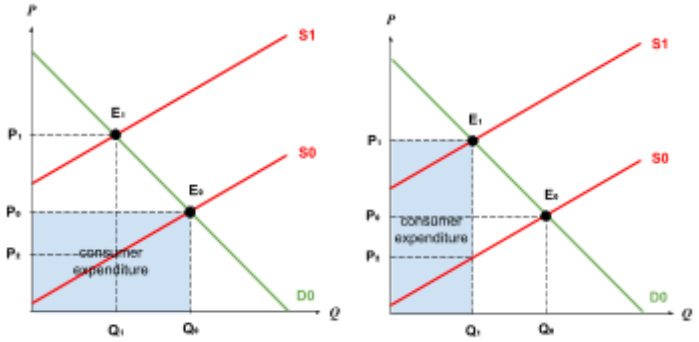
Governments' microeconomic objectives: E&E

Allocative efficiency	Equity
efficient use of resources	equitable distribution of output
Maximise society's welfare: last unit of good produced and consumed add equally much to society's benefit & cost → not possible to further increase society's welfare by adjusting o/p **Social optimum**: **MSB = MSC** **Deadweight loss (DWL)**: welfare loss when due to market failure, desirable consumption and production does not take place	Equity achieved when income/ wealth is distributed in a fair or just way Income inequality: people possess different quantity and quality of resources from which to generate income Goods allocated based on ability to pay → inequitable outcome: rich have access, poor do not have access

→ society's welfare not maximised when output level is not at social optimum	

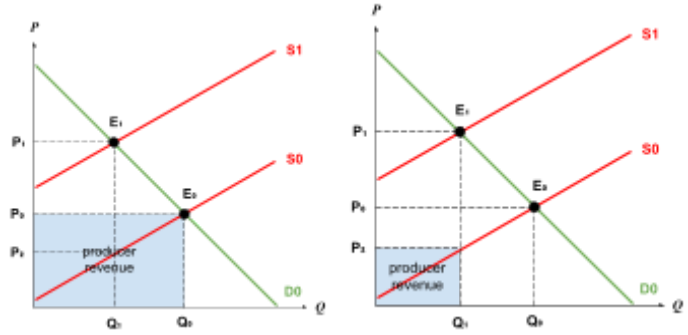
Market Intervention (AE)

INDIRECT TAX	
	**Definition:** Levy imposed by govt upon sale of G&S, paid to govt, not by consumers, but <u>indirectly by producers</u> ● Specific tax: fixed amt of tax per unit sold ● Ad valorem tax: percentage of price of G&S **Aim:** Discourage production or consumption of good Raise tax revenue to finance govt spending Examples: ● demerit goods e.g. tobacco, alcohol ● Goods and Services Tax (GST) **<u>On equilibrium price and quantity</u>** MC increase relative to MR → producers <u>↓ SS</u> to avoid marginal loss = equilibrium P ↑ Q ↓
<u>On consumer expenditure</u> Consumer expenditure = price consumers pay per unit of output * units of output	**<u>On producer revenue</u>** Producer revenue = price producers receive per unit of output * units of output



Effect on consumer expenditure depends on PED

- PED elastic: decrease
- PED inelastic: increase

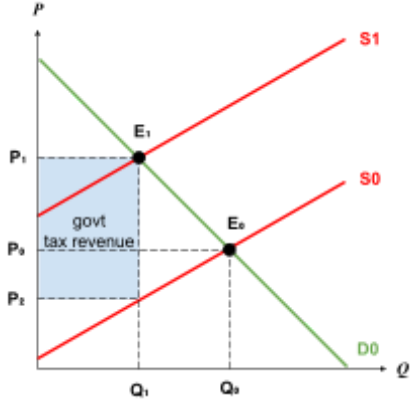


Producer revenue decrease regardless of PED

<u>On govt tax revenue</u>

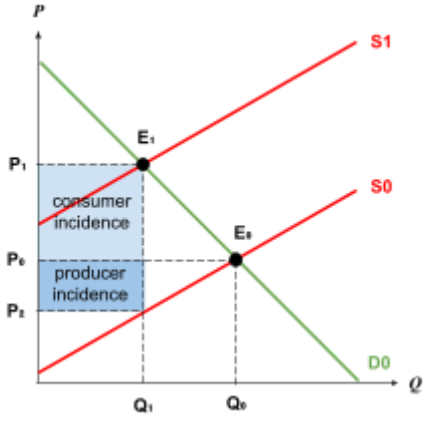
Govt tax revenue

= tax per unit of output * units of output



<u>On tax incidence</u>

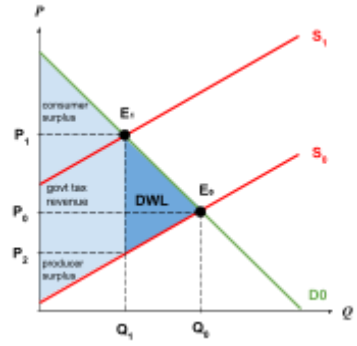
Some incidence shifted from producer to consumer through increase in selling price ⇒ division of tax burden



<u>On govt's microeconomic objectives</u>

Loss of allocative efficiency (loss of economic welfare)

- Consumer surplus decrease: csr made worse off
- Producer surplus decrease: prs made worse off
- Govt tax revenue: govt made better off
- DWL incurred: welfare loss gained by no one

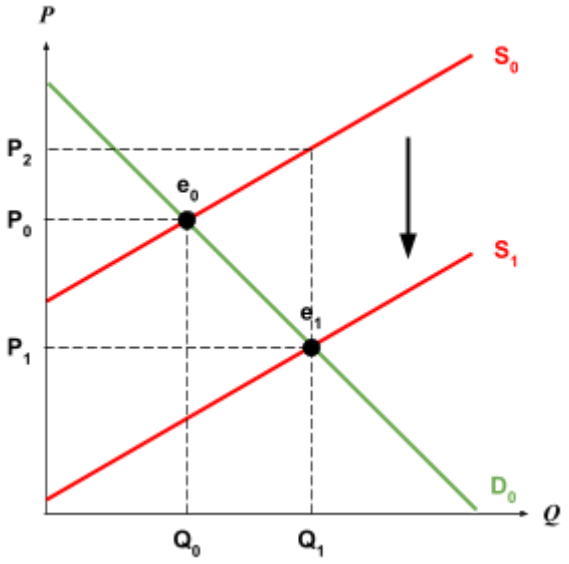


Equity

- Regressive in nature: take larger % of income from low-income person than high-income person e.g. soda tax

Depends on PED and PES	
Effectiveness **Discouraging consumption** ● PED elastic: more significant decrease in Qty ⇒ effective ● PED inelastic: less significant decrease in Qty ⇒ require high tax rate to induce large increase in price for Qty to fall significantly **Raising govt tax revenue** ● PED elastic: less tax revenue generated ● PED inelastic: more tax revenue generated ⇒ effective	**Problems** **Black market** ● Smokers try to find a way to satisfy their addiction in face of high taxes = smugglers incentivised to import cigarettes from countries where no or lower tax, undercut legal sellers and gain profit → undermine effectiveness of tax to discourage consumption

INDIRECT SUBSIDY



Definition:
Provision of financial assistance by govt to producers to encourage production of G&S

- Specific subsidy: fixed amt of subsidy per unit sold
- Ad valorem subsidy: percentage of price of G&S

Aim:
Encourage production or consumption of good
Make good more affordable for the poor

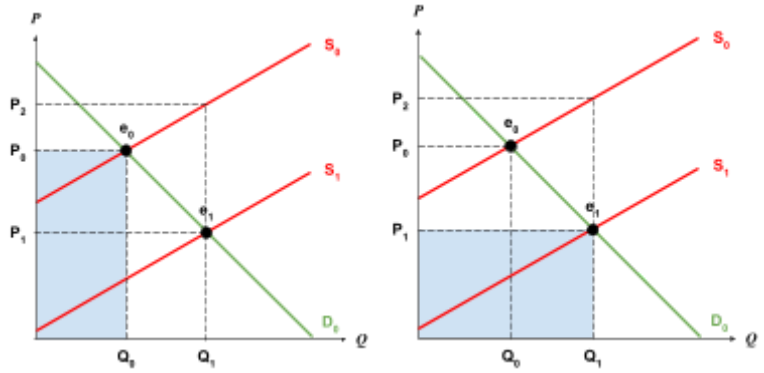
Examples:

- merit goods e.g. healthcare, education
- necessities e.g. petrol, cooking oil

On equilibrium price and quantity
MC decrease relative to MR → producers ↕ SS to capture marginal profit ⇒ eqm P ↓ Q ↑

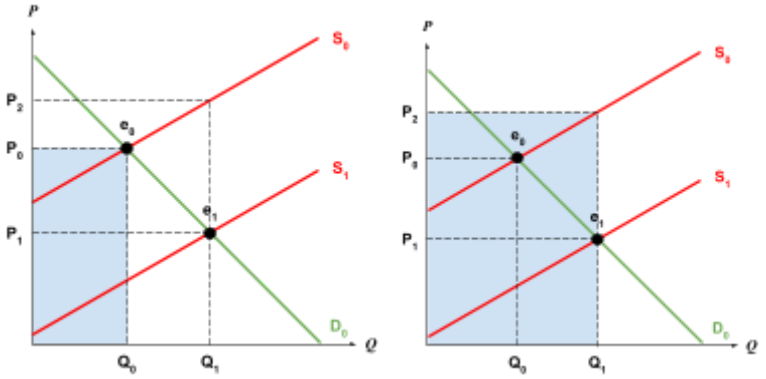
On consumer expenditure
Consumer expenditure
= price consumers pay per unit of output * units of output

On producer revenue
Producer revenue
= price producers receive per unit of output * units of output



Effect on consumer expenditure depends on PED

- PED elastic: increase
- PED inelastic: decrease

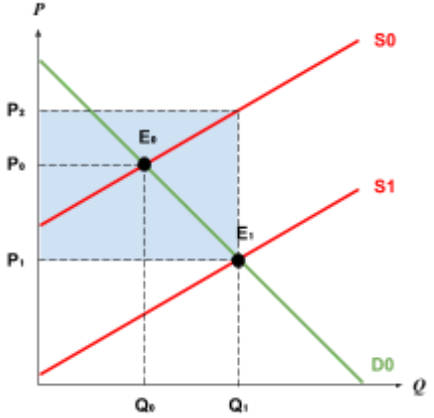


Producer revenue increase regardless of PED

<u>On govt subsidy spending</u>

Govt subsidy spending

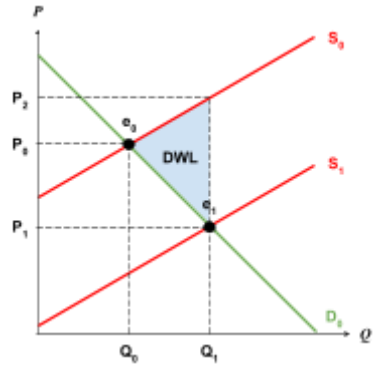
= subsidy per unit of output * units of output



<u>On govt's microeconomic objectives</u>

Loss of allocative efficiency (loss of economic welfare)

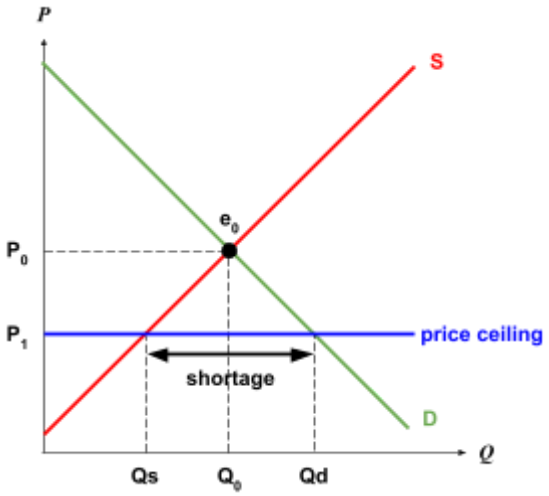
- Consumer surplus increase: csr made better off
- Producer surplus increase: prs made better off
- Govt subsidy spending: govt made worse off
- DWL incurred: welfare loss gained by no one



Equity

	• Producers produce good at lower cost, charge lower prices. Low-income people experience greater purchasing power, have access to necessities → <u>improve equity</u> • Regressive in nature: benefit high-income person, greater increase in purchasing power of high-income than low-income people e.g. petrol subsidies as higher-income people more likely to own and drive cars → <u>worsen equity</u>
<u>Effectiveness</u> **Encouraging consumption** • PED elastic: smaller decrease in price is sufficient to induce large enough increase in Qdd to eliminate surplus, overall increase in Qty is more significant ⇒ <u>effective</u> • PED inelastic: large decrease in price needed to induce large enough increase in Qdd **Lower price of good** • PED elastic: small decrease in price is needed to induce small increase in Qdd to eliminate surplus • PED inelastic: large decrease in price is needed to induce large enough increase in Qdd to eliminate surplus ⇒ <u>effective</u>	**<u>Problems</u>** **Black market** • Subsidy lowers price of good in the country below price of same good overseas • Smugglers incentivised to take risk to make profit by purchasing good at subsidised price at home & selling good at higher price in another country → undermine effectiveness of subsidies to keep necessities affordable and available to locals • Govt effort to conduct checks and enforce rules → take away scarce resources from alternative uses (opportunity cost) **Worsen govt budget position** • Spending on subsidy, without compensating spending cuts in other areas of tax increase **Opportunity cost of subsidy** • Divert funds away from other sectors

PRICE CEILING



Definition:
Maximum legal price allowed by govt, no G&S can be bought or sold at price above this upper limit (set below equilibrium price in free market)

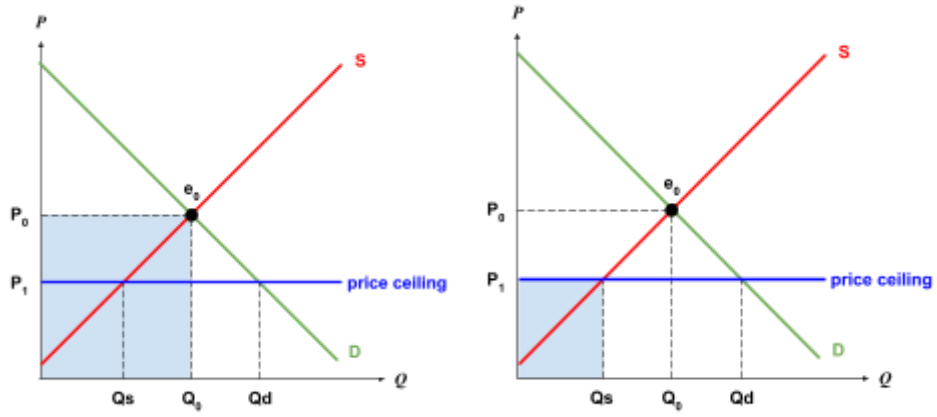
Aim:
Protect consumers from having to buy goods that are priced too high, keep goods affordable to consumers

Examples:
- necessities e.g. food, housing, rent control

On price and quantity
Create *persistent* shortage (Qdd > Qss) → size depends on PED & PES
- At lower price, consumers increase Qdd
- At lower price, units of o/p that can only be produced at higher MC are no longer profitable → producers decrease Qss

On consumer expenditure and producer revenue

On govt's microeconomic objectives



Effect on TE = TR depends on PED & PES

- PED & PES elastic: larger decrease in TE/TR (larger fall in qty)

Loss of allocative efficiency

- Consumer surplus uncertain
- Producer surplus decrease: producers made better off
- DWL incurred: welfare loss gained by no one

Equity

- Keep price of good low, more affordable to low-income people
- Counter regressive effect: increase in price of necessities represents larger percentage of incomes of low-income than high-income people - greater decrease in purchasing power
- Fewer units of good available in market, decrease in availability of good hurts other groups of consumers

Problems

Black market

- Sellers incentivised to take risk to sell the good illegally at higher price (since consumers are prepared to pay higher price) → consumers have to pay inflated prices well above ceiling price

Quality deterioration

- No ability to increase prices = producers cut cost of production to maintain profitability (switch to lower-grade materials, reduce portion size) = decline in consumer utility, loss of economic

- Govt conduct checks and put in place tough penalties → take away scarce resources from alternative uses

Allocation by alternative means

- Based on first-come-first-served:
- Based on sellers' preferences:
- Rationing through coupons:

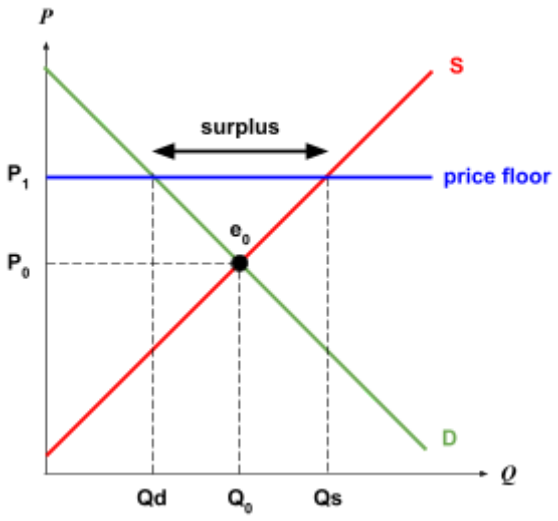
welfare

- Govt issue specific product standards → high cost incurred to enforce

Reduction in market supply in the long run

- Higher profits in alternative industries which do not face price controls raises the opportunity cost of staying on in the existing industry = producers leave the industry = market supply decrease = exacerbate shortage = higher prices = lower-income households unable to purchase these G&S

PRICE FLOOR



Definition:
Minimum legal price allowed by govt, no G&S can be bought or sold at price below this lower limit (set above equilibrium price in free market)

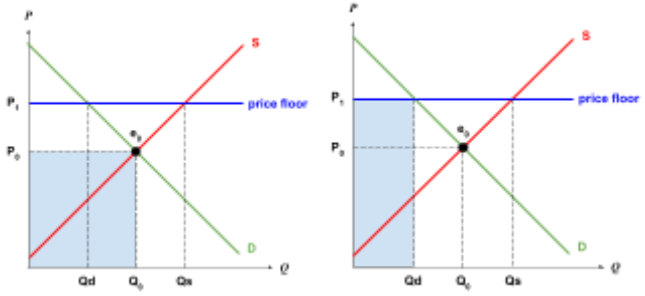
Aim:
Protect producers from having to sell goods priced too low, so that producers receive fair income
Govt buy up surplus to accumulate stocks in preparation for future shortages

Examples:
- Agriculture
- Minimum wage

On price and quantity
Create *persistent* surplus (Qss > Qdd) → size depends on PED
- At higher price, consumers decrease Qdd
- At higher price, units of o/p that can only be produced at higher MC are now profitable → producers increase Qss

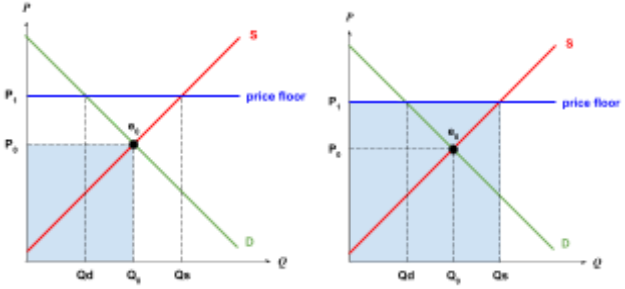
On consumer expenditure
Consumer expenditure
= price consumers pay per unit of output * units of output

On producer revenue (assume govt buy up surplus)
Producer revenue
= price producers receive per unit of output * units of output (Qs)



Effect on consumer expenditure depends on PED

- PED elastic: decrease
- PED inelastic: increase



Producer revenue increase regardless of PED

<u>On govt's response to surplus</u>

Buy up surplus

- Worsen govt budget position
- Opportunity cost: at the expense of other sectors
- Raise taxes to finance spending

Raise demand

- Advertising, find alternative uses for good, reduce consumption of substitutes

<u>On govt's microeconomic objectives</u>

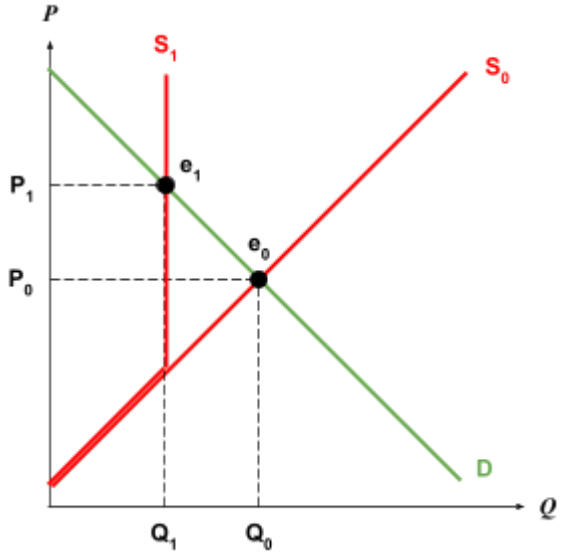
Loss of allocative efficiency

- Consumer surplus decrease: csr worse off
- Producer surplus increase: prs better off
- Govt spending: govt worse off
- DWL incurred

Equity

Minimum wage	Agriculture
• Raise workers' income, narrow income gap • Job loss → workers originally employed are now retrenched	• Raise farmers' income • Higher food price → decrease purchasing power (+ regressive effect) of low-income households, unaffordable

QUOTA



Definition:
Limit imposed by govt on quantity of goods that can be sold
(set below equilibrium quantity exchanged in free market)

