Anglo-Chinese School (Independent)

Economics (SL)

Macroeconomics: Level of overall economic activity

Section 2: Macroeconomics

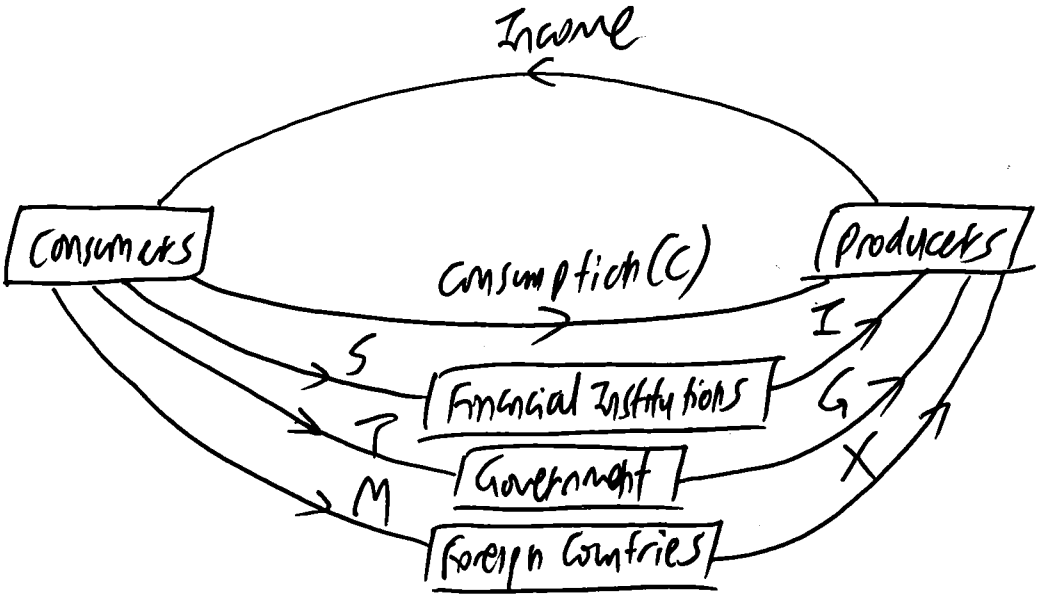
Topic 1: Level of overall economic activity

(a) Circular income flow model

4 sector circular income flow model

Factors of production: Land, Labour, Capital, enterprise

Income: Rents, wages, profits, interest



Based on model: **Income (Y) = Expenditure (E) = Output (O)**

Withdrawals (W)	Injections (J)
Savings ➢ Income not spent on consumption, deposited in banks	**Investment** ➢ Spending by firms on capital goods, financed by borrowing from banks
Taxes (T) ➢ Part of income spent on goods that goes to the government	**Government Expenditure (G)** ➢ Public Spending (eg. subsidies, infrastructure, public training,etc)
Import Expenditure (M) ➢ Outflow of domestic income to foreign countries on imports	**Export Expenditure (X)** ➢ Inflow of income from foreign countries on exports

Changes in Size of circular flow model of income (Relate to AD=C+I+G+(X-M))

ACS(I) 2015 YEAR 5 EOY Paper 1 Q1(a)

W>J	W<J
Fall in Government Expenditure (G) W>J Decrease in AD Decrease in output by firms Decrease in factor income National income decreases Size of circular flow decreases	Fall in savings (S) W<J Increase in Consumption Increase in AD Increase in output by firms Increase in factor income National Income increases Size of circular flow increase

(b) Measures of economic activity

- **E=O=Y**

(i) Expenditure approach

- Adds up expenditure on all **Final Goods and services**
- *Intermediate Goods not included to prevent double counting when determining total expenditure*

(ii) Income Approach

- Adds up **income earned from all factors of production**
- Rent (Land), Wages (Labour), Profit (Capital), Interest (Enterprise)

(iii) Output Approach

- Adds up **value of output** from all economic sectors (eg. agriculture, manufacturing, service sectors)

GDP

- **Total value of output** of all goods and services by **factors of production** within **national boundaries** in a **period of time**

GNP (Gross National Product)

- GNP= GDP + **Net factor income earned from abroad**
- GNP can be less than GDP (outflow of income: eg. to foreign investors who make an interest from investments)

GNI (Gross National Income)

- Same as GNP

n.b GNI and GDP are used interchangeably as their values approximately the same. But it is good to distinguish them in defining them.

Nominal & Real GDP

Nominal GDP: GDP valued at current prices (with inflation)

Real GDP: GDP valued at constant prices (Accounting for GDP)

Current Year Prices (CYP): Weighted average of all components of GDP in the present time

Base Year Prices (BYP): Weighted average of all components of GDP in the base year (Year which is used as point of reference)

- GDP Deflator is used to calculate Real GDP (Which "deflates" the nominal GDP to get Real GDP, accounting for inflation)

GDP Deflator = $\frac{CYP}{BYP} \times 100$ (Inflation: GDP Deflator < 100) (Deflation: GDP Deflator>100)

Idea: Inflating the deflated GDP, Deflating the inflated GDP

(c) Uses of National Income Statistics

Total output in an economy= GDP Total output /capita: GDP/total population

1. **Indicator of economic performance**

(i) Indication of economic growth

- Increase in Real GDP= Economic Growth (upward phase of business cycle)
- Decrease in Real GDP: Recession

(ii) Expenditure Statistics (AD=C+I+G+(X-M))

- **C:I Ratio:** Indication of future growth/ compare present and future living standards
- **Proportion of G of GDP:** Degree of government involvement/ participation in the economy
- **X:GDP Ratio and M: GDP Ratio:** Trade relationships/openness of economy
- **C:GDP Ratio:** allows government to decide amount of consumption tax

(iii) Income statistics

- Shows contribution of each FOP to economic output
- Shows income distribution (Indication of income inequality)
- Allow Gvt to levy taxes on different sources of income

(iv) Output Statistics

- Shows contribution of each sector to economic output
- Shows best/worst performing sectors
- Allow Gvt to plan resource allocation/. Expenditure on lower performing sectors to boost output

2. **Indicators Standard of living**

- Indication of material well -being (Higher income, afford more consumer goods)
- Compare living standards in a country over time (Using GDP Deflator)
- Compare living Standards between countries (Using PPP exchange rate, USD)
- Identifies countries in need of economic aid (useful for organisations such as UN)

3. **Formulating Government policy**

- Eg. Formulating labour policies that maximise productivity
- Eg. GDP/hour worked, GDP/employed person

(d) <u>Problems with using NI statistics as indicator of living standards</u>

1. **Unrecorded economy**

(i) Unpaid non-market activities

- Housewives/husbands looking after own children instead of hiring nanny. (understates level of output & living standards)
- DIY jobs (eg. painting own house, instead of hiring a painter)—understates level of output & living standards

(ii) Unrecorded economic activity

- **Legal:** "casual jobs" such as tutoring, to avoid additional income being taxed (understates output & living standards)
- **Illegal:** Black Markets, smuggling of drugs, firearms (understates output)

2. **Interpretation problems**

(i) Distribution of income

- Country may have high GDP/Capita but high GINI coefficient
- Living standards overstated for majority of low income groups

(ii) Difference in methods of measuring NI

- **Eg. UK:** value of some non-market activities are included in GDP (eg. housekeeping)
- **Eg.** Russia: Value of services not included in GDP (understates living standards)

(iii) Composition of output (GDP)

- Only increase in consumer goods will improve living standards
- Capital goods produce more consumer goods in future, living standards only improve in future
- Increase in GDP due to increase in exports (X) does not affect living standards domestically as goods go abroad (living standards overstated)
- Government spending on goods such as military equipment does not directly impact living standards 9living standards overstated)

3. Omission of factors that affect living standards

(i) Externalities

- High level of output may give rise to externalities that reduce living standards (eg. China: Severe air pollution)—overstates living standards

(ii) Leisure Time

- High GDP/Capita (output) may be because of long work hours. Lack of leisure time means living standards overstated
- These problems mean there are problems using NI statistics to **compare living standards for a country over time** & **between countries (eg. developing vs developed economies)**

Evaluation

- NI only useful as a measure of material living standards
- This necessitates composite indicators that are a better indicator of non-material living standards.

(e) Alternative measure of living standards

(i) Health indicators

- Life expectancy, infant mortality rate, maternal mortality rate

(ii) Education indicators

- Adult literacy rate, mean no of years of schooling

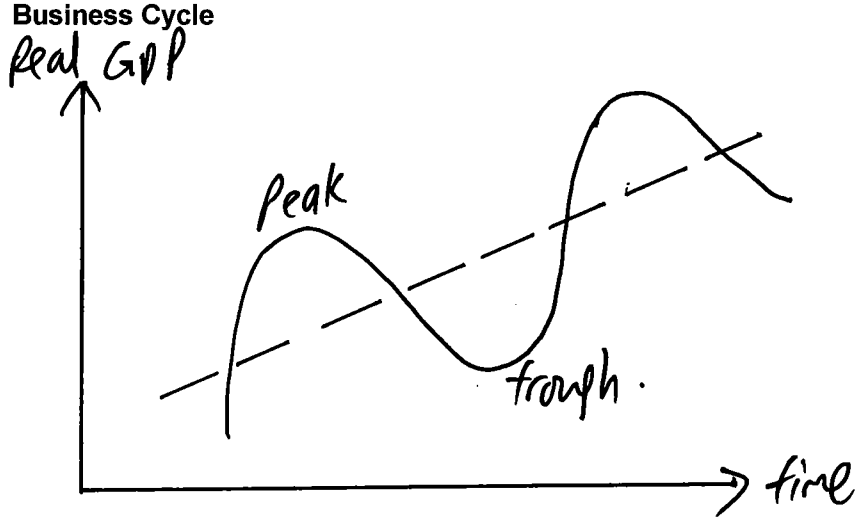
(iii) Composite indicators

- **HDI:** Factors in health, education and GDP/Capita
- **HDI:** Quality of resources available, ability/knowledge to use resources (education), time that people have to use resources (Health)

(iv) Green GDP

- GDP that accounts for externalities and environmental degradation due to high output of goods
- Green GDP= GDP-value of degradation-expenditure to address degradation

(f) Business Cycle



A: Peak (Boom) B: Recession (Contraction) C: Trough (Depression) D: Recovery

Recession: 2 consecutive quarters of negative growth of GDP

Characteristics of economy at various phases of business cycle

Peak (boom)	Trough (depression)
Sharp increase in real GDP High AD (C+I+G+(X-M)) High usage of factors (low spare capacity) High economic output (producing near/at Y_{fe} High wages/factor cost High profits for firms Inflation increases High consumer/business confidence Unemployment decreases (due to ↑ in SRAS/AD)	Sharp decrease in real GDP Low AD (C+I+G+(X-M)) Low usage of factors (high unused capacity) Low economic output (producing near/at Y_{fe} Low wages/factor cost Low profits for firms Low inflation/deflation Low consumer/business confidence: Low investment on capital