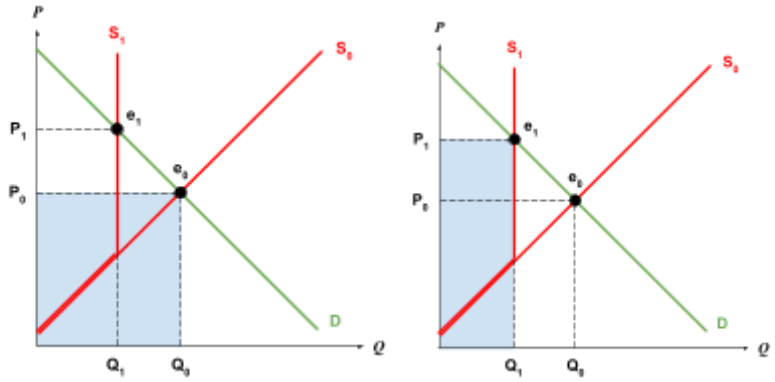
Aim:
Limit consumption of demerit goods (e.g. alcohol, tobacco)
Limit production processes that give rise to negative externalities (e.g. greenhouse gas emissions)
Limit production to drive up prices and protect producer revenue (PED inelastic goods)
Protect domestic producers from foreign competition, as it limits the amount of foreign goods that can enter the market

Examples:
- Import quota on steel

On equilibrium price and quantity
Part of SS curve past quota qty becomes perfectly price inelastic → equilibrium Q ↓ P ↑
Increase in price depends on PED

On consumer expenditure & producer revenue

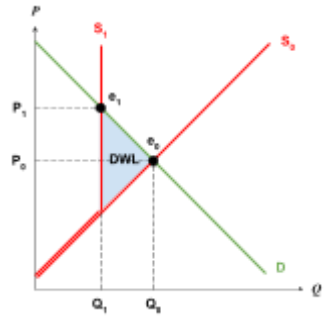
On govt's microeconomic objectives
Loss of allocative efficiency



Effect on TE = TR depends on PED

- PED elastic: decrease
- PED inelastic: increase

- Consumer surplus decrease: consumers made worse off
- Producer surplus uncertain
- DWL incurred: welfare loss gained by no one



Equity

- Regressive effect if goods concerned are necessities: low-income households spend larger percentage of income → greater decrease on purchasing power of low-income households
- Unaffordable to low-income households
- Raise producers' income (PED inelastic goods), where producers are disadvantaged group e.g. poor farmers

<u>Problems</u>

Black market

- Beyond quota amount and up to original eqm output, there exists quantities of output for which consumers are w/a to pay prices <u>above</u> what it costs to supply good to mkt
- Opportunity for profit → entice producers to cheat and produce in excess of quota
- Step up efforts to conduct checks → take away scarce resources from alternative uses

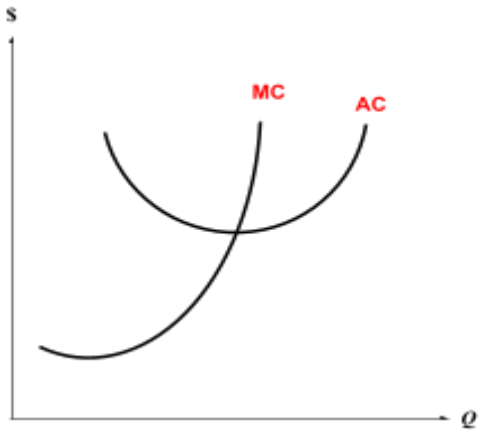
2.3 Firms and Decisions

Concepts and Tools of Analysis
☐ Profit maximisation condition: MR=MC, where MC is rising ☐ Revenue maximisation, profit satisficing, market share dominance ☐ Total cost, average cost, marginal cost ☐ Total revenue, average revenue, marginal revenue ☐ Internal and external economies and diseconomies of scale ☐ Third degree price discrimination ☐ Shut-down condition ☐ Product differentiation ☐ Barriers to entry ☐ Competition versus collusion ☐ Efficiency – Allocative, productive and dynamic efficiency ☐ Consumer welfare

Cost

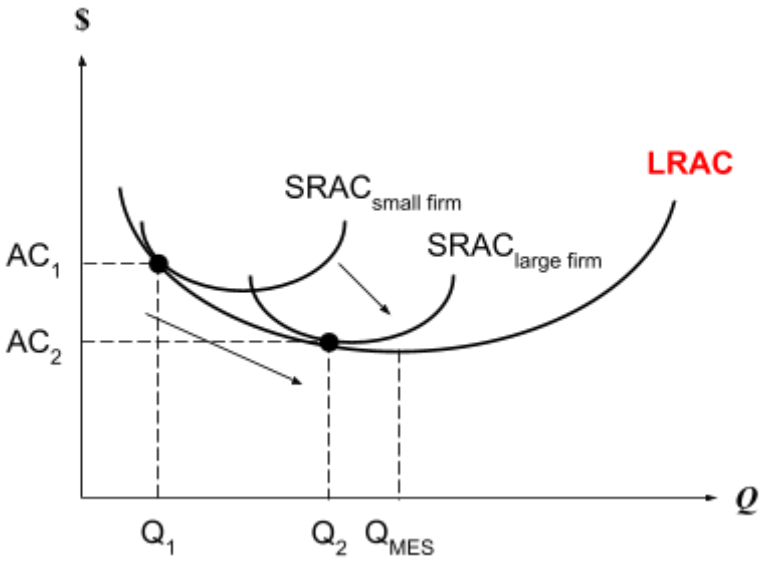
Short run: at least one factor input is fixed

Total cost (TC) = TFC + TVC	**Average cost (AC)** = AFC + AVC	**Marginal cost (MC)**
Total fixed cost (TFC) independent of o/p level (unavoidable)	**Average fixed cost (AFC)**	**Explicit cost** cost of using factor inputs
Total variable cost (TVC) changes with o/p level (avoidable)	**Average variable cost (AVC)**	**Implicit cost** opportunity cost of using factor inputs



Long run: all factor inputs are variable
Firm is able to vary all factor inputs → expand scale of production

- Internal: expansion of firm
- External: expansion of industry (firm itself does not expand)



Large firms usually have high MES relative to industry demand.
enjoy cost savings from iEOS → unit cost falls → lower pricing to capture larger market share

Internal economies of scale (iEOS)	**Internal diseconomies of scale (iDOS)**
• Cost savings arising from benefits of increasing o/p by expanding firm's scale of production • Increase in o/p leads to LTP increase in total cost → AC decrease as o/p increase • Movement along downward sloping portion of LRAC	• Rising average cost from increasing o/p by expanding firm's scale of production • Increase in o/p leads to MTP increase in total cost → AC increase as o/p increase • Movement along upward sloping portion of LRAC
Technical economies **Specialisation of inputs** • division of labour → assign workers to specific roles, daily repetition allows workers to accumulate more skills and knowledge → raise productivity → lower unit CoP **Indivisibilities of factor inputs**	**Managerial diseconomies** • Communication problem: bogged down by rules, regulations, standard procedures → slow down decision making, decrease efficiency • Coordination problem: difficult to coordinate between various departments → more supervision required → higher AC **Financial diseconomies** • Need more funds for operations

- machinery that can greatly enhance productivity are too large and expensive for small firms to use
- large firms which higher o/p can spread out costs → lower unit CoP

Increased dimensions

- use of bigger capacity machines → set-up and operating costs increase LTP → lower unit CoP

Linked processes

- in a large plant, several stages of manufacturing process can be carried out at same location → save time and transportation cost from moving semi-finished product from one area to another → lower unit CoP

Firm economies

Managerial economies

- Large firms able to hire professionals to specialise in different areas of work → increase productivity → lower unit CoP

Financial economies

- Large firm has higher sales volume and more assets to offer as collateral, more credit-worthy → banks more willing to offer loans / lower interest rates when borrowing large sums
- Large firms can list their companies on stock exchange → raise funds at lower cost

Marketing economies

- Bulk purchase of inputs at favourable (discount) rates
- Advertising → cost spread over larger o/p → lower unit advertising expenditure

Risk bearing economies

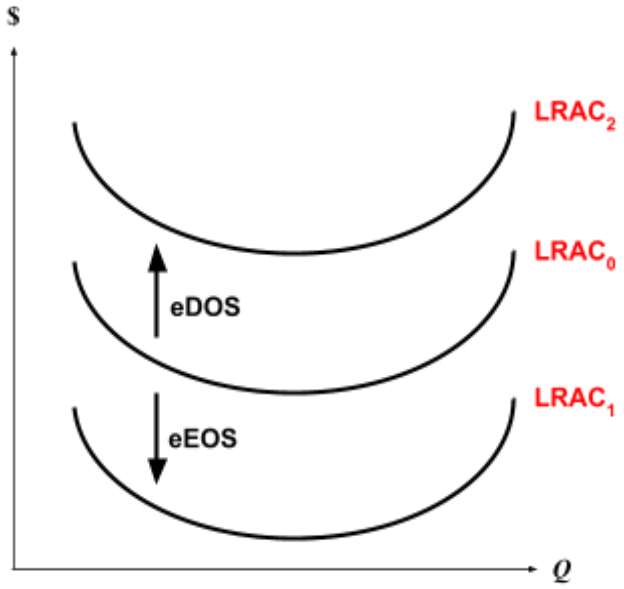
- Firms borrow too heavily, become debt-ridden → undermine credit-worthiness → banks demand higher interests rates on loans to compensate for higher risk → higher AC

Marketing diseconomies

- Many layers of hierarchy → decision makers in large firms are distanced from customer base
- Additional marketing expenditure needed to bridge information gaps → higher AC

• Speak out risks through diversification → spread costs of uncertain production over large o/p level • If a product is not selling well in one market, can depend on other products to bring in profits to offset loss	

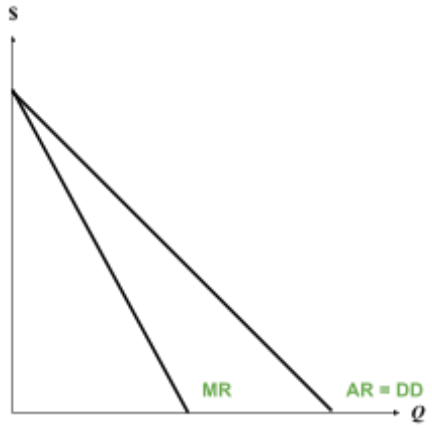
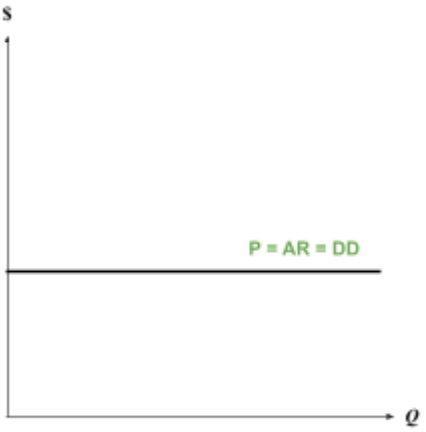
Minimum efficient scale (MES)	• O/p level where LRAC reaches minimum and falls no further • Lowest point on LRAC



External economies of scale (eEOS)	**External diseconomies of scale (eDOS)**
• Falling unit costs of production when whole industry expands • Downward shift of LRAC	• Rising unit costs of production when whole industry expands • Upward shift of LRAC
Economies of concentration • Sharing of resources b/w firms in industry, i.e. cluster in a region • Training: training centres set up to meet industry's growing demand for labour, providing ready pool of skilled workers • Infrastructure: shared by firms, lowering operating costs **Economies of information** • Firms share cost of R&D → obtain information more cheaply as compared to carrying out R&D independently **Economies of disintegration** • Specialisation through division of production processes among firms	**Higher input prices** • Industry expand → Increased demand for FoP + PES inelastic → firms bid higher prices **Strain on infrastructure** • Concentration of firms in one region → pollution, congestion, overcrowding

Revenue

Total revenue (TR)	**Average revenue (AR)** = DD	**Marginal revenue (MR)**

Price setter	Price taker
	
Firm faces <u>imperfect competition</u> ● Some market power → able to influence price by restricting o/p → downward-sloping DD curve ● Limited competition: greater market power, greater ability to set prices → more price inelastic DD curve ● Intense competition: weaker market power, weaker ability to set prices → more price elastic DD curve	Firm faces <u>perfect competition</u> ● No market power → no ability to set prices → perfectly price elastic DD curve

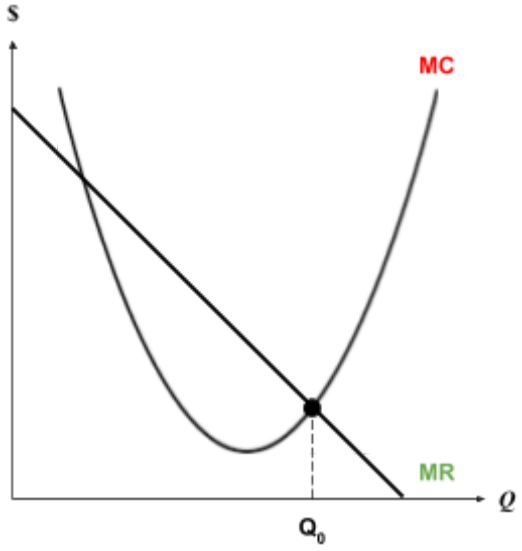
Profits

Profit = TR – TC	**Accounting profit** = TR – total accounting cost (explicit cost)	**Economic profit** = TR – total economic cost (explicit + implicit cost)
Normal profit TR = TC	**Supernormal profit** TR > TC	**Subnormal profit** TR < TC

Objectives of Firms

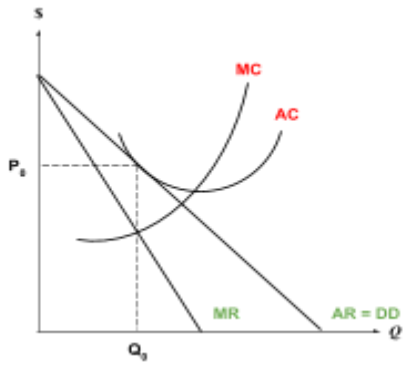
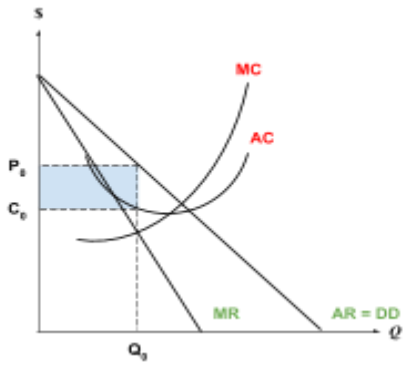
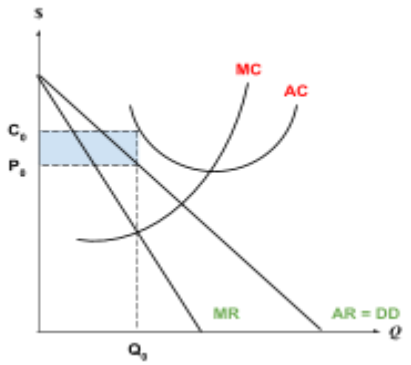
Maximise profits

Profit-maximising output: **MR = MC** and **MC is rising**



MR > MC	MR = MC	MC > MR
Firm increase production as long as MR > MC to capture marginal profit	At output level Q_0, any possible positive marginal profit has been exhausted	Firm decrease production as long as MC > MR to avoid marginal loss

Profits:

Normal profit	Supernormal profit	Subnormal profit
		
Profit-maximising output: Q_0 (MR = MC, MC rising)	Profit-maximising output: Q_0 (MR = MC, MC rising) Firm charges highest possible price that consumers are w/a to pay (DD curve)	Profit-maximising output: Q_0 (MR = MC, MC rising) Firm charges highest possible price that consumers are w/a to pay (DD curve)

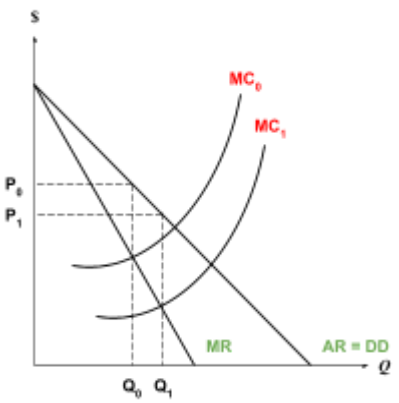
AR = AC at Q_0 TR = TC	AR > AC at Q_0 TR > TC	AR < AC at Q_0 TR < TC

Shifts in AC, MC, DD/AR, MR curves

Cost of variable input (e.g. innovation)	AC, MC
Cost of fixed input (e.g. advertising)	AC only
Increase in demand	DD (parallel shift)
Increase in demand due to advertising	DD (pivotal shift/ steeper)

Firm adjustment process e.g. MC decrease

- Profit-maximising output is at Q_0 where MR = MC and MC is rising
- Firm charges price P_0, highest possible price given the demand to maximise profit
- When MC decrease, at original output Q_0, MR > MC. Firm increases o/p to capture marginal profit, until Q_1 where MR = MC …



Limitations to traditional theory of profit maximisation

1. **Imperfect information on MC**	• Usually only consider <u>explicit costs</u> since easier to compute, but <u>economic cost</u> (explicit + implicit costs) is difficult to calculate → true MC unknown
2. **Imperfect information on MR**	• <u>Not ceteris paribus</u>: demand curve does not remain static, constantly changes due to other factors affecting demand • Firms estimate, rather than accurately determine max profit o/p
3. **Principal-agent problem**	• Separation of ownership and control: Owners want to maximise profits BUT managers have other aims to maximise own self-interests → misalignment of objectives → <u>profit satisficing</u> instead of profit maximisation
4. **Revenue maximisation**	• **MR = 0** • Occur due to: ○ Manager instead aims to maximise revenue because he is paid commission as % of total sales revenue (self-interest) ○ Firm dominated by large sales department ○ Boost firm's reputation among banks and financial institutions by maximising sales - more willing to finance firm

5. **Market share dominance**	● **AR = AC** (growth maximisation → max possible o/p that avoids incurring losses) ● Gain mkt share, higher LR profit
6. **Organisational slack**	● Use more input than necessary at certain o/p level → AC, MC higher than necessary ● Occur due to: ○ Lack of competitive pressures ○ Imperfect knowledge of the lowest costs or wages needed ○ Unwillingness to take the risk of investments ○ Trade unions' demands for higher wages
7. **Social/ envt concerns**	● Use materials / FoP which do not harm envt → incur higher AC, MC → lower SR profit ● Adopt social/ envt concerns as part of branding to improve brand image, brand becomes more attractive to consumers → develop brand loyalty → higher LR profit
8. **Others**	● Advertising, R&D (product/ process innovation) → sacrifice SR profit to increase LR profit

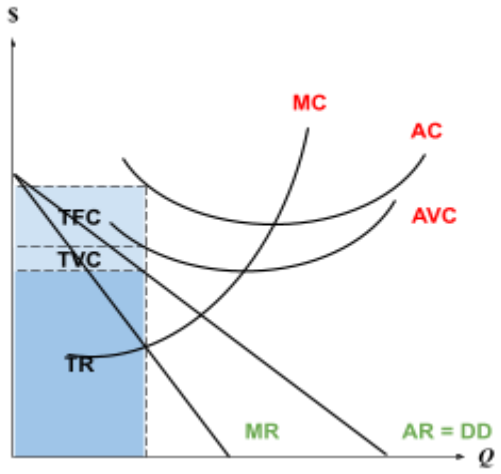
Shutdown condition (A STRATEGY)

Firms' decision to shut down or continue operations are aimed at minimising loss

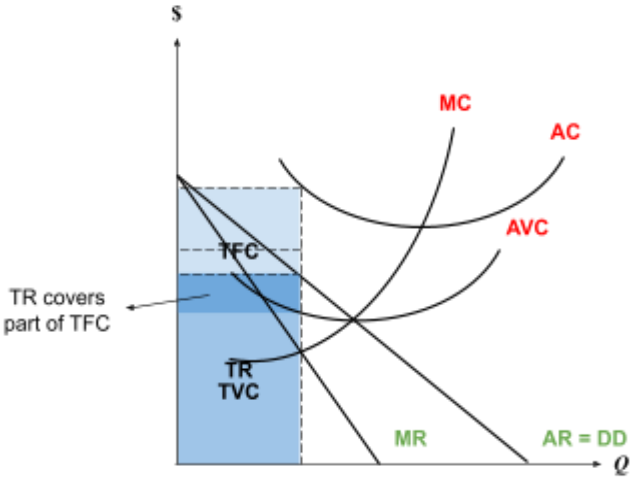
Short run (TR < TC)	Long run
TR ≥ TVC	**at least normal profit**
Variable cost (TVC) is avoidable, fixed cost (TFC) is unavoidable	All costs are variable in LR, unavoidable, better to earn nothing than to incur losses

• TR ≥ TVC:
  ○ Shut down: loss = TFC
  ○ Continue: TR cover TVC and part of TFC → minimise loss
• TR < TVC:
  ○ Shut down: loss = TFC
  ○ Continue: loss = TFC + (TVC – TR)
	• Normal profit: level of profit just sufficient to induce firm to stay in industry in LR
	• Supernormal profit: level of profit more than what is necessary to induce firm to stay in industry in LR
	• Subnormal profit: level of profit less than what is necessary to induce firm to stay in industry in LR

Shut down:



Continue:



Firms' Decisions and Strategies

Factors affecting intensity of market competition

1. **Number and size of firms**

   - More firms within the same market → **more intense competition**
   - Fewer firms of comparable size (no one firm dominates) → **more intense competition**

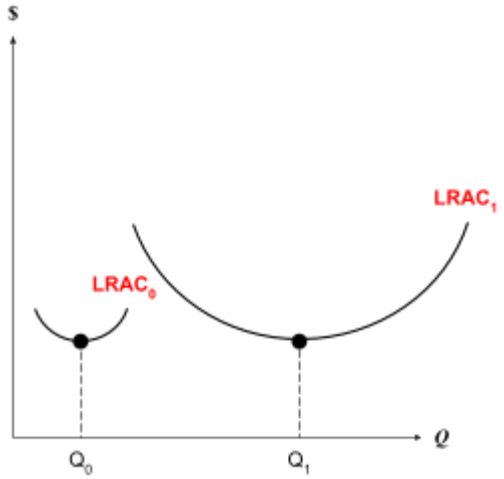
2. **Barrier to entry**

   Strong barrier to entry → restrict entry to market → fewer firms compete → **less intense competition**

STRUCTURAL

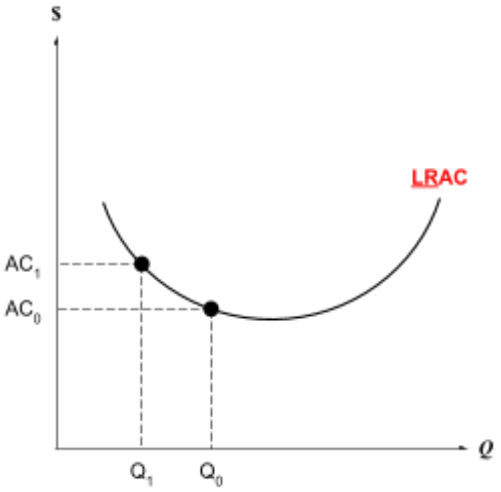
Cost relative to size of market demand

- High cost relative to limited mkt DD
  - Expensive technology / infrastructure / equipment / transport cost / rental cost
  - Niche products which appeal to few people
- Industries with different cost structures



Production techniques	**Simple** ($LRAC_0$)	**Capital-intensive** ($LRAC_1$)
Desc	Does not involve costly infrastructure / equipment	Involves costly infrastructure / equipment
iEOS	Limited scope for iEOS to be reaped i.e. though small, firm is efficient	Extensive iEOS to be reaped → firms that produce large o/p able to spread high cost over large o/p, LRAC fall over large range of o/p
eg	hair salons	railway services

- **Extensive iEOS to be reaped**



  - Large firm reap iEOS → lower AC → charge lower prices
  - Small firms with higher AC unable to match low prices without sustaining subnormal profits
  - Mkt dominated by a few large firms

Network effect

- Consumers benefit from having a network of other people using the same service
- Firms aim to increase market share at early stage, as future customers' willingness to pay depends on number of existing users → established firm already accumulated large consumer base → challenging for new entrants to attract users away from existing platforms
- increase firm's ability to raise prices at later date, once it has driven adoption of its services early on
- **EG:** Social media platforms

STRATEGIC

Aggressive pricing strategies

- Limit pricing, predatory pricing etc.

Product recognition

- Create product differentiation via advertising, R&D, design → establish recognised brand name → enhance consumer brand loyalty → more difficult for rivals to induce brand switching
- High sunk cost incurred → costly for rivals to engage in sizeable advertising campaign

Product proliferation

- Firm produces many variations of same product - compete against each other & other firms
- New entrant has to compete with many variations of the product - difficult for new entrant to obtain large market niche with a single new product - additional cost

- **EG: Procter & Gamble** has many lines of shampoo under its name e.g. Head & Shoulders, Herbal Essences, Pantene - cater to the varied needs of their consumers

Product complexity

- Product is complex, consumers need to have more information about product → consumers buy from firms with extensive and established dealer network which can handle major services

Switching cost

- Existing firm make it more costly for customers to switch from product/ service to competitor's
- **EG:** Mobile phone contracts from **SingTel, StarHub** for two years, consumers pay hefty fee to end contracts earlier

Control essential FoP / distribution channels

- Raw materials that are absolutely essential in production
- Distribution channels through which other firms reach out to consumers

STATUTORY

Licences or exclusive franchises

- Govt issue licences - grant exclusive rights to firm to supply a particular good, to limit competition

Intellectual property rights

- e.g. patents, copyrights, trademarks - holder exercise sole ownership on the use of ideas
- Monopoly power is conferred by restricting imitation / duplication
- **EG:** COVID-19 vaccine production, creative work such as books and music, franchises

Tariffs and trade restrictions

- Keep out foreign competition

3. **Nature of product**

- Homogenous product: price is sole point of comparison for consumers = firms under pressure to keep costs down to compete on prices → **more intense competition**
- Differentiated product: price is only one of many points of comparison for consumers = firms able to set prices → **less intense competition**

4. **Access to information**

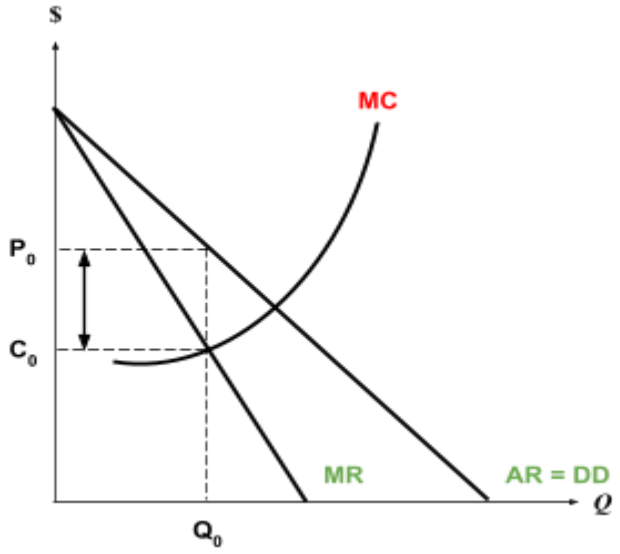
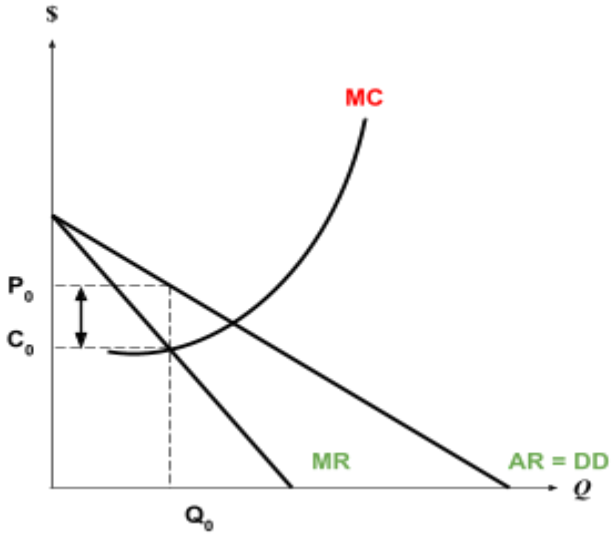
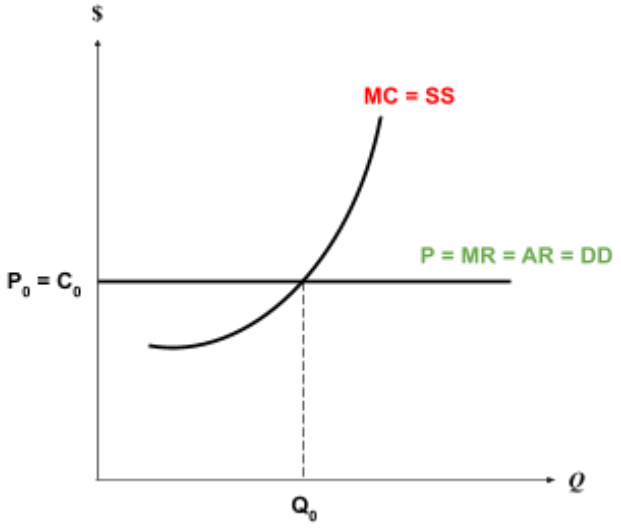
- Consumers: compare prices and quality of firms' products → compel firms to compete more vigorously ⇒ **more intense competition**

- New entrants: possess common knowledge about market opportunities → enter market with similar products to compete against existing firms ⇒ **more intense competition**

Contestability

- Threat / potential entry of new entrants → firms behave in competitive manner
  - Charge lower prices (below SR profit-max level) closer to competitive market price at P=MC, accept lower supernormal profit → foreclose entry of competitors (unprofitable to enter market, as SS ↑ P ↓)
- Characteristics:
  - Easy entry & costless exit (hit-and-run industry)
    - If there is supernormal profit to be reaped, firms can easily enter the industry
    - If subnormal profits, firms can easily exit the industry at no cost
  - New firms entering market can produce at same per unit cost as existing firms

Market power: ability to exert significant influence over quantity / price of good

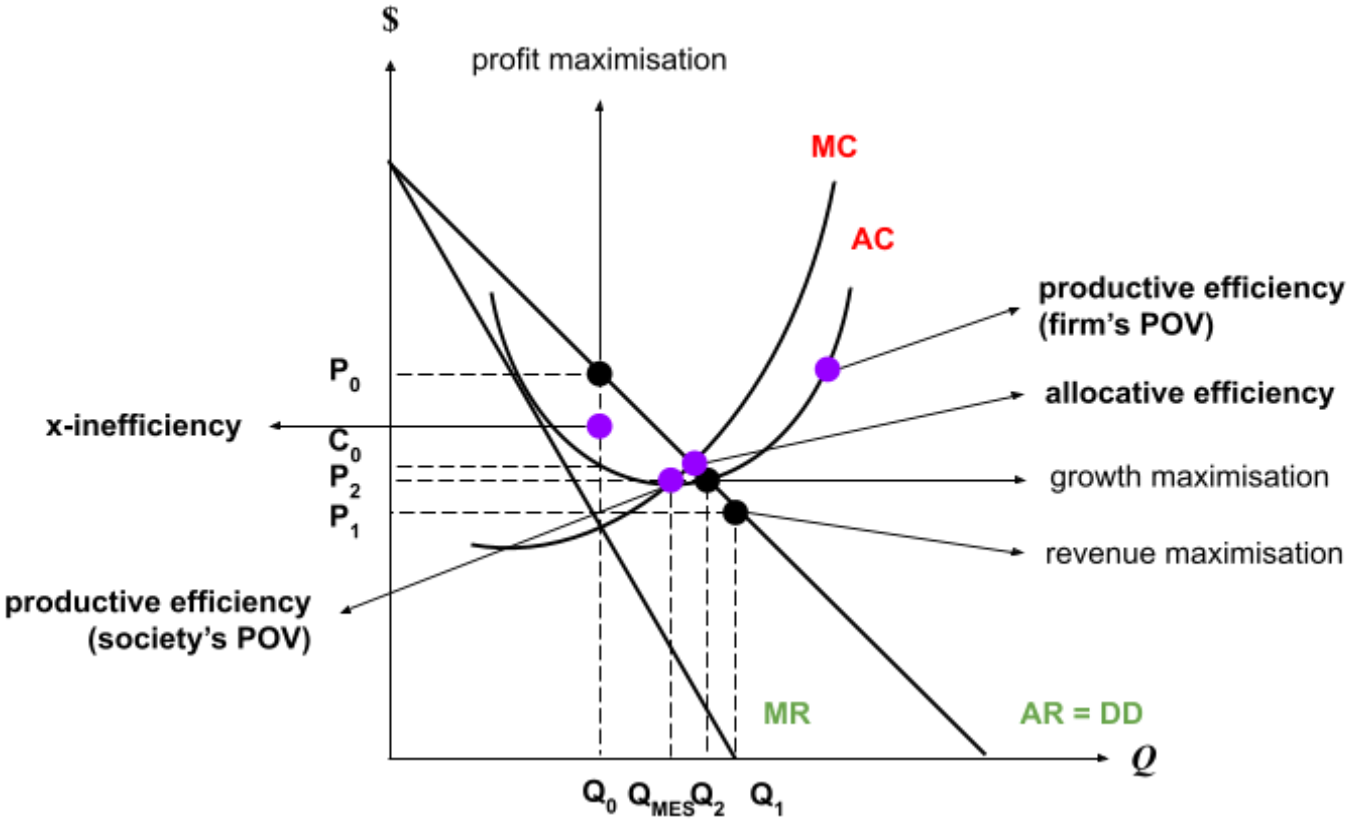
Strong market power	Weak market power	No market power
oligopoly, monopoly	MPC	PC
		
DD price inelastic ● few close substitutes ● each firm has large market share → large price-setting ability (restrict o/p to push up price)	**DD price elastic** ● many close substitutes ● each firm has small market share → small price-setting ability (restrict o/p to push up price)	**DD perfectly elastic** ● identical goods ● Firms can only take market price (intersection of market DD and SS)
Greater mark-up of P>MC	**Smaller mark-up of P>MC**	**No mark-up of P>MC**

Market outcomes

<table>
<tr><td rowspan="2">Profit:</td><td>SR</td><td colspan="2">Can make supernormal / normal / subnormal profit

Factors affecting (one-off in nature):
● Cost conditions e.g. changes in input prices
● Demand conditions e.g. recession</td></tr>
<tr><td>LR</td><td colspan="2">Must at least make normal profits (depends on mkt structure, BTE)</td></tr>
<tr><td colspan="2">Allocative efficiency:
allocation of scarce resources that maximises society's welfare</td><td colspan="2">P = MC (no mark-up of P over MC)
● P: value that consumers place on good
MC: opportunity cost incurred by society to produce good
● P>MC: Increase o/p will increase society's welfare → underproduction (DWL)
● P=MC: Adjusting o/p will not bring about further increase in society's welfare</td></tr>
<tr><td colspan="2">Productive efficiency:
output produced with least costly combinations of inputs</td><td>Society's POV: lowest point on LRAC, i.e. Q_{MES}
● Falling section of LRAC: reap iEOS, can further reduce unit CoP by increasing o/p level
● Rising section of LRAC: experience iDOS, can further reduce unit CoP by decreasing o/p level
● Minimum point of LRAC (MES): fully enjoy iEOS, all iEOS exploited, avoid onset of iDOS, cannot further reduce unit CoP by adjusting o/p level</td><td>Firm's POV: any point on LRAC
● LRAC = lowest possible average cost of producing any given level of o/p in LR
● To maximise profit, firms minimise cost → produce on LRAC
● x-inefficiency: produce same o/p at higher cost → produce above LRAC</td></tr>
<tr><td colspan="2">Dynamic efficiency:
technologically progressive (innovation, R&D) to meet consumers' changing needs and wants</td><td>Product innovation
● Improve quality of product
● Increase variety of product, expand consumers' choice → consumers able to find goods that better cater to their T&P
⇒ increase consumer welfare/ utility</td><td>Process innovation
● Increase productivity → lower MC, AC → charge lower price to increase mkt share → increase csr purchasing power, able to buy more goods to satisfy more needs and wants
⇒ increase consumer welfare/ utility</td></tr>
<tr><td colspan="2">Equity:</td><td colspan="2">● Revenue earned is just sufficient to compensate business owner for the opportunity cost in the use of resources</td></tr>
</table>

fair distribution of wealth, income	• No sustained redistribution of income from households to firms


$
profit maximisation
MC
AC
productive efficiency
(firm's POV)
allocative efficiency
growth maximisation
revenue maximisation
P0
x-inefficiency
C0
P2
P1
productive efficiency
(society's POV)
MR
AR = DD
Q
Q0 QMES Q2 Q1

Market Structure

Types:

1. **Perfect competition**
2. **Monopolistic competition**
3. **Oligopoly**
4. **Monopoly** (incl. natural monopoly, duopoly)

Mkt outcome	**Perfect competition**	**Monopolistic competition**	**Oligopoly**	**Monopoly**
Char	large no. of small firms homogeneous product no barrier to entry perfect knowledge	large no. of small firms slightly differentiated product low barrier to entry imperfect knowledge	few dominant firms differentiated / homogeneous product high barrier to entry imperfect knowledge	single firm unique product complete barrier to entry imperfect knowledge
	E.g .primary product market (agriculture)	E.g. F&B	E.g. oil, telecommunication	E.g. utility (electricity, water)
LR profit	**Normal profit** Firms enter or leave industry such that marginal firm only makes normal profit (no BTE) → only normal profit in LR	**Normal profit** Firms enter or leave industry such that marginal firm only makes normal profit (weak BTE) → only normal profit in LR	**Supernormal profit** Supernormal profits not eroded as competition kept out (strong BTE) → retain supernormal profit in LR	**Supernormal profit** Supernormal profits not eroded as competition kept out (complete BTE) → retain supernormal profit in LR
AE	✓ No mark-up of P over MC	**X** Smaller mark-up of P over MC	**X** Larger mark-up of P over MC	**X** Larger mark-up of P over MC
PE (soc)				

PE (firm)	✓ Weak BTE, firms face intense competition Earn only normal profits in LR, any increase in cost will yield subnormal profits - forced to shut down and leave industry → maximise profits by minimising cost	✓ Weak BTE, firms face intense competition Earn only normal profits in LR, any increase in cost will yield subnormal profits - forced to shut down and leave industry → maximise profits by minimising cost	**X** Strong BTE, firms face less intense competition Firm can charge price high enough to cover high production cost while still earning supernormal profit (can afford to be X-inefficient)	**X** Strong BTE, firms face less intense competition Firm can charge price high enough to cover high production cost while still earning supernormal profit (can afford to be X-inefficient)
DE (w)	**X** Assumed homogeneous products - R&D is irrelevant	**X** Weak BTE: Supernormal profits in SR eroded due to entry of new firms -> do not enjoy benefit of R&D (unable to retain profits)	**Tension** Strong BTE: able to retain supernormal profit from R&D Strong BTE: already enjoy supernormal profit even without costly and risky R&D	**Tension** Strong BTE: able to retain supernormal profit from R&D Strong BTE: already enjoy supernormal profit even without costly and risky R&D
DE (a)	**X** LR normal profit: no financial means to engage in costly R&D	**X** LR normal profit: no financial means to engage in costly R&D	✓ LR supernormal profits: have financial means to engage in costly R&D	✓ LR supernormal profits: have financial means to engage in costly R&D
Equity	✓ Normal profit: revenue earned is just sufficient to compensate business owner for the opportunity cost in the use of resources No sustained redistribution of income from households to firms → equitable	✓ Normal profit: revenue earned is just sufficient to compensate business owner for the opportunity cost in the use of resources No sustained redistribution of income from households to firms → equitable	**X** Supernormal profit: revenue earned is in excess of what is needed to compensate business owner for the opportunity cost in the use of resources Sustained redistribution of income from households to firms → inequitable	**X** Supernormal profit: revenue earned is in excess of what is needed to compensate business owner for the opportunity cost in the use of resources Sustained redistribution of income from households to firms → inequitable

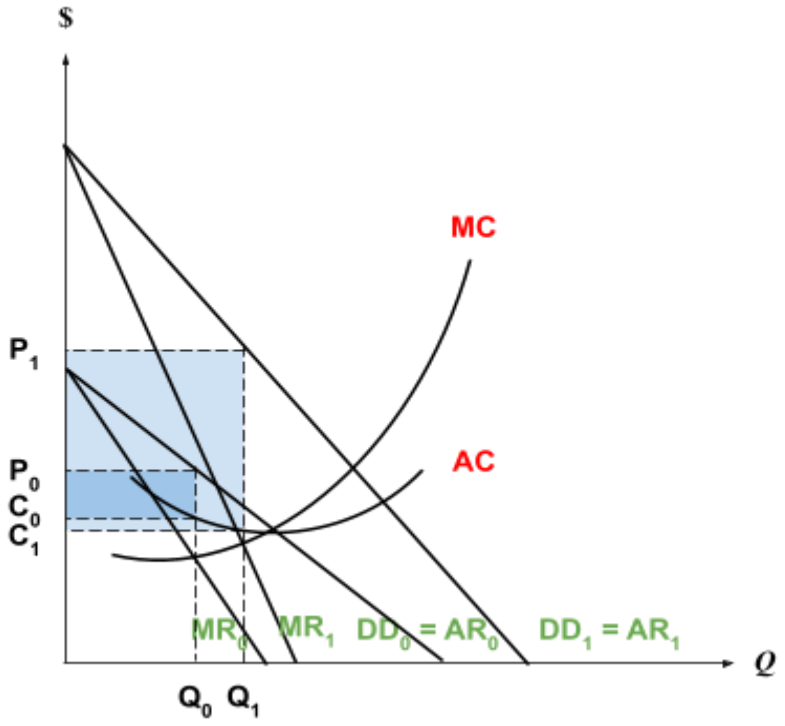
Csr choice	**X** Homogenous products	✓ Product differentiation → greater variety of products to choose from	✓ Product differentiation → greater variety of products to choose from	**X** No close substitutes

Firms and Decisions

Market Strategies (OLIGOPOLY)

Strategic pricing

- WHAT: Each seller takes the actions and reactions of its rivals' marketing strategy into account when making its own production and marketing decisions
- WHY: Few large firms each command large share of the market
  - [willingness] Action by one firm has significant impact on DD of other firms → rivals respond to defend market share and profits (mutual interdependence)
  - [ability] Rival firms have financial reserves (accumulated from supernormal profits) to respond with counter-strategies to defend market share and profits → able to deviate from SR profit-maximisation to increase LR profit

PRICE STRATEGIES	
Price competition	**Price war** ● Firms use accumulated financial reserves (supernormal profits) to engage in tit-for-tat price wars ● Trigger: ○ new entrant into market ○ significant shift in mkt conditions e.g. DD plunge ● Competing firms continuously reduce prices to increase market share ● Firms attempt to undercut one another's prices → rivals respond by cutting their own prices → firm's price cut does little to increase Qdd for products, TR and SR profit decrease → successive rounds of price cuts, price fall below AC → low-price-low-profit equilibrium ● Rivals *unable to sustain losses* for extended period of time, exit industry → firms gain market share, earn higher LR profit 

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Limit pricing: deter entry of firms

- Existing firm set low price → unprofitable for new entrants to compete
  - Price below that which max SR profit
  - Price low such that entry of new firm would add to mkt SS and push price further down *to the point that new entrant would face losses*
  - Price low but *sustainable* for existing firm
- Firms sacrifice current profits to maintain mkt power → earn higher LR profit

Predatory pricing: drive out existing competitors

- Predator set very low price → unprofitable for competitors to compete
  - Price below that which max SR profit
  - Price even below the firm's own cost (either MC or AVC)
  - Price *cannot be sustained* even for the firm itself in LR (incur losses)
- Raise price back to profit-maximising price, gain mkt share → earn higher LR profit

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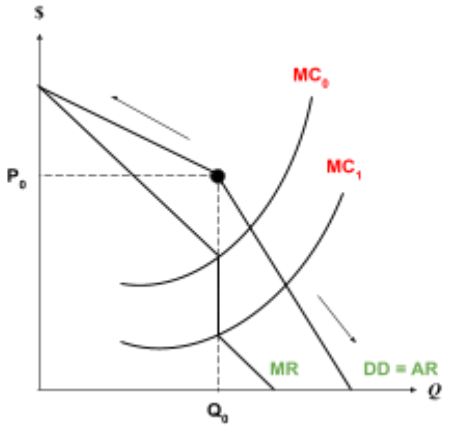
<tr><td>**Price rigidity**</td><td>

Kinked Demand Curve Theory

Reason: rival firms will match price reduction but not price increase



Firm increases price	Firm decreases price
• more expensive than rivals, consumers switch to rivals	• SR: large DD increase, gain mkt share, TR increase • LR: rival firms do not want decrease in mkt share → respond by cutting price (PRICE WAR) → firm will only see small DD increase → PED inelastic
• DD fall → TR decrease • Lose mkt share → PED elastic (increase in price leads to MTP	• Decrease in TR & market share (increase in output LTP than decrease in price)

</td></tr>
</table>

<table>
<tr><td></td><td>
<table>
<tr><td>decrease in o/p)
⇒ profit decrease</td><td>⇒ profit decrease</td></tr>
<tr><td colspan="2">Prices are stable without firms deliberately fixing prices
competition is so intense that firms have little room → no incentive to raise price or to cut price for fear of <u>price war</u>, which will lead to loss of market share and profit</td></tr>
</table>
</td></tr>
<tr><td>Collusion</td><td>Oligopolists agree on price to limit competition

Explicit collusion: cartel
● Firms formally collude to form cartel
● Cartel restricts total o/p of all members to an o/p level that will jointly maximise combined profits for all members
● Firms act as if they were a single monopoly to restrict output to <u>max combined profits</u> → may not max own profit

Tacit collusion: price leadership
● One of the oligopolists is the <u>price leader</u>
● Price leader sets price, accepted as market price by other firms
● When price leader initiates change (in price / output) to <u>max its own profits</u>, other firms follow → may not max own profit</td></tr>
<tr><td>Price discrimination (3rd degree)</td><td>● Firms charges <u>different prices</u> for the <u>same good</u> to different groups of consumers for reasons <u>not associated with cost differences</u>
● Firms charge higher price for inelastic sub-market & lower price for elastic sub-market

Conditions:
1. <u>Same good</u> sold to diff market segments
2. <u>No cost difference</u> in supplying to diff market segments
3. <u>Price difference</u> not explained by cost differences

To be effective, firm has to prevent <u>seepage/ resale</u> b/w markets
Consumers cannot purchase at low price in elastic sub-market, then resell at higher price to other consumers in inelastic sub-market</td></tr>
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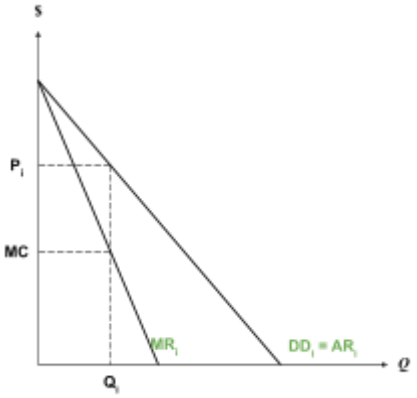
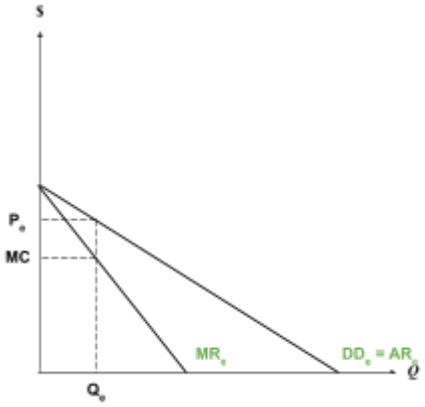
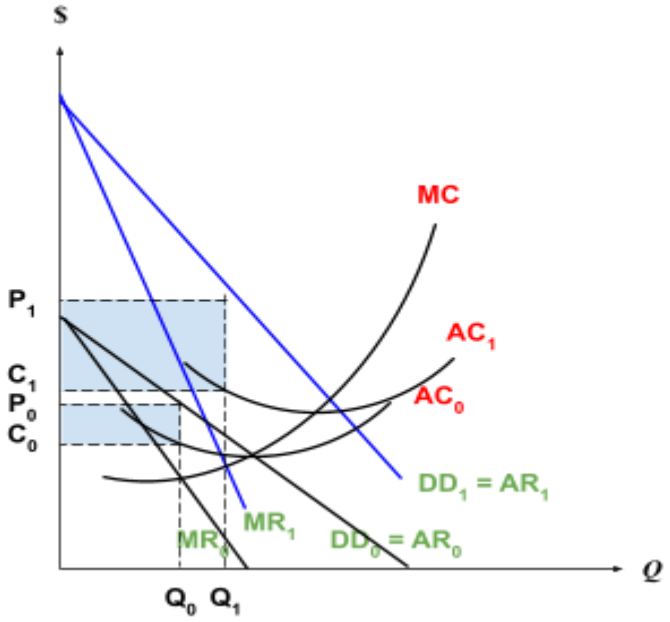
	 inelastic sub-market  elastic sub-market

<table>
<tr><th colspan="2">NON-PRICE STRATEGIES</th></tr>
<tr><td>Product differentiation</td><td>
Advertising
● Ability: use part of LR supernormal profit
● Create <u>perceived differences</u> in product through ads
○ information advertising: let csr know about features
○ persuasive advertising: convince csr that they need the product

Improve product quality thru R&D
● Ability: use part of LR supernormal profit
Willingness: do so to win mkt share
● Create <u>real differences</u> to introduce features in product that better cater to consumers' t&p
● e.g. Apple vs Samsung add features such as AI, authentication, mobile payments

⇒ consumers <u>do not regard products as identical</u>


</td></tr>
<tr><td>Mergers and acquisitions</td><td>
Horizontal merger
Merge with firm in <u>same industry</u> at <u>same stage of production</u>
● gain market share dominance
○ reduction in competition
○ able to raise price over MC
● new firm able to more fully exploit iEOS → lowers LR unit CoP

Vertical merger
Merge with firm in <u>same industry</u> at <u>different stage of production</u>
● Lowers uncertainty about access to markets / securing FoP → improve
</td></tr>
</table>

<table>
<tr><td></td><td>
supply chain coordination
• Types
<table>
<tr><td>Forward integration</td><td>Move into succeeding stages of production, own companies that were once customers
• e.g. potato chips frying obtaining packaging
• lower uncertainty by controlling distribution, reduce dependency on middleman & distributors of end products who might charge high fees</td></tr>
<tr><td>Backward integration</td><td>Move into earlier stages of production, own companies that were once suppliers
• e.g. potato chips frying obtaining potato farming
• gain greater control over quantity & quality of scarce FoP, greater security for delivery
• reduce costs by producing factor input directly</td></tr>
</table>

Conglomerate merger
Merge with firm in different industry
• Diversity risk: revenue not overly affected by decrease in DD for one product → reduce uncertainty & risks, esp. during recession
• e.g. General Electric: financial services, aviation, healthcare etc.

Reap iEOS (operate as one larger firm): LRAC falls
</td></tr>
<tr><td>Diversification</td><td>Venturing into other good/service markets
• increase sources of consumer DD → obtain other sources of revenue
• Limitation: step into unfamiliar territory, may not provide the quality of service that is competitive with incumbents of those markets → experience lower than expected demand → limited increase in revenue</td></tr>
</table>

Effects of strategies: Firms and Decisions

Cognitive biases → consumers make irrational purchase decisions
Firms can make use of cognitive biases in their strategies

Sunk cost fallacy	Loss aversion	Salience bias
Consumers consider sunk cost (cost already been incurred and cannot be recovered, bygone and should not be taken into consideration) when making decision	Consumers experience losses more severely than equivalent gains → tend to prefer avoiding loss over making equivalent or greater gain	Consumers tend to focus on information that is more prominent over other less prominent but equally relevant pieces of information → make decisions according to elements that appear more

[Consumers should only consider MB & MC]		salient

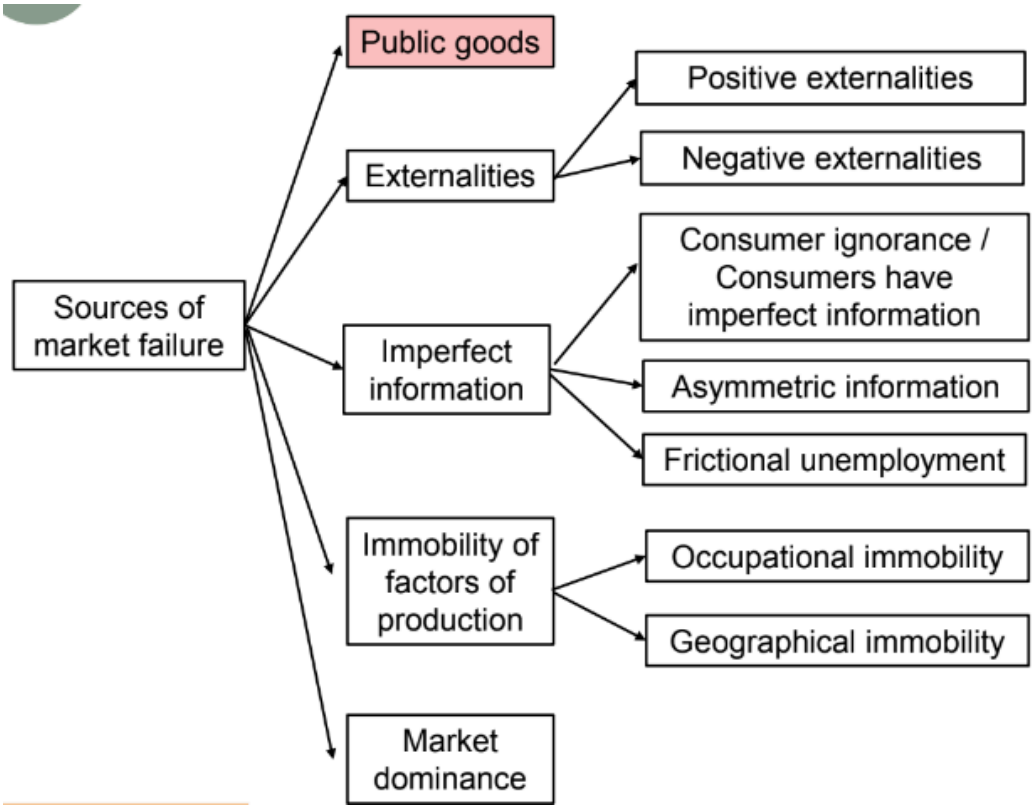
2.4 Market Failure

Concepts and Tools of Analysis
☐ Allocative efficiency ☐ Equity ☐ Market failure ☐ Deadweight loss ☐ Marginal private benefit and cost ☐ Marginal external benefit and cost ☐ Marginal social benefit and cost ☐ Social versus private (market) optimum ☐ Public goods – Non-excludability and non-rivalry ☐ Positive and negative externalities ☐ Information failure ☐ Market dominance ☐ Factor immobility

Market failure
Free market, operating without government intervention, is allocatively inefficient, leading to society's welfare not maximised

Agent	benefit	cost
social	**Marginal Social Benefit (MSB)**	**Marginal Social Cost (MSC)**
private	**Marginal Private Benefit (MPB)**	**Marginal Private Cost (MPC)**
external	**Marginal External Benefit (MEB)**	**Marginal External Cost (MEC)**
	MSB = MPB + MEB	**MSC = MPC + MEC**
	Private equilibrium level: Qp where **MPB = MPC** **Social optimum level**: Qs where **MSB = MSC**	

Sources



Policies

Market-based	**Command & control**	**Hybrid**
Policies influence BUT final decision on how much to consume / produce ultimately rests with the market	Govt dictate o/p through laws and regulations, crs/ prs have to comply	Combination of both
• Taxes and subsidies • Public education / moral suasion • Pro-competition policies	• Standards, bans • Compulsory competition • Govt provision • Direct price setting	• Tradable permits

***When writing essay, cover different aspects of policies to give a scope of answers

PUBLIC GOODS

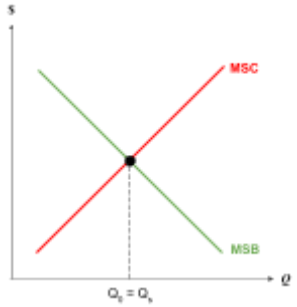
Non-provision in free market (missing market)

- No DD
  - **Free rider problem** → non-payers can continue to free-ride on payers because qty available for others to consume and benefit from does not diminish (non-rivalrous)
  - Non-payers can still enjoy benefits of good paid by payers (non-excludable)
  - No one willing to pay for consumption → no expression of demand in the form of missing price signals
- No SS
  - **MC = 0** (non-rivalrous in consumption)
  - To be allocatively efficient where P=MC, producers will have to charge zero → no rational producer will want to provide good

*NO DIAGRAM!

Direct provision by govt

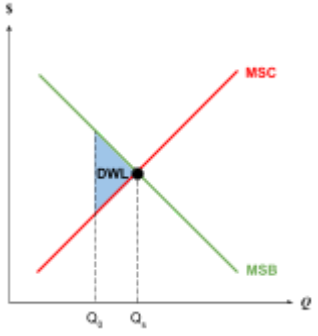
- Financed by tax revenue
- Govt decide what & how much to provide
  - Estimate MSB & MSC of producing & consuming the good → produce at Qs where MSB=MSC



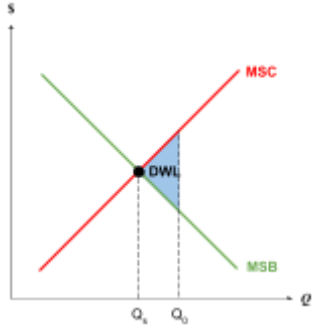
Effectiveness

- [–] Imperfect information on part of govt
  - Difficult to accurately calculate expected benefits i.e. ascertaining the market price of the good as such a good has no price (which is a gauge of its value to csr), DD for good is estimated through surveys or votes, and this information is used in cost-benefit analysis

Under-provision



Over-provision



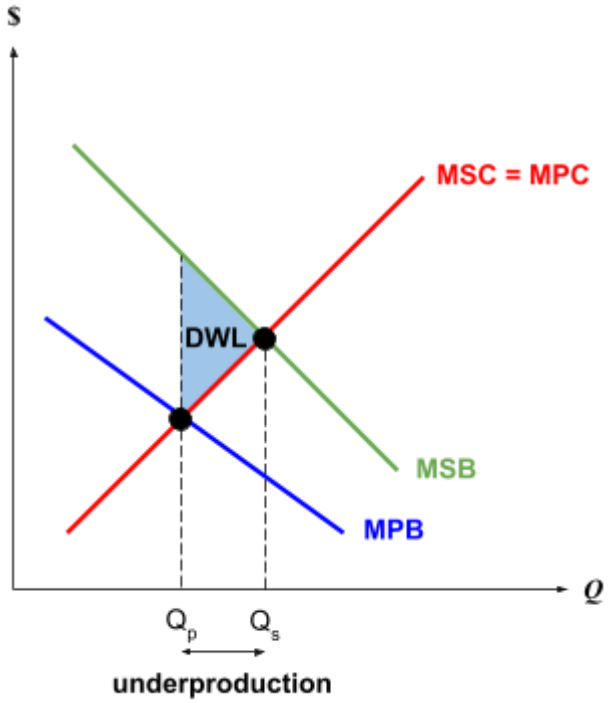
- [–] Inefficiency of state-owned enterprises
  - Absence of profit motive and competition → incur higher costs than necessary (x-inefficient) & lower rate of innovation and quality of good
  - However: govt turn to public-private partnerships (PPP) to deliver goods more efficiently

	○ However: govt can put in place an independent system of checks to hold govt agencies accountable for their use of funds and resources ● [–] Opportunity cost ○ Other public goods and merit goods foregone

EXTERNALITY

Non-socially optimal levels of good

Positive externality: spill-over benefits on third party

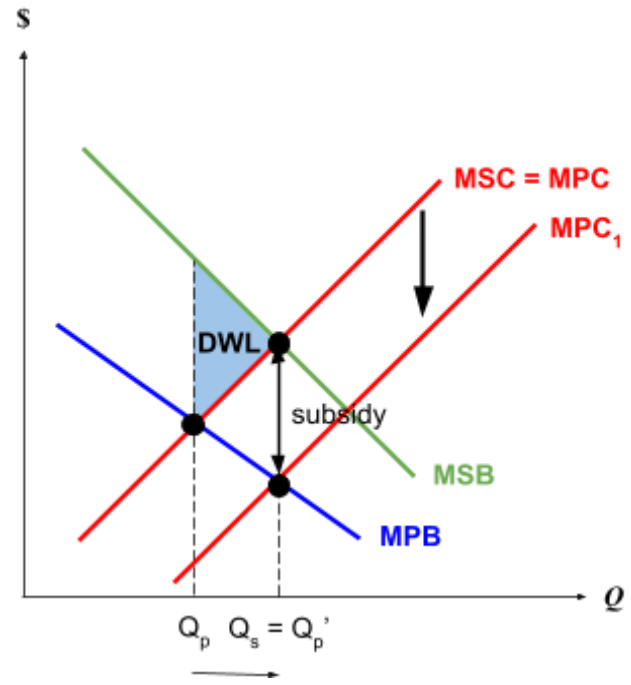


- Define MPB, MPC in the given context
- Individuals only consider MPB and MPC → consume private eqm output of Qp where MPB = MPC
- Positive externality generates MEB: third parties enjoy spill-over benefits → additional benefit to society exceeds additional benefit to consumers/producers alone → MSB > MPB
- Socially optimal output at Qs where MSB = MSC

Market-based solution

Subsidy

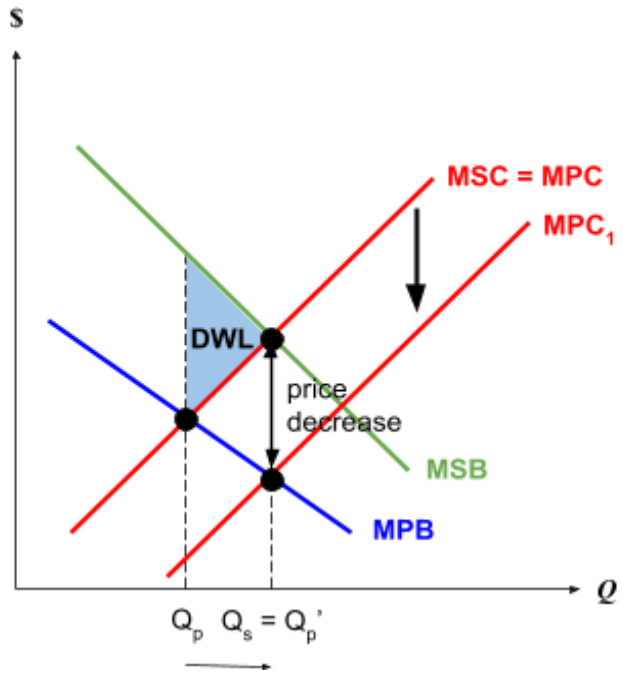
Direct subsidy



Granted to party that generates externality:

- **Subsidy = MEB at Qs**
- **Internalise** external benefit: can now be captured in the form of cost savings → MPC decrease
- Qp' = Qs, eliminate DWL

Indirect subsidy

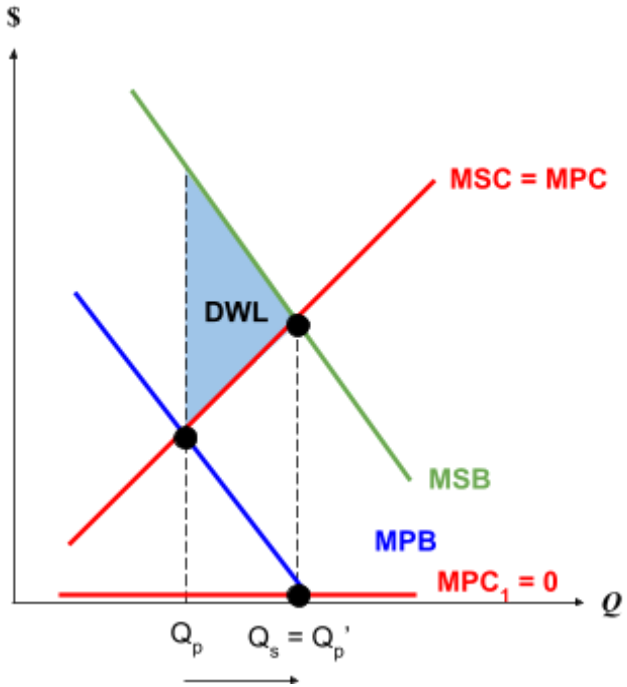


Granted to seller of good whose consumption generates externality:

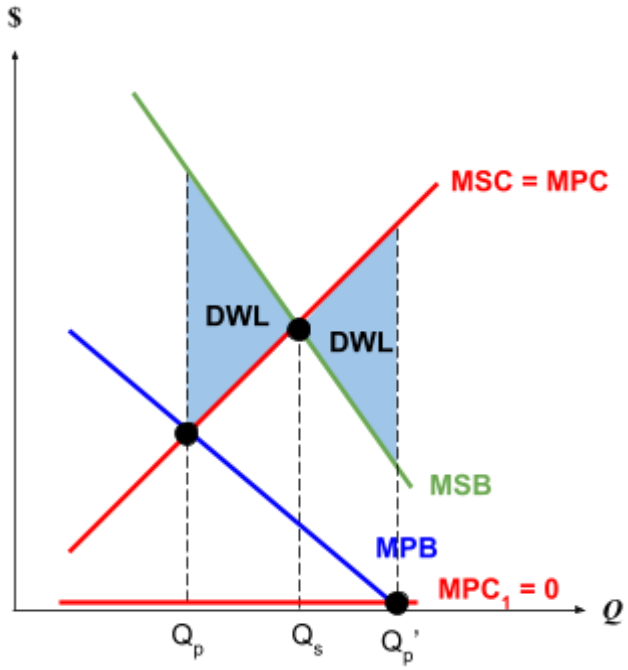
- Incentivise prs to increase SS to capture positive marginal profits → downward pressure on mkt price
- **Price fall = MEB at Qs**
- Lower price, MPC of crs decrease
- Qp' = Qs, eliminate DWL

- Qp < Qs → **<u>under-consumption</u>**
- Output levels between Qp and Qs not consumed where MSB > MSC → loss of additional benefit to society exceeds additional cost avoided → **<u>deadweight loss</u>** (society's welfare not maximised)

Free provision (100% subsidy): MPC = 0



- Qp' = Qs

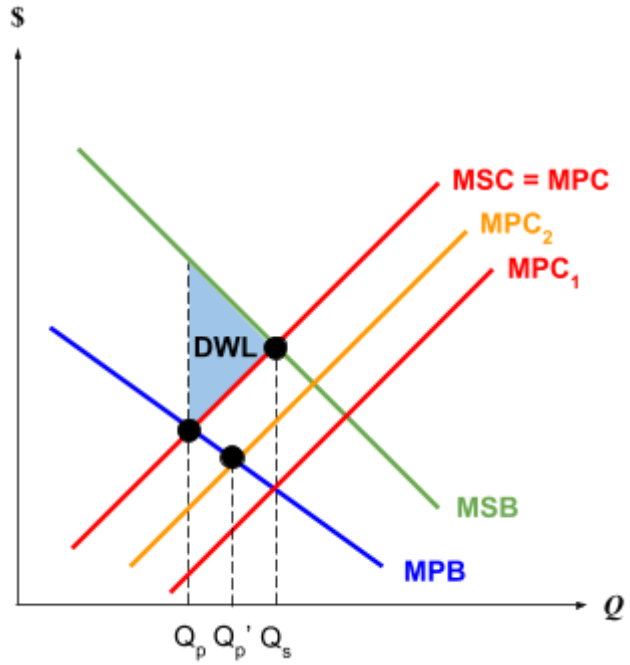


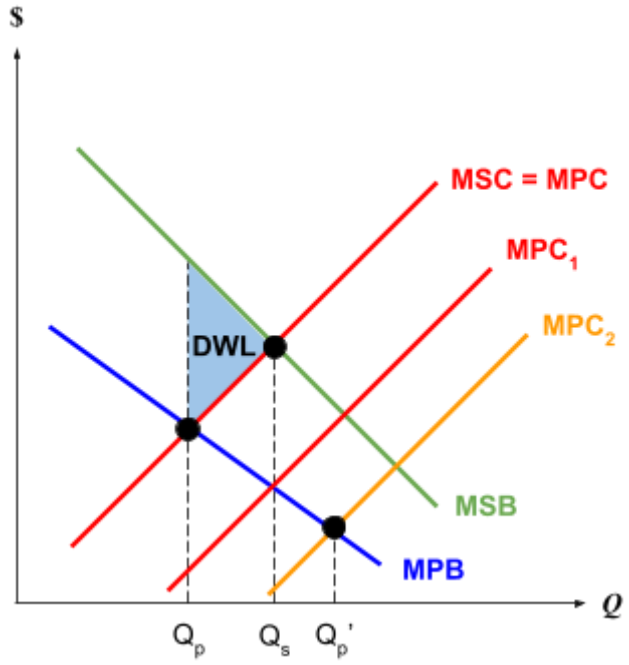
- Qp' > Qs → **<u>over-consumption</u>**
- Compare both areas of DWL → net improvement in society's welfare

Effectiveness

- [–] Imperfect information
  - Difficult to accurately determine exact monetary value of external benefit → amount of subsidies
  - Govt may under- or over-subsidise

Under-subsidise **Over-subsidise**





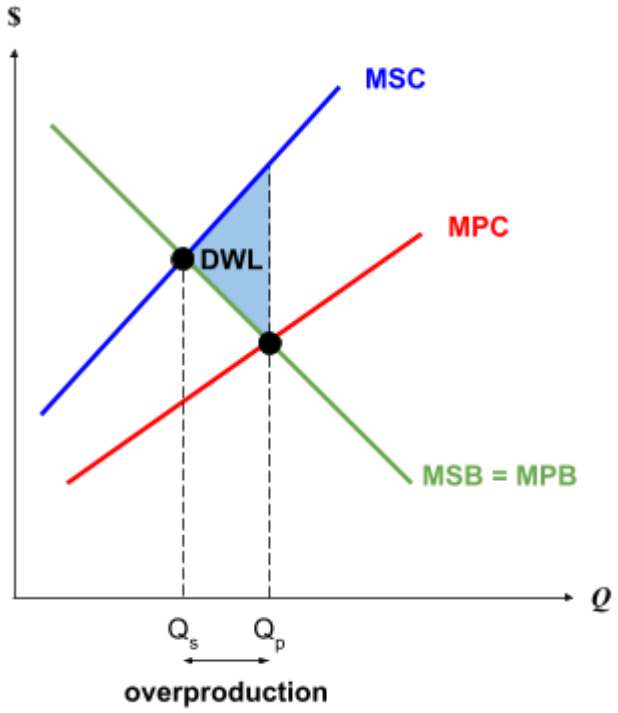
- [+] Tap on cognitive biases
  - Loss aversion
- [+] Support LR development of industry
  -
- [–] Uncertain outcome
  - Final effect on output depends on PED & PES
- [–] Govt budget
  - Worsen govt budget position
  - Opportunity cost of subsidy
  - Raise taxes to finance subsidy spending
- [+] Improve equity
  - Lower final price of good
  - Necessities: larger percentage of household income of low-income households → progressive effect

	on income distribution ● [–] Firm inefficiency ○ Lower firms' cost, give them higher profits without doing anything → firms under less pressure to keep tight control over costs → x-inefficiency ○ Less impetus on firms to innovate and improve technology to deliver better quality goods → dynamic inefficiency **Moral suasion** How it works ● Attempts to change people's attitudes and behaviours by ○ urging them to "do the right thing"... portray certain behaviour as prosocial and others as socially-unacceptable ○ draws on people's social preferences, their desire for status, to follow norms or to have a positive self-image from which individuals derive moral (dis)utility ● Encourage consumption / production of good by increasing public awareness and knowledge ○ Urge csr towards certain desired behaviour (**voluntary adoption**) ○ Incentive for firms to respond in shift in csr t&p (graph) Effectiveness ● [+] Mindset change leads to enduring change ● [–] Mindset change takes time ● Voluntary adoption depends on compliance cost – will voluntarily make the behavioural change if personal cost is low (monetary or otherwise) ● Voluntary adoption depends on whether it is in their interests to do so – if the activity is already widely practised, free rider problem can inhibit effectiveness of moral suasion (mask wearing) **C&C measure** **Compulsory consumption** ● MEB is so large that govt makes consumption of good compulsory ● Not everyone has the means to pay mkt price for the good → policy accompanied with free provision [graph] Effectiveness

	● Political resistance: limit economic freedom – freedom of csr to choose what to consume & what not to consume **Direct provision / nationalisation** ● Govt either produce good / contract it to private producers → govt control o/p, pass directives to product o/p based on its estimates on Qs Effectiveness ● High cost to govt ● Inefficiency of state-owned enterprises

Non-socially optimal levels of good

Negative externality: spill-over costs on third party



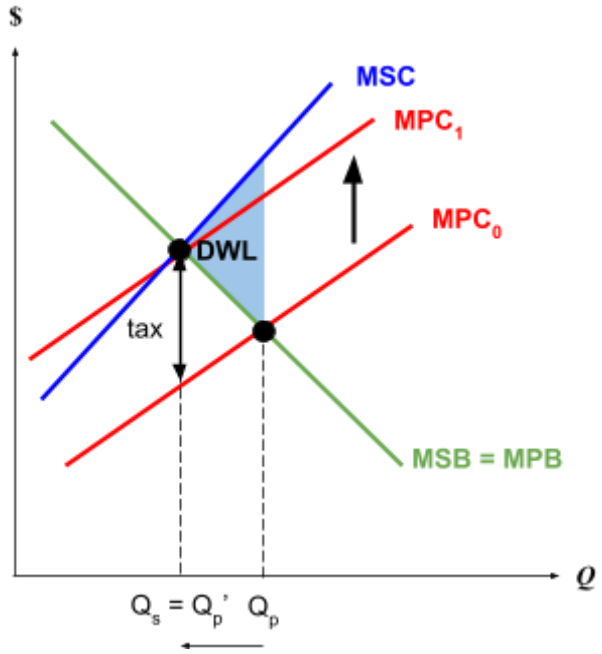
- Define MPB, MPC in the given context
- Individuals only consider MPB and MPC → consume private eqm output of Qp where MPB = MPC
- Negative externality generates MEC: third parties experience spill-over costs → additional cost incurred by society exceeds additional cost incurred by consumers/producers alone → MSC > MPC
- Socially optimal output at Qs where MSB = MSC

Market-based solution

Tax

How it works

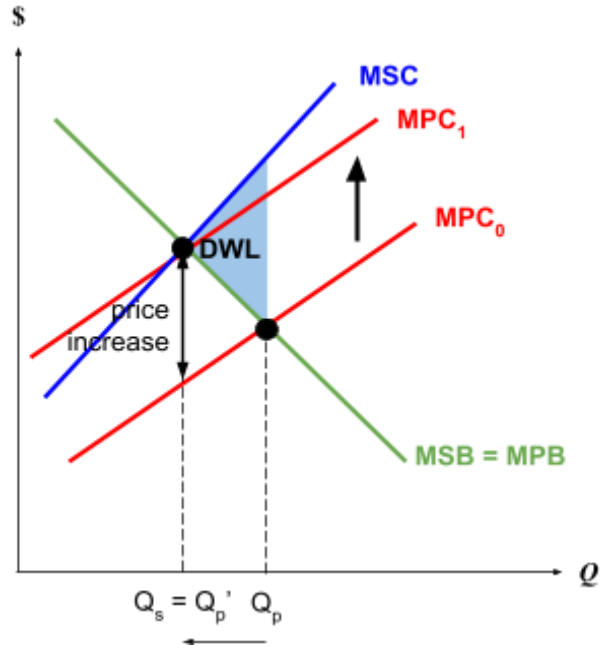
Direct tax



Imposed on party that generates externality:

- **Tax = MEC at Qs**
- **Internalise** external cost: can no longer be disregarded by crs / prs → now face the full cost (private + tax) of their actions → MPC incurred by crs/ prs increase → cut back o/p towards Qs

Indirect tax



Imposed on seller of good whose consumption generates externality:

- Raise marginal cost faced by manufacturers / importers → reduce SS to avoid marginal losses → pass on part of the increase in marginal cost to crs by raising prices → MPC incurred by *csr* increase
- **Price increase = MEC at Qs**
- New eqm at Qp' coincide with Qs

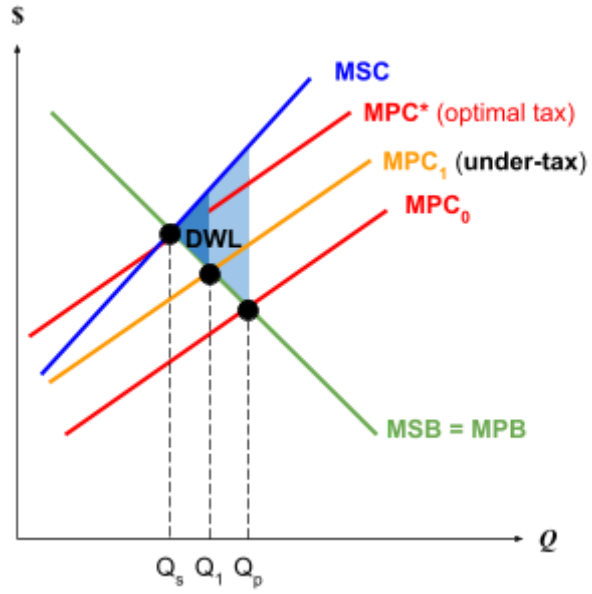
Effectiveness

- [+] Tax revenue to finance other projects
- [+] Drive innovation, accelerate adoption of long-term solutions

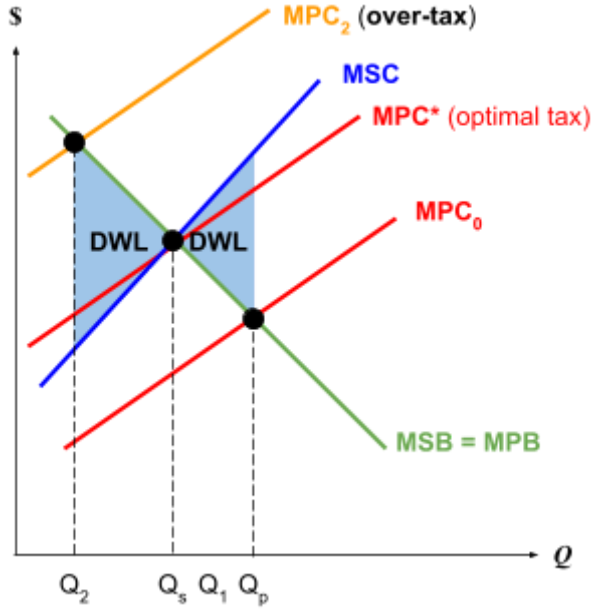
- Firms acting in pursuit of self-interest disregard MEC, produce up to Qp: Qp > Qs → **over-production**
- Output levels between Qp and Qs consumed where MSC > MSB → society bear cost in excess of benefits → **deadweight loss** (society's welfare not maximised)

  - [SR] Indirect tax → constrain production / consumption → loss of utility & employment
  - [LR] Drives innovation & adoption long-term solutions → reduce MEC
    - Reasoning: tax is based on MEC generated
    - if firms develop / adopt 'green solutions', they would be able to reduce tax paid
    - incentive to do so, so long as the benefits of adoption (tax savings) > cost of adoption
- [+] Harness cognitive biases
  - Saliency bias: make certain info more prominent to get ec agents to be more responsive to policy
  - Loss aversion: penalties on negative behaviour tend to be more effective than rewards on positive behaviour
- [–] Imperfect information on the part of the govt
  - Unable / difficult to accurately determine monetary value of externality → under- or over-estimate MEC

Under-tax



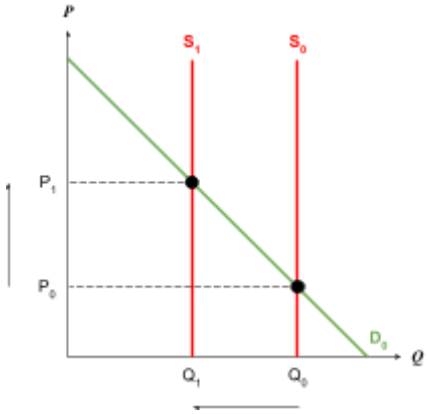
Over-tax



  - Reduce o/p towards Qs but does not totally eliminate over-production
  - Smaller DWL → net improvement in society's
  - Reduce o/p so far that it is below Qs → over-production becomes under-production (one inefficient point → another inefficient point)

	welfare ○ Compare both areas of DWL → net improvement in society's welfare ● Monitoring and enforcement ● Uncertain outcome - depends on PED & PES ○ PED inelastic → o/p decrease to small extent → undermine effectiveness ● [+] Tax revenue - finance project to remedy situation, or compensate third parties ● [+] Tax revenue - reduce other taxes ● [-] Equity: regressive taxes on goods that take up larger percentage of incomes of low-income households → worsen income distribution **Moral suasion** **C&C measure** **Standards** **Bans** Restrictions on • time e.g. bus lanes, alcohol sale • place e.g. zoning of industries, non-smoking zones • material / technology e.g. only Euro V diesel or petrol allowed Effectiveness **Hybrid measure** **Tradable permits (cap-and-trade)** How it works

C&C	Mkt
Govt decides on no. of permits to issue	Price of permits determined by interaction of market forces of DD & SS ● SS is perfectly inelastic, fixed by govt ● DD depends on factors e.g. economic activity, technology
Intended outcome: ● Progressively reduce SS of permits to achieve long-term target e.g. reduce CO_2 emissions ● SS decrease → push up price of permits (carbon price) → incentivise prs to switch to low-carbon technology	



Effectiveness

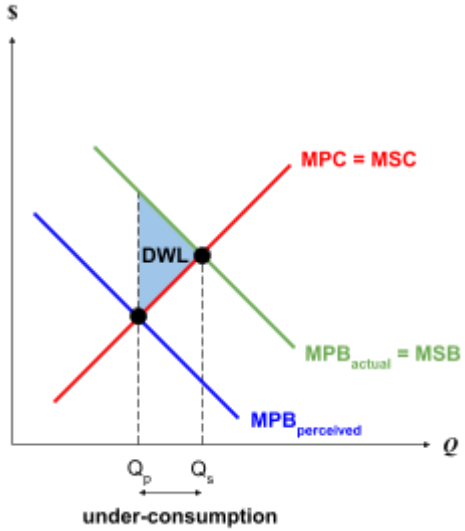
- [+] Efficient distribution
  - Permits will go to those who value them most (signalled by willingness to pay higher price to bid)
- [+] Revenue for gov
  - Fund the transition to green tech / public transport
  - Compensate the group adversely affected
- [+] Certain outcome
  - No matter how the market eventually distributes the permits, the permits determine the cap
- [+] Efficient distribution
  - SELL: Firms that are able to reduce emissions more cheaply will choose to do so & sell the unused emissions permits
  - BUY: Firms that find it costly to cut emissions will choose to buy permits to avoid having to cut emissions much
  - Outcome: Emissions cut (cap) achieved at the lowest cost to society
- [-] Price volatility
  - Price of permits determined by interaction of mkt forces of DD & SS
  - In periods of decreased economic activity (recession) → decrease DD for permits → decrease in price of permits [graph] → may be cheaper to simply purchase permits rather than invest in low-carbon technology
  - Implication: Govt has to anticipate the decrease in DD → decrease SS simultaneously

	● [-] Cognitive biases ○ Having paid so much for COE (tradeable permit) of car ownership, crs want to average down the cost of such spending by using their cars more!! ● [-] Cheating ○ Requires monitoring, enforcement and deterrence

INFORMATION FAILURE

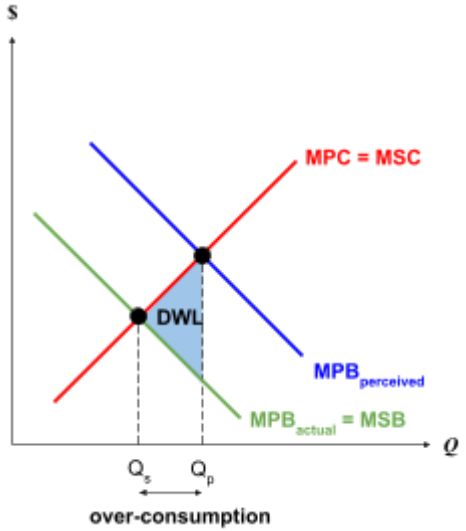
Non-socially optimal levels of good
Imperfect information

Merit good



- Define MPB & MPC
- Consumers not aware of full extent of benefits → underestimate benefits → <u>perceived MPB < actual</u>
- Shaped by imperfect information, consumers consume up to <u>private eqm level Qp</u> where perceived MPB = MPC
- <u>Socially optimal level</u> Qp where MSB = MSC
- **<u>Under-consumption</u>** → DWL

Demerit good



- Define MPB & MPC
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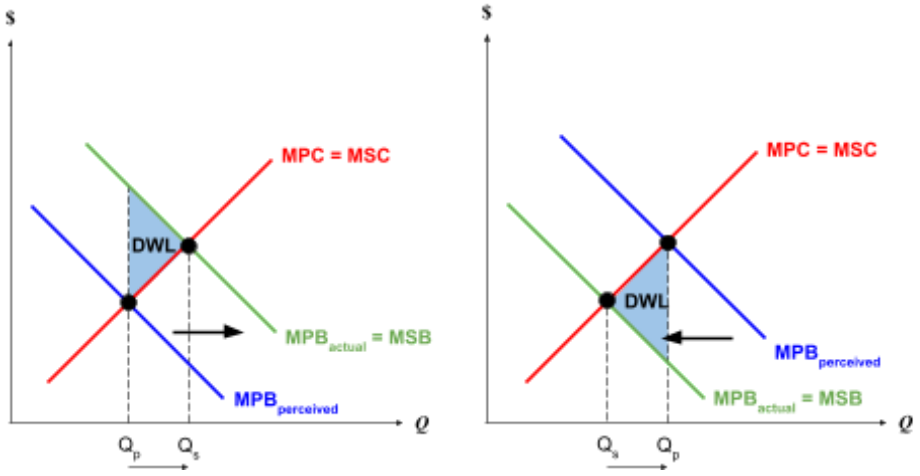
- <u>Socially optimal level</u> Qp where MSB = MSC
- **<u>Over-consumption</u>** → DWL

<u>Market-based solution</u>
Close information gap



Public education

- Govt provide accurate, comprehensive, timely information
- Shift MPB perceived towards MPB actual → move Qp towards Qs

Legislation

- Govt introduce laws to
  - prohibit false and misleading information e.g. false advertising
  - mandate information disclosure
- Shift MPB perceived towards MPB actual → move Qp towards Qs

Effectiveness

- [+] Harness cognitive biases (saliency bias)
  - Mandate that relevant info be presented in easy-to-understand manner & prominently displayed
- [–] Voluntary nature – depends on receptivity of csr, outcome highly uncertain

Asymmetric information

One party has more information than another party regarding characteristics of goods and services for sale

- **Adverse selection**
  Products of different qualities are sold at a single price because seller/buyer incentivised to conceal information → buyer/seller not sufficiently informed to determine true quality **at the time of purchase**

Second hand car market: (lemon problem)

- Seller have more information about quality of used cars than buyers → sellers hide some info from buyers
- Buyers have less information on the quality of good → run risk of being sold low quality good → offer lower price
- Sellers of **plums** unwilling to offer good for sale → leave market → only **lemons** offered for sale
- **Market adversely selects against plums in favour of lemons**
- More and more sellers of plums leave market → market increasingly dominated by lemons → extreme situation where market for plums disappears → potentially Pareto improving exchanges do not take place → potential net benefit to society from having some good quality goods exchanged is lost → society welfare not maximised → allocative inefficiency

Insurance market:

- Buyer knows more about his health condition than seller + seller unable to adequately monitor buyer's behaviour
- Individuals with poor health more likely to want insurance → proportion

- [+] Voluntary nature – preserve economic freedom, csr can decide how they want to respond to the information
- [–] Govt budget – advertising and administrative cost, monitoring and enforcement
- [+] Drive innovation
  - Consumers change t&p → firms under pressure to innovate to cater to changing t&p
- [–] Confirmation bias
  - People seek out or evaluate information in a way that fits with their existing thinking and preconceptions
  - Reject public education messages sent out by govt

Infrastructure to improve information flow (frictional unemployment)

- Govt set up job matching platforms / infrastructure e.g. jobs fair

Lemon Law (asymmetric information)

- Legislation that provides consumer protection for defective goods
- Consumers have the right to request repair, replacement, reduction in price, rescission of contract for goods that do not conform to contract / of unsatisfactory quality or performance standards
- Avenues for csr to seek recourse → reduce incentive for seller to attempt to sell defective goods / hide defects

Tax and subsidy

**does not correct root cause (information failure)

Indirect tax (over-consumption)	**Indirect subsidy** (under-consumption)

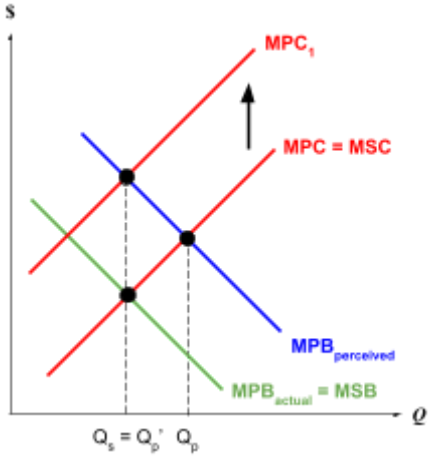
of individuals with poor health in pool of insured people increases
- Claims from customers rise → rise in cost, charge higher premium to protect profit
- Marginal cost of purchasing insurance increases, only consumers who expect to reap sufficiently high marginal benefits will purchase insurance (poor health). Healthier individuals with low risks choose not to be insured → proportion of individuals with poor health in pool of insured people increases further → further push up price of premium
- **Market adversely selects against healthy individuals in favour of individuals with poor health**

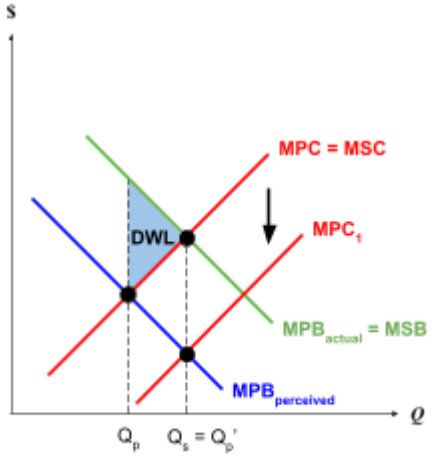
- **Moral hazard**

Tendency to change behaviour when the cost of that behaviour will be borne by the other party, after contract agreed upon

Insurance market:
- Buyer has more info about his subsequent actions + seller unable to accurately monitor behaviour
- Buyer more willing to take on high-risk activities - covered by insurance
- Increase likelihood of insurance payout → more claims, rise in cost → companies charge higher premium to protect profit
- Insurance companies' cost rise to the point that they no longer make profit → no longer provide service → missing market

- **Supplier-induced demand**
  - Seller has more knowledge than buyer, profit-maximising seller uses superior knowledge to influence demand in his self-interest → perceived MPB > actual
  - Shaped by imperfect information, consumers consume up to private eqm level Qp where perceived MPB = MPC
  - Socially optimal level at Qp where MSB = MSC
  - **Over-consumption** → DWL





- Tax levied on prs: increase marginal cost of production → firms decrease SS to avoid marginal losses → charge higher price of good → pass on part of cost increase to csr
- MPC incurred by csr increase

- Subsidy granted to prs: decrease marginal cost of production → firms increase SS to capture marginal profits → charge lower price of good → pass on part of cost decrease to csr
- MPC incurred by csr decrease

Effectiveness
- Effect on govt budget
- Imperfect info
- Monitoring and enforcement
- Political resistance
- Uncertainty of outcome - depends on PED / PES
  - PED / PES more inelastic → less effective in altering consumption level → requires more tax / subsidy

C&C measure

Regulation and legislation

Restriction on consumption (over-consumption as perceived MPB > actual)
- Restrict consumption thru total bans, partial bans → reduce consumption

- **Real-wage unemployment**
  - Firms have imperfect information about worker productivity - monitoring of workers is costly or impossible → incentive for workers to shirk as less likely to be caught for shirking
  - To discourage shirking, firms pay higher wages to raise marginal cost of shirking (lost of income when fired from job)
  - Wages above mkt eqm wage → surplus labour → **unemployment**

Frictional unemployment

- Workers are not fully aware of types of jobs available + employers not fully informed of type of available labour (high search cost involved in acquiring information)
- Workers are w/a to work at prevailing wage rate, actively searching for jobs but do not have jobs
- Pareto improving exchanges do not take place: workers get higher income, employers make higher profits
- Productive inefficiency as o/p of G&S is below its potential o/p (opp cost of unemployment is the o/p forgone) → society's welfare below max attainable level

towards Qs

- SG: casino exclusion measures

Compulsory consumption (under-consumption as perceived MPB < actual)

- Raise consumption level towards Qs
- SG: Compulsory Education Act

Direct provision (under-consumption)

- Govt either produce the good or contract it to private producers → govt charge good at lower cost / offer it free → raise consumption towards Qs

Effectiveness

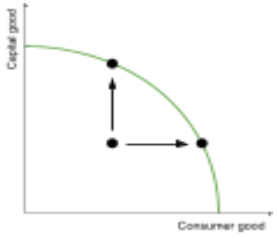
- [–] Imperfect info on the part of govt
- [–] Monitoring and enforcement
- [–] Political resistance
- [–] Limit economic freedom
- [–] Direct provision → high cost to govt & inefficiency of state-owned enterprises

<table>
<tr><th colspan="2">FACTOR IMMOBILITY</th></tr>
<tr><td>Non-socially optimal levels of good
Occupational immobility
Barriers to mobility of FoP between different industries and uses

Workers retrenched from declining industry possess job-specific skills that are not necessarily transferable to other growing industries in the economy
This implies a mismatch between the skills on offer from the unemployed & those demanded by the employers looking for additional workers, leaving workers occupationally immobile and facing structural unemployment</td><td>Continuing education and training (CET)
● Retraining and upgrading skills of displaced workers whose skills have become obsolete
● Govt provide tax incentives or subsidies to firms to induce them to send workers for upgrading courses
● SG: SkillsFuture Singapore (SSG) - statutory board works with educational institutions and training partners to develop industry-relevant training

Reform education system
Revamp and gear education system towards the needs of the economy
● digital economy
● care economy
● green economy</td></tr>
<tr><td>Geographical immobility
Lack of willingness and ability of FoP to move between and within countries

Retrenched workers in economically-depressed regions may be unable or unwilling to relocate to take up jobs in other areas which are booming. This may be due to social ties e.g. family ties or financial factors e.g. high cost of relocation.</td><td>Move workers to jobs
● Govt provide financial assistance to individuals who are willing to relocate in order to find employment for which they are qualified by reason of training and experience – mobility assistance programme for the unemployed

Move jobs to workers
● Govt use tax and financial incentives to attract investment and direct it into certain locations e.g. regions with high unemployment</td></tr>
<tr><td>Inability of factor of production to shift from one location to another → unemployment of resources (point lies inside PPC)
● Moving from point will lead to improvement in society's welfare - with more output produced, more wants can be satisfied and higher level of utility attained
● Raise production of one good without sacrificing production of another good
● Factors of production left idle, society incurs opportunity cost in terms of forgone output → society's
  </td><td></td></tr>
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welfare below max attainable level	

MARKET DOMINANCE

Non-socially optimal levels of good

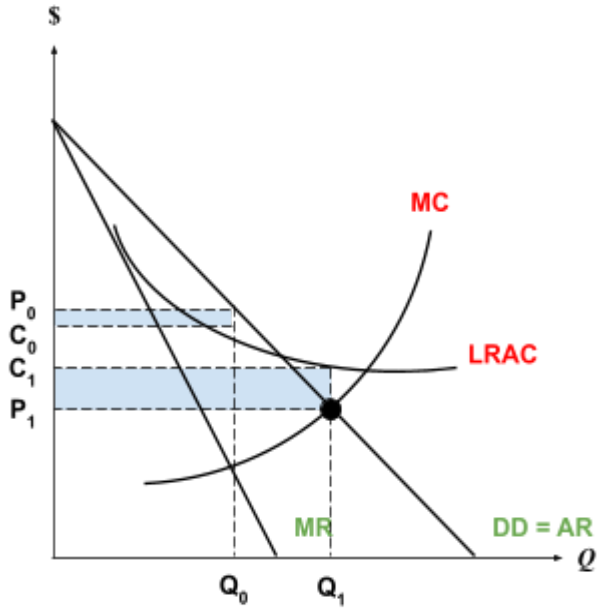
- firms produce at P>MC, leading to deadweight loss, allocative inefficiency
- Value of benefit to society > cost incurred by society in producing one additional unit → loss of net potential benefit to society → underproduction of resources

Direct price setting (price cap)

MC pricing

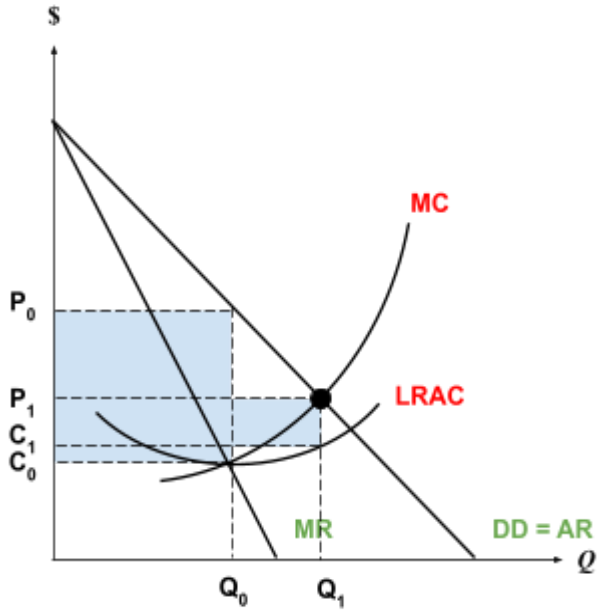
Monopolist required to charge P=MC (allocative efficient o/p level) → lower price, higher o/p level

Natural monopoly



- Extensive iEOS (cost structure of industry) → LRAC falls over entire range of mkt DD
- MC pricing: firm makes subnormal profit → no private firm willing to enter mkt to supply good → govt needs to subsidise loss

Artificial monopoly

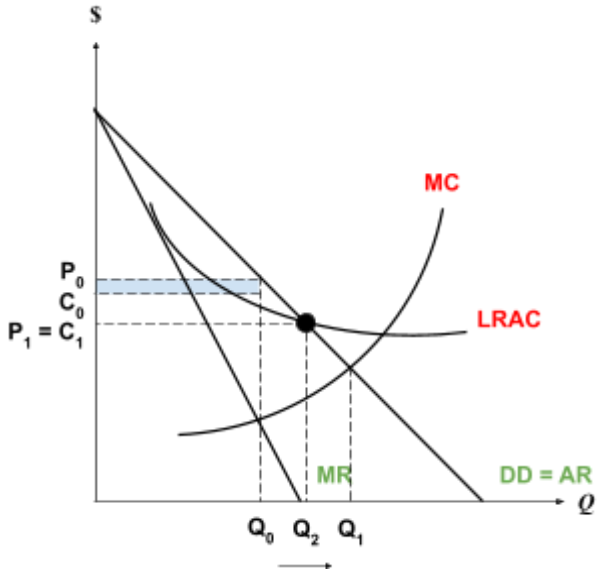


- Created by statutory / strategic BTE
- MC pricing: firm continues to make supernormal profit → no need subsidy

AC pricing

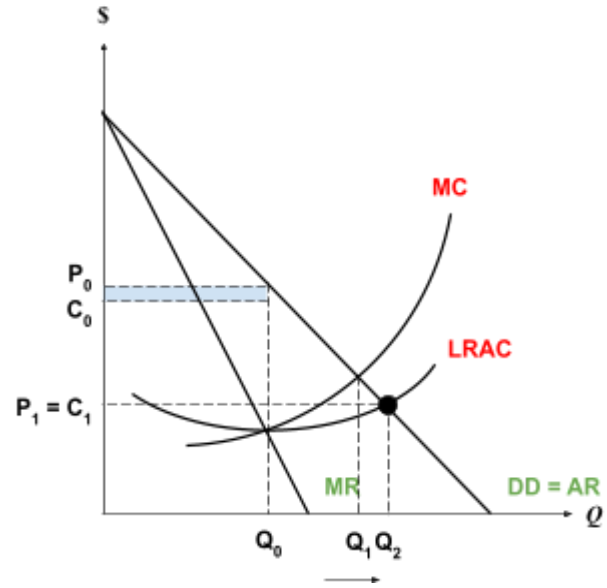
Monopolist required to charge P=AC (close to allocative efficient o/p level) → lower price, higher o/p level

Natural monopoly



- AC pricing: o/p closer to allocative efficient o/p level
- Firms makes normal profit → no need for govt to subsidise

Artificial monopoly



- AC pricing: o/p overshoots allocative efficient o/p level

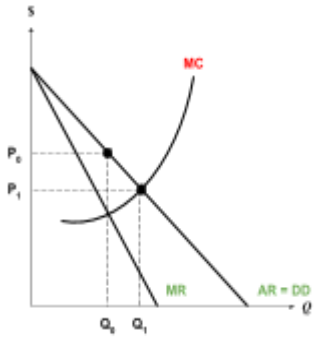
Effectiveness

- [–] Asymmetric information
  - Firms know more about their own costs than regulators
  - Firm incentivised to overstate costs → charge higher price & produce at lower o/p → undermine effectiveness of policy
- [–] Loss of productive efficiency & dynamic efficiency
  - Any successful efforts by firms to cut costs will have to be passed on to csr, not retained by firms as additional profits → firms lack strong incentive to seek out least-cost method of production & strive for technical progress and productivity improvement

Pro-competition policy

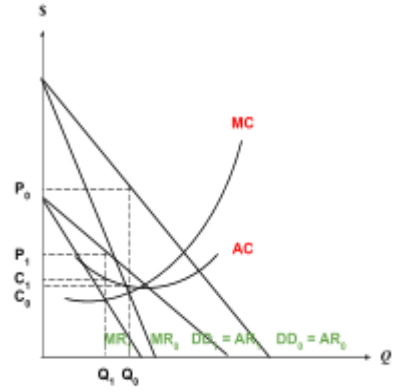
Antitrust (anti-monopoly) law

- Anti-competitive behaviour: price fixing, mergers and acquisition, predatory pricing et. → limit competition, hurt csr welfare
- Laws: penalty on anti-competitive practices & break up monopolies into smaller independent units → increase competition → firms act more competitively → lower price and increase o/p → smaller mark-up of P>MC → reduce allocative inefficiency



Market liberalisation to improve market contestability

- Contestable mkt: real threat of competition → similar effect to actual competition, as existing firm behaves more like competitive firm → lower degree of inefficiency
- Introduce competition by dismantling/relaxing laws that form statutory BTE, grant new firms licences→ new firms enter mkt → DD of incumbent firms fall + PED more elastic (increased availability of substitutes) → mkt power of incumbent weakens
- Smaller mark-up of P>MC → reduce allocative inefficiency
- Supernormal profit reduced → reduce inequity

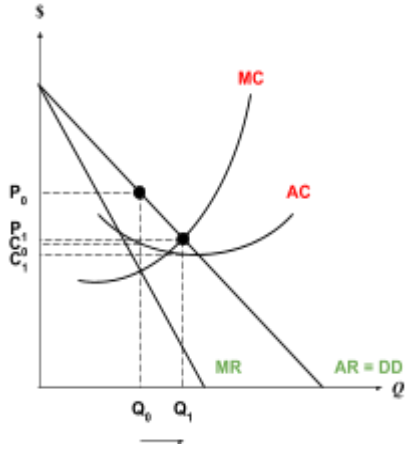


Effectiveness

- [–] Difficult to prove that firms actually collude or engage in anti-competitive actions
- [+] Sale of licences through auctions provide govt with a windfall
- [–] Loss of productive efficiency
    - Pro-competition policies keep firms' scale of operation small → reduce ability to reap iEOS → AC/MC increase

Nationalisation

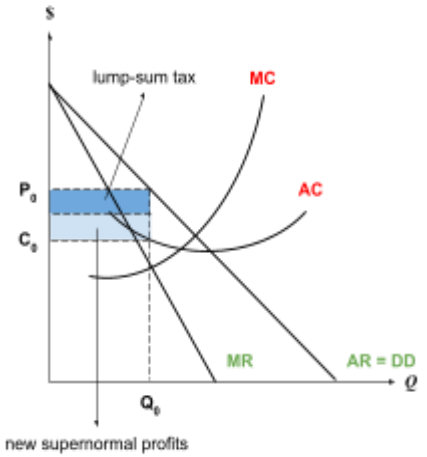
- Private company acquired by public sector, nationalised industries are part of govt production that covers the provision of private goods for sale through the mkt place
- Nationalised industries operate in public interest, choose to produce at larger o/p & charge price closer to that in competitive mkt → smaller mark-up of P>MC → <u>reduce allocative inefficiency</u>
- <u>Reduce inequity</u>: size of supernormal profit reduced



Effectiveness

- [–] Inefficiency of state-owned enterprises
- [+] Govt budget
  - As long as the monopoly continues to make supernormal profits (although lower amt), the earnings add to the state budget

Lump-sum tax



Impose lump-sum tax on firm's profit

- reduce size of supernormal profit → reduce income inequity

Effectiveness

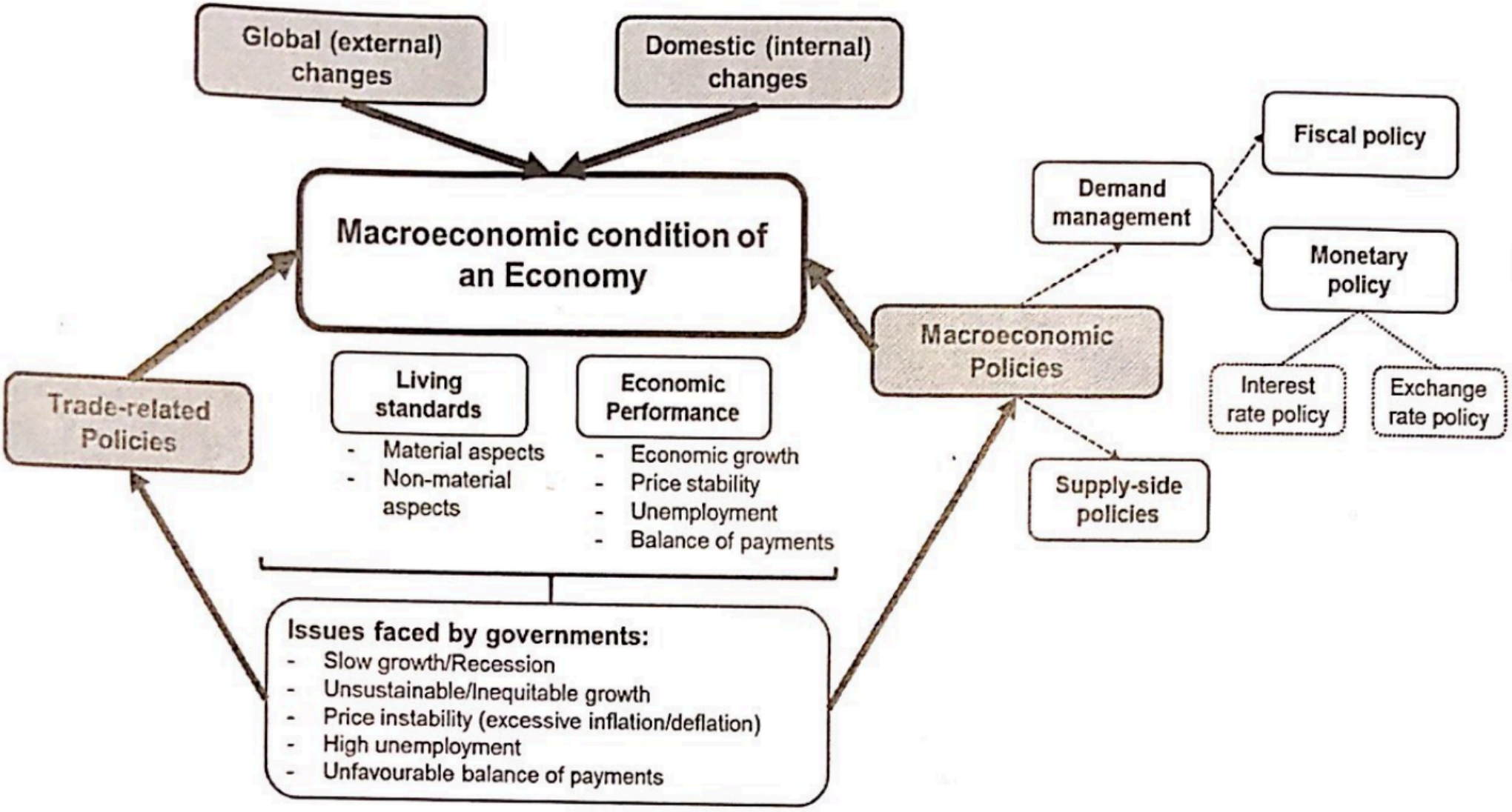
- [–] Asymmetric information
  - Firms know more abt amount of profit earned than regulators → incentivised to cheat by understating profits earned → reduce tax faced → undermine effectiveness of policy
- [–] Does not improve allocative efficiency
  - Does not affect firm's MC → profit-max P & Q remains the same
- [–] Reduction in dynamic efficiency
  - Reduce firms' willingness and ability to innovate, as any additional profits earned are taxed by govt
- [+] Govt budget
  - Govt revenue, improve govt budget position
  - Use tax revenue to redistribute to low-income households

EQUITY	

Part II

Macroeconomics

Theme 3: National Economy

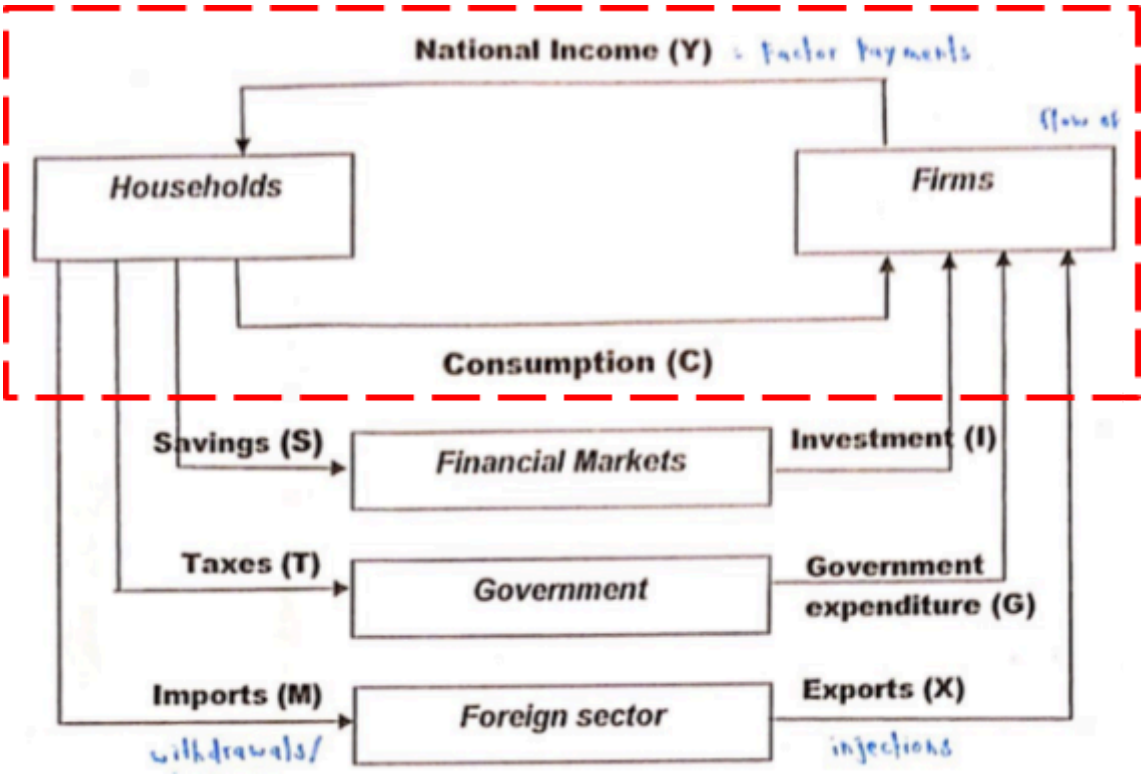


3.1 Introduction to Macroeconomics

Circular Flow of Income

Circular flow of income: represents sources of spending flow & uses of income generated by spending flow

Sectors of economy:
1. **households**
2. **firms**
3. **government**
4. **foreign sector**



Consumption (C)	Households pay firms for the purchase of G&S to satisfy needs and wants
National income (Y)	Firms pay households for factor services provided by households (factor payments) e.g. wage
Injections (J)	Any payment of income to domestic firms that do not arise from domestic household consumption • **investment** (I) • **government expenditure** (G) • **export revenue** (X) Injections increase circular flow income, lead to increase in national income level

Withdrawals (W)	Any part of households' income that is not spent on domestic G&S • **savings** (S) • **taxation** (T) • **import expenditure** (M) Withdrawals decrease circular flow income, lead to decrease in national income level

National income level (GDP): total expenditure of consumers, firms, govt, foreigners on G&S
Expenditure = Total value of output = National Income = GDP

Multiplier effect

Marginal propensities

Marginal Propensity to Consume (MPC)	proportion of additional income spent on consumption	**MPC = Δ C / Δ Y**
Marginal Propensity to Save (MPS)	proportion of additional income spent on saving	**MPS = Δ S / Δ Y**
Marginal Propensity to Tax (MPT)	proportion of additional income spent on tax	**MPT = Δ T / Δ Y**
Marginal Propensity to Import (MPM)	proportion of additional income spent on imports	**MPM = Δ M / Δ Y**
Marginal Propensity to Withdraw (MPW)		**MPW = MPS + MPT + MPM = 1 – MPC** (since $1 additional income earnt must either be consumed or withdrawn)

Multiplier indicates no. of times income changes relative to initial change in injection

k = Δ Y / Δ J = 1 / (1 – MPC) = 1/MPW

By circular flow of income, expenditure creates income and income generates more expenditure

Full explanation for qn

- Circular flow of income represents the sources of spending flow and the uses of income generated by the spending flow.
- Assume I ↑ $1000, MPC=0.6, spare capacity present in the economy
- Round 1:
- Initially, NY ↑ $1000. Firms pay out $1000 as factor income to households who provide factor service e.g. labour
- Out of this increase in income of $1000, households spend part of it i.e. $600 on consumption, and the rest goes to saving, taxes and imports. The increase in consumption encourages firms to produce more in Round 2.
- Round 2:

- Factor income paid out by firms increases by $600, households spend part of it i.e. $360 on consumption in Round 3. The remaining will go to savings, taxes and imports.
- Thus the process of increase in consumption and increase in output and income will continue until there is no more additional spending on consumption and hence income (in other words, total injections = total withdrawals)
- The whole process by then would have increased NY by a total of $2500, that is 2.5 times the initial increase in investment given by k=1/(1-MPC)
- In summary, if the marginal propensities of withdrawal (including saving, taxes and imports) are smaller, it is associated with a larger multiplier effect. A smaller combined effect of savings, taxes and imports implies that more of the initial increase in injection (via higher I) will be spent on consumption, leading to larger overall increase in NY through multiplier effect.

Factor affecting multiplier size: <u>size of leakages</u>
Singapore: high reliance on imports, compulsory saving of workers' monthly salary through Central Provident Fund (CPF)
→ high level of withdrawals (high MPM and MPS), k of Singapore is small
Lower effectiveness of tools that government can use to close the output gap. Hence fiscal policy effects a smaller change in national income for sg economy

Aggregate Demand and Aggregate Supply

Aggregate demand (AD)
Quantity of domestically-produced G&S that households, firms, government, foreigners are w/a to buy at each price level

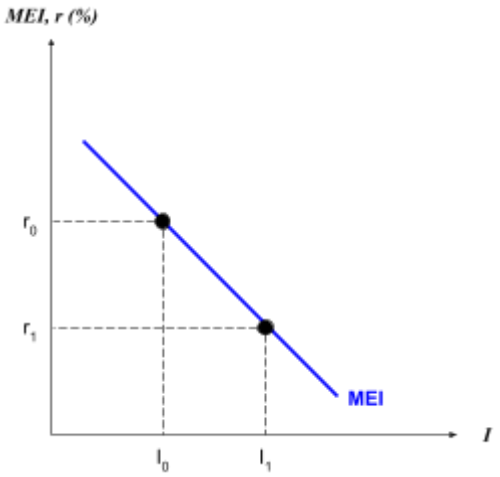
AD = C + I + G + (X – M)

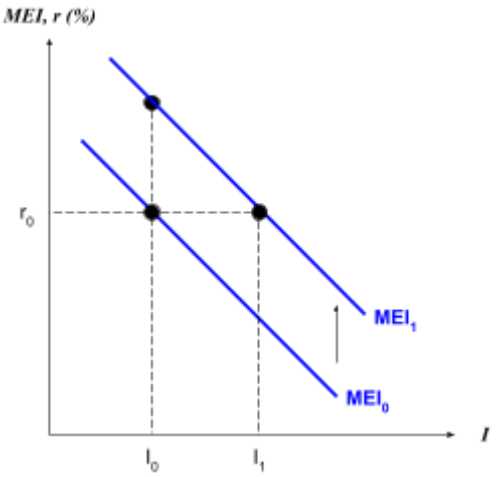
Components of AD:
1. **Consumption (C)**
2. **Investment (I)**
3. **Government spending (G)**
4. **Net exports (X – M)**

Component	Determinants
C	**Induced expenditure**: change in consumption when income changes ● **Income**: Income ↑ purchasing power ↑ C ↑ **Autonomous expenditure**: minimal consumption expenditure by households when income is zero i.e. independent of income ● **Wealth**: Decrease in wealth (e.g. poor performance in financial assets) → choose to consume less and save more to restore wealth Increase in wealth → feel less need to save to add to now-larger stock of wealth ● **Govt policies**: **Disposable income**: income excluding personal income tax and including transfer payments Disposable income = income earnt – direct taxes + transfers Disposable income ↑ purchasing power ↑ C ↑ ● **Expectation of future prices and income**: Future prices expected to increase → buy now while prices low & purchasing power of income high to maximise utility → C ↑ Future income expected to decrease → increase precautionary saving ● **Cost and availability of credit**: Cost of credit: interest rate ○ Borrowers: i/r ↑ higher explicit cost of borrowing → less incentive to borrow to finance spending → C ↓

<table>
<tr><td></td><td>
○ Savers: i/r ↑ higher earnings from bank savings → when consume and not save money in banks, incur higher opportunity cost in terms of interest income forgone → less incentive to consume → C ↓
Availability of credit: willingness of financial institutions to provide loans

● Distribution of income:
○ Low-income household: high MPC
○ High-income household: low MPC
○ Redistribution of income: C of low-income ↑ C of high-income ↓
</td></tr>
<tr><td>I</td><td>
Investment: expenditure on production of capital goods and net additions to stocks of goods

Marginal Efficiency of Investment (MEI): relationship b/w eRORI and level of investment


interest rate
(movement along MEI)


non-interest rate factors
(shift of MEI)

● Interest rate:
Explicit cost of credit when taking loans
i/r decrease from r_0 to r_1 → cheaper to finance investments, firms expect higher rate of return
At I_0, eRORI > cost of borrowing → to capture positive net eRORI, firms incentivised to ↑ I from I_0 to I_1 where eRORI = cost of borrowing

● Business confidence and expectations:
Optimistic about future market conditions → firms revise eRORI, higher eRORI relative to cost of borrowing → MEI shift upwards
At I_0, eRORI > cost of borrowing → to capture positive net eRORI, firms incentivised to ↑ I from I_0 to I_1 where eRORI = cost of borrowing

● Govt policies:
Corporate tax rate ↓ → expectations of after-tax profits ↑ → MEI shift
</td></tr>
</table>

	upwards → I ↑
G	**Government expenditure**: current spending and capital spending by govt on provision of G&S (autonomous in short run, independent of NY) ● For macroeconomic stabilisation Govt spending tends to be counter-cyclical in SR → govts increase spending in periods of economic recession to support the level of economic activity and keep down employment → govts cut back spending to avoid overheating the economy ● For sustained and sustainable growth Spending on infrastructure, education, R&D on green tech to build the economy's productive capacity while minimising envt impact that could undermine sustainable growth and the continuous improvement in SOL ● Government spending for social objectives Ageing population, govt increase spending on healthcare and eldercare
X – M	**Net exports**: difference b/w export expenditure & import revenue $TR_X - TE_M$ ● **Foreign & domestic income**: TR_X depends on foreign income TE_M depends on domestic income (MPM) ● **Relative prices**: Relative inflation rate: ○ Inflation in other country > own country ○ Imports: price of foreign-produced G&S ↑ price of imports ↑ Qdd for imports ↓ MTP (assume $\|PED_M\| > 1$) → TE_M decrease ○ Exports: domestic buyers switch to local G&S substitutes → TR_X increase (extent depends on XED) ○ Trade balance improve, AD ↑ Relative exchange rate: ○ Domestic currency appreciates against foreign currency ○ Exports: price of exports ↑ in foreign currency terms → Qdd_X ↓ ○ Imports: price of imports ↓ in domestic currency terms → Qdd_M ↑ ○ Assuming Marshall-Lerner condition holds ($\|PED_X\| + \|PED_M\| > 1$), price changes in exports and imports will induce sufficiently large changes in Qdd in opposite direction → TR_X decrease relative to TE_M ○ Trade balance worsen, AD ↓ ● **Tastes and preferences**:

	• **Govt policies**:

Aggregate supply (AS)
Quantity of domestically-produced G&S that firms are w/a to supply at each general price level

Why the shape?

- **Horizontal** range: unemployment of resources
  Workers willing to work at prevailing wage, firms able to obtain resources to expand production without paying high prices for FoP → RNY can be increased without changes in GPL
- **Upward sloping** range: structural rigidities
  Firms have to hire less suitable FoP to increase production → unit cost of production increase → increase in RNY is possible only when accompanied by increase in GPL
- **Vertical** range: full employment of resources
  Productive capacity of economy (Y_f: max possible output given current resources) → attempts to stimulate aggregate demand will only push up GPL with no effect on RNY

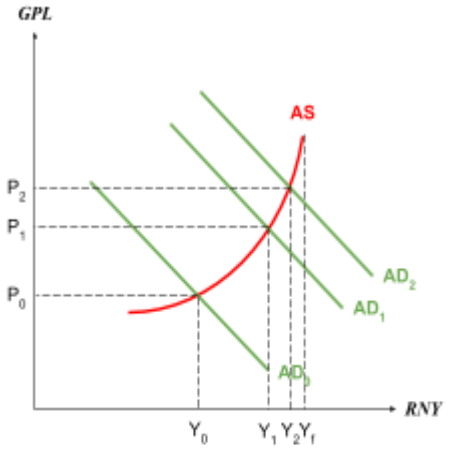
Determinants

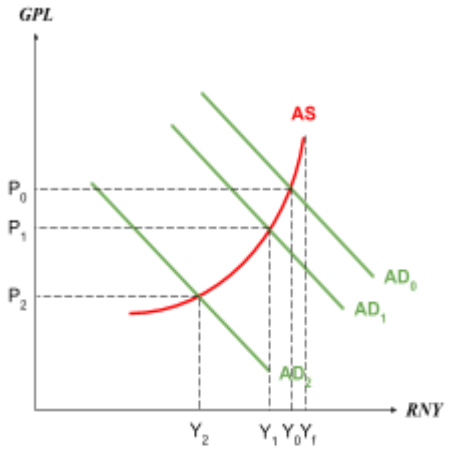
Determinant	Explanation
1. SRAS: **uCOP**	• Input prices: Price of essential FoP ↑ uCOP ↑ firms w/a to supply same o/p level only at higher prices → AS ↓ (shift upwards) Technology → increase productivity → uCOP ↓ → AS ↑ (shift downwards) • Govt indirect taxes & subsidies: Tax: uCOP ↑ Subsidy: uCOP ↓
2. LRAS: **Q&Q of FoP**	• Expansion of economy's productive capacity → higher level of potential o/p Yf → AS ↑ (shift rightwards) **AND** • Increase in labour → surplus of labour at existing wage level → push wages down → uCOP ↓ → AS ↑ (shift downwards)

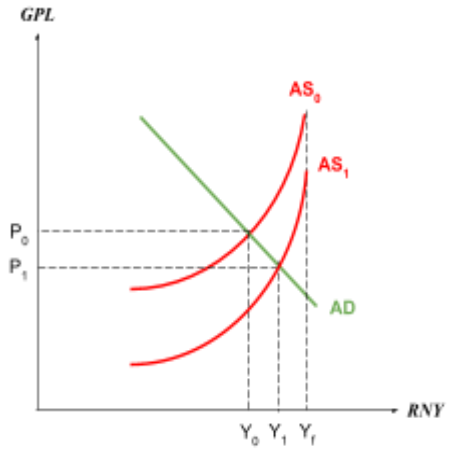
Equilibrium

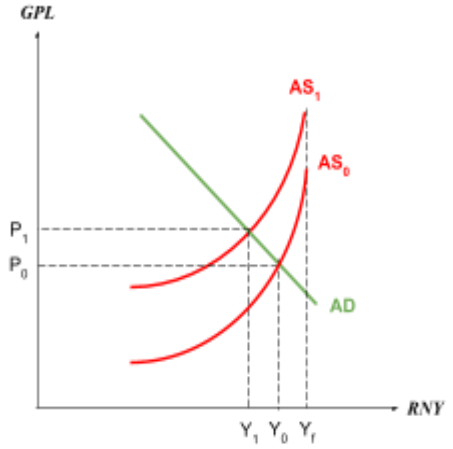
Macroeconomic equilibrium: AD = AS

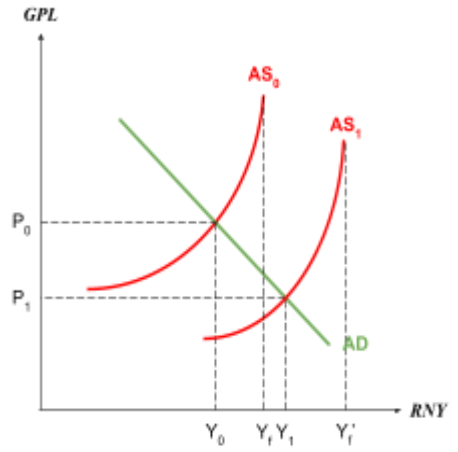
Adjustment process

AD increase	
National income: ● AD increase from AD_0 to AD_1 ● Firms faced with unplanned disinvestment (unplanned fall in inventories) as firms draw down stocks to meet unanticipated increase in AD → increase o/p in next production cycle to restore inventories to optimal level ● Firms enter factor mkt to demand for more FoP (incl labour), pay out more factor income ● Through multiplier effect (spending creates income, income generates more spending), AD increase further from AD_0 to AD_2 ● RNY increase from Y_0 to Y_2 Inflation: ● Firms demand more FoP, increased competition for FoP, bid up factor prices (holding SS of FoP constant) ● Increase in uCOP ● To protect profits, firms pass on part of higher costs by raising prices of final G&S ● GPL increase from P_0 to P_1 Employment: ● RNY increase towards full employment level of national income Y_f ● Less spare capacity, employment increase	

AD decrease	
National income: ● AD decrease from AD_0 to AD_1 ● Firms faced with <u>unplanned investment</u> (unplanned increase in inventories) → <u>decrease o/p</u> in next production cycle to restore inventories to optimal level ● Firms enter factor mkt to <u>demand for less FoP</u> (incl labour), pay out <u>less factor income</u> ● Through <u>reverse multiplier effect</u> (spending creates income, income generates more spending), AD decrease further from AD_0 to AD_2 ● RNY decrease from Y_0 to Y_2 Inflation: ● Firms demand less FoP, less competition for FoP, <u>factor prices fall</u> (holding SS of FoP constant) ● <u>Decrease in uCOP</u> ● To protect profits, firms pass on part of higher costs by raising prices of final G&S ● GPL decrease from P_0 to P_1 Employment: ● ~~RNY decrease <u>away from full employment level</u> of national income Y_f~~ ● ~~More spare capacity, employment increase~~	

SRAS increase	
National income: ● Firms experience decrease in uCOP, profits increase, firms incentivised to increase o/p through better utilisation of resources … ● Through <u>multiplier effect</u> … Inflation: ● To protect profits, firms pass on part of increase in unit cost of production to consumers by raising prices of final G&S ● GPL increase from P_0 to P_1	

SRAS decrease	
National income: ● Firms experience increase in uCOP, profits decrease, firms decrease o/p to protect profits ● Firms reduce production, lay out FOP (incl labour), pay out less factor income ● Through <u>reverse multiplier effect</u> … Inflation: ● To protect profits, firms pass on part of increase in unit cost of production to consumers by raising prices of final G&S ● GPL increase from P_0 to P_1	

LRAS increase	
National income: • Inflation: •	

***Quantity of FoP increase, lower uCOP -> AS shift right AND down

3.2 Macroeconomic Objectives and Policies

Concepts and Tools of Analysis
☐ Standard of living – Material and non-material well-being – Gross Domestic Product (GDP) and Gross National Income (GNI) – Human Development Index (HDI) – Income inequality – Gini coefficient ☐ Economic growth – Actual and potential growth – Sustainable growth – Inclusive growth ☐ Full employment and unemployment – Demand-deficient unemployment – Structural unemployment – Frictional unemployment ☐ Price stability – Demand-pull inflation – Cost-push inflation – Deflation – Consumer Price Index (CPI) ☐ Nominal and real concepts ☐ Balance of trade surplus and deficit ☐ Short-term capital flows ☐ Long-term capital flows – Foreign direct investment ☐ Discretionary fiscal policy ☐ Government budget surplus and deficit ☐ Monetary policy – Interest rates – Exchange rates ☐ Supply-side policies

Standard of Living and Macroeconomics Indicators

Standard of living: level of economic welfare and social well-being of individual or household

- Material aspect: Quantity of goods and services consumed by the average person in a country in a given time period
- Non-material aspect: Qualitative aspects of welfare

Mathematical concepts

Nominal and real concepts

- **Nominal**: measured using prices prevailing in the market in the current year → not adjusted for inflation
- **Real**: measured using prices that prevailed during some fixed base year → adjusted for inflation to remove price effect

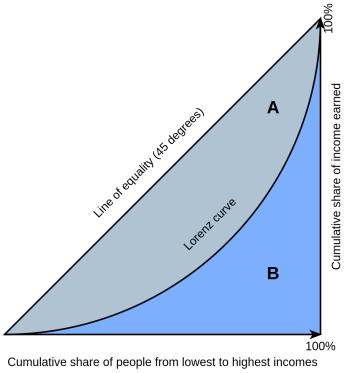
Real XXX = Nominal XXX – Inflation rate

Per capita: divided by population count

Index numbers

- An understanding of how index numbers are interpreted, including the base year and use of weights, is required

Key economic indicators

Indicator	Definition
Gross Domestic Product (GDP)	Total value of all final G&S produced within geographical boundaries of a country (domestic production), in a given period of time
Gross National Income (GNI)	Sum of gross factor incomes received by residents of country (national production) GNI = GDP + net primary income from abroad
Unemployment rate	% of unemployed persons in labour force
Productivity **Labour productivity**	Real output per unit of factor input used Real output per unit of labour input used
Gini coefficient	Degree of variation to measure extent of distribution of income within a country from a perfect equal distribution Lorenz curve  Gini coefficient = A/(A+B) varies between 0 and 1 0 is perfect equality, 1 is full inequality

Indicator	Definition
Consumer Price Index (CPI)	Weighted average of prices of specified basket of G&S commonly purchased by a typical household (indicator to measure inflation/deflation)
Inflation rate	Rate at which general price level increases Can be measured using purchasing power parity (PPP), general price level Inflation rate = %increase in CPI
Exchange rate	Price of a currency, in terms of other currency **Appreciation** of A against B: increase in price of A in terms of B **Depreciation** of A against B: decrease in price of A in terms of B
Human Development Index (HDI)	Statistical composite index of ● life expectancy ● education level ● per capita income indicators e.g. per capita GNI (PPP)

Indicators for SOL

Comparison over time and space

Indicator	Explanation	Limitations
Real per capita GDP over time	Material SOL ● Increase in real per capita GDP → more G&S produced per head, more needs and wants satisfied → derive higher level of utility Non-material SOL (proxy) ● National income of country rises → govt collect more tax revenue, more govt spending towards social development	● Changes in income are not considered ● GDP statistics do not distinguish between type of output ● National income statistics fail to capture changes in qty of G&S & availability of free services ● Inclusion of previously-excluded productive activities ● Reliability of data improved overtime (overstate / understate) ● National income data does not adequately reflect non-material aspect of SOL
Real per capita GDP (PPP) over space	GDP converted to ● per capita: account for population differences ● PPP exchange rate: account for differences in cost of living	● Countries have different degree of inequality in income distribution ● Countries differ in composition of national output ● Countries differ in extent of

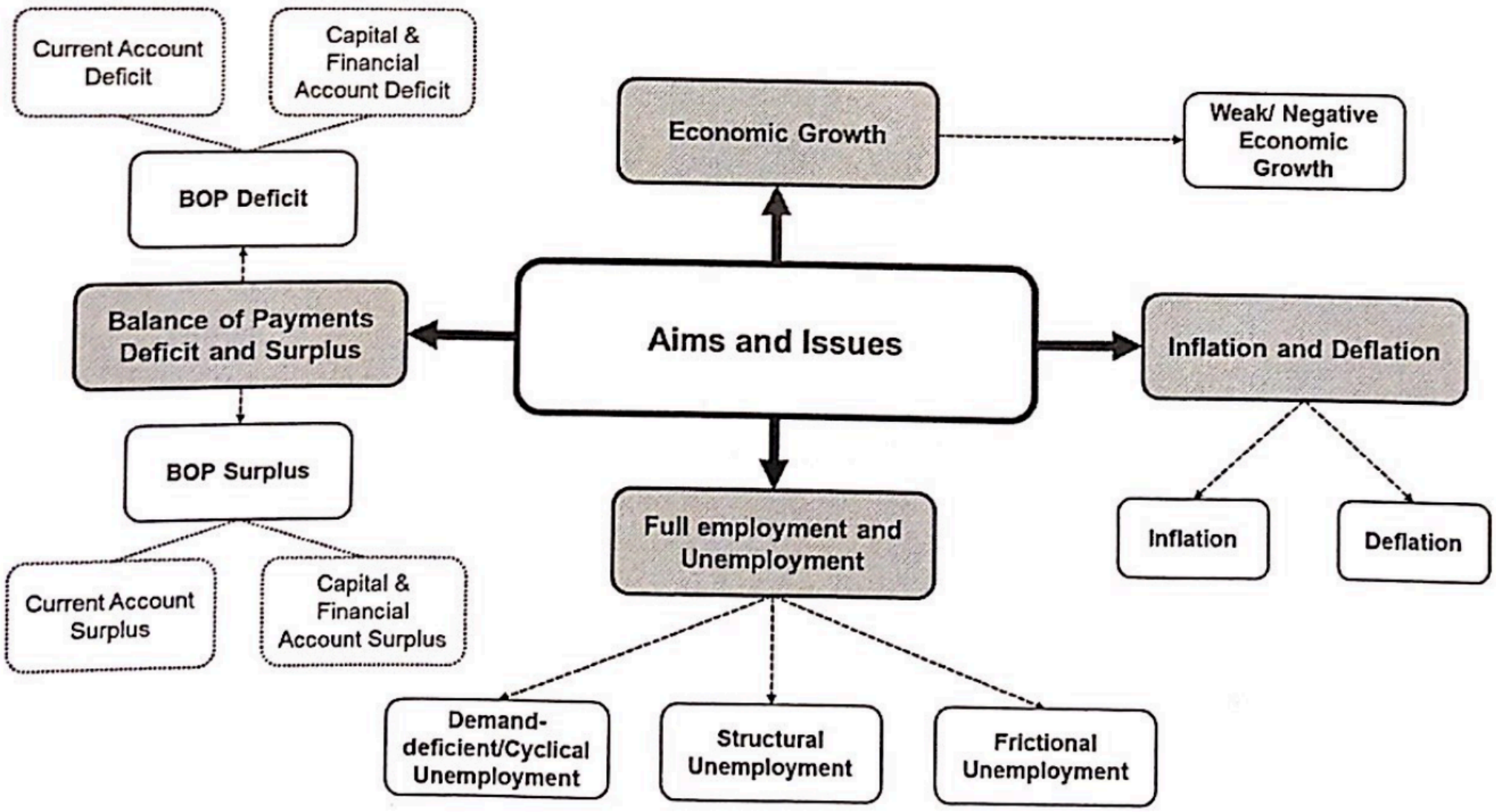
	<u>Material SOL</u> <u>Non-material SOL (proxy)</u>	non-marketed activities and underground economy ● Countries differ in terms of method, accuracy, reliability of data collection ● Countries differ in non-material aspect of SOL, not captured by national income statistics
Composite indices over time & space	Combine two or more indicators to provide more holistic measurement ● HDI ● Green Growth Indicators ● Happy Planet Index ● World Happiness Index	

“Singapore economy”

- Economic growth
- Price stability
- Unemployment
- Balance of trade

Read news regularly for Macro - current affairs

Macroeconomic Issues

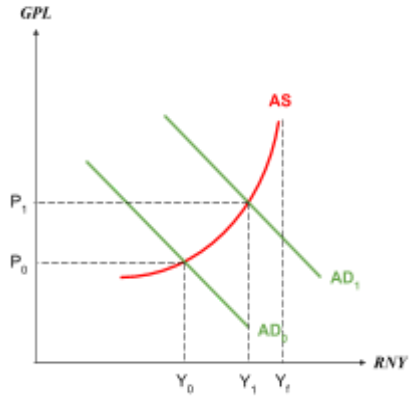


ECONOMIC GROWTH (SUSTAINABLE & INCLUSIVE)

Economic growth: sustained increase in real national output brought about by increase in productive capacity

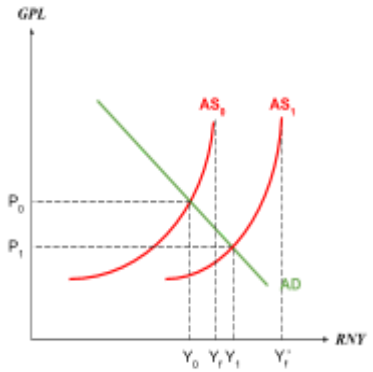
Actual growth: increase in <u>real national output</u>

- AD increase / SRAS increase
- Extent of increase: depends on availability of spare capacity



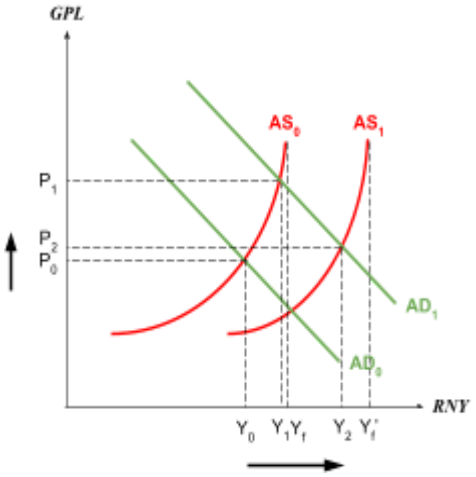
Potential growth: long-term expansion of <u>productive capacity</u>

- LRAS increase



Note: refer to both actual and potential growth in essay, especially when question does not specify which

(High and) Sustained growth: actual growth + potential growth



- Actual growth w/o potential growth: amount of FoP decreases, limit ability of economy to increase national o/p + *sharp* increase in GPL → X sustained
- Potential growth w/o actual growth: → X high
- Real o/p can increase further, while lowering inflation (sustained, non-inflationary growth)

Inclusive growth: growth sustained over period of time, broad-based across economic sectors, creates productive employment opportunities for majority of population

- Economic progress fairly distributed across society
- Low Gini coefficient, low income inequality

Sustainable growth: growth achieves w/o causing <u>other significant economic problems</u>, particularly for <u>future generations</u>

- Current rapid growth may exhaust scarce resources → envt degradation → undermine future growth

<u>Benefits</u>	**<u>Costs</u>**
Micro	• Investment comes at trade-off with current

● Macro ● SOL: Higher current and future SOL - material and non-material (Increase in real GDP > increase in population) real GDP/capita ↑ purchasing power ↑ more w/a to purchase G&S to satisfy more needs and wants, derive ↑ utility Ec growth - more tax revenue → govt better able to redistribute more income from rich to poor (progressive income tax system) through transfer payments to low-income households / lower-skilled workers - close income gap, lower income inequality ● Investments ○ Ec growth → higher savings → source of funds for investment → I ↑ ○ Ec growth → rising DD and o/p, firms make more profits, higher eRORI → I ↑ ○ I ↑ AD and AS ↑ sustained growth ●	consumption ○ ● Structural unemployment, worsen income inequality ● environmental degradation ● inequitable income distribution
<u>Policies</u>	

LOW UNEMPLOYMENT

Labour force: all those who are w/a to work at current wage rate

Unemployed: labour force of legal working age who are without jobs but available for work, willing to work, actively seeking work at current wage rate

Causes

Demand-deficient unemployment:

- Lack of AD
- Cyclical unemployment: AD
- fall in AD, firm earn less, afford less FoP, lay off some resources
- e.g. Covid-19

Structural unemployment:

- Structure of economy changes → change in skills and knowledge required to perform jobs → workers do not have relevant skill set to be hired (mismatch in skills)
- e.g. automation, manual labour replaced by robots

Frictional unemployment:

- Imperfect information in labour market: workers not fully informed about job opportunities & employers not fully informed about labour available → takes time for job-seekers to be matched with suitable jobs
- e.g. university fresh graduates

Real-wage unemployment:

Benefits	**Costs** Micro Macro

	● Forgone output ○ Produce within PPC, actual o/p is less than potential o/p, under-utilisation of resources ○ Opp cost to society, loss of economic welfare, as smaller o/p means fewer needs and wants can be satisfied - lower level of utility derived ● Decline in investment, potential growth ○ Income fall so C fall AD fall ○ Lower profits, I fall AD fall ○ Unemployment falls further ○ I fall AS increase less, limit potential growth ● Erosion of skills, potential growth ○ Long-term unemployment - work skills deteriorated as miss out on on-the-job training opportunities that counter skills obsolescence → erosion of work skills → productivity declines, limit potential growth (Q&Q of FoP) ○ Long-term unemployment discourages workers from job search, end up leaving labour market -> quantity of FOP … ● Worsen govt budget position ○ Unemployed pay no income tax - loss of tax revenue + unemployed spend less, collection from indirect tax e.g. GST falls + incur higher expenditure on unemployment benefits ○ When cyclical unemployment on the rise, govt adopt expansionary fiscal policy (cut tax, increase spending) to stimulate AD → increase outlay ○ ⇒ budget deficit
Policies	

PRICE STABILITY (LOW AND STABLE INFLATION)

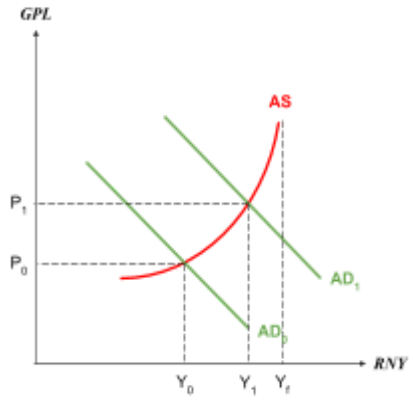
Inflation: increase in GPL
Deflation: decrease in GPL
Disinflation: decrease in rate of inflation
Stagflation: situation of high unemployment and rapid inflation with depressed real national o/p

Inflation rate = Δ CPI / Δ t
Consumer Price Index (CPI) is an index number - relative to base year

Causes

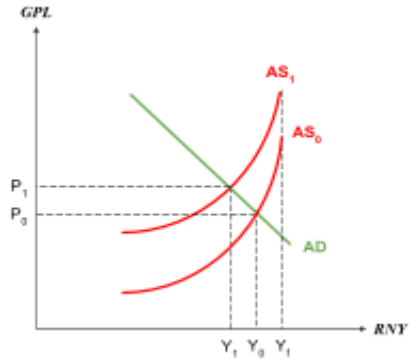
Demand-pull inflation: continuous increase in AD with little/no increase in AS, near/at full employment

- persistent rise in AD, associated with a booming economy → firms respond to rise in DD by raising prices and partially increase o/p



Cost-push inflation: continuous increase in uCOP for reasons not associated with increase in AD (SRAS decrease)

- due to supply-side factors. Rising uCOP during periods of low unemployment → AS decrease



Benefits	**Costs**

Policies

FAVOURABLE BALANCE OF TRADE

Balance of payments: record of country's international transactions i.e. flow of money between residents of country & rest of world → can be in surplus / deficit

1. Current account (CA)
   - Goods and service account
   - Primary income account
   - Secondary income account
2. Capital and financial account (KA)
   - Short-term capital flows
   - Long-term capital flows

BOT deficit: $TR_X < TE_M$
BOT surplus: $TR_X > TE_M$

Causes of BOT deficit

Relative inflation rates

- Scenario: the country is experiencing high rate of inflation, while other countries have zero rate of inflation
- Exports: P_X ↑, assume $|PED_X| > 1$, MTP ↓ in Qdd_X → TR_X ↓
- Imports: P_M same, increase in prices of domestically-produced G&S induce locals to switch to imports (substitutes) → DD_M ↑ → TE_M ↑
- TRX ↓ + TEM ↑ ⇒ BOT worsen

Relative exchange rates

- Scenario: the country's currency appreciates against foreign currencies
- Exports: P_X ↑ in foreign currency terms → Qdd_X ↓
- Imports: P_M ↓ in domestic currency terms → Qdd_M ↑
- Assume Marshall-Lerner condition ($|PED_X| + |PED_M| > 1$), price changes in exports and imports induce large enough changes in Qdd in opposite direction to cause TR_X to fall relative to TE_M
- TR_X ↓ + TE_M ↑ ⇒ BOT worsen

Emergence of low-cost competitors

- Exports: relative P_X ↑, assume XED > 1 (closer substitutability), TR_X ↓ to large extent
- Imports: P_M ↓, Qdd_M ↑, assume $|PED_M| > 1$, MTP ↑ in Qdd_M → TE_M ↑
- TR_X ↓ + TE_M ↑ ⇒ BOT worsen

Relative growth rates

-

Benefits	**Costs**

Policies

Unemployment	• lack of AD • technological changes • mismatch of skills • transition between jobs
Price instability	• changes in AD • costs of production • productive capacity
Persistently large balance of trade deficit or surplus	• changes in global conditions • international competitiveness

Consequences for economic agents on the standard of living

Macroeconomic Policies

1) Macroeconomic policy decisions undertaken by governments to achieve macroeconomic objectives in relation to living standards

2) Policy measures and their effectiveness in achieving macroeconomic objectives:
   - Fiscal policy
     – How discretionary fiscal policy can influence the level of economic activities and living standards through government spending and taxation
   - Monetary policy
     – How monetary policy can influence the level of economic activities and living standards through the management of exchange rates (case of Singapore) and interest rates
   - Supply-side policies
     – How supply-side policies can improve quantity, quality and mobility of factors of production to increase the productive capacity of an economy and hence affect living standards

3) Possibilities of conflicts between macroeconomic objectives and how this may affect governments' decision on macroeconomic policy

Additional information:
An understanding that governments around the world focus on different macroeconomic objectives, depending on the state of the economy and the level of development of the country is required.
An awareness of the desirability for a government to maintain fiscal sustainability over the long term is required.
An understanding of how transfer payments can improve income distribution and help achieve inclusive growth is required.
Knowledge of the Marshall-Lerner condition is required. Derivation of its formula and calculation are not required.

Marshall-Lerner condition: $|PED_X| + |PED_M| > 1$

3.3 Globalisation and the International Economy

Concepts and Tools of Analysis
☐ Globalisation ☐ Free trade ☐ Protectionism – Tariffs and non-tariff measures ☐ International and regional economic co-operation

Globalisation, International Trade and Economic Co-operation

1) Globalisation as the increased trade of goods and services, and flows of capital and labour between countries
   - Factors affecting globalisation

2) Basis of free trade and specialisation

3) Benefits and costs of free trade and flows of capital and labour on:
   - Consumers – Prices, choice and variety of goods and services
   - Producers – Size of markets, degree of competition, cost of production and innovation
   - Government – Macroeconomic objectives (and policy choice)

4) Benefits and costs of protectionism

5) Governments may decide to engage in economic co-operation and trade agreements between countries or impose protectionist measures to achieve macroeconomic aims

Additional information:
An understanding of the Theory of Comparative Advantage, in terms of opportunity cost, is required.
Numerical illustration of the Theory of Comparative Advantage is not required.

Diagrammatic analysis of the effects of tariffs is required.
Detailed knowledge of the forms of economic integration, institutional knowledge and legislation is not required.
Diagrammatic analyses of economic co-operation and trade agreements between countries are not required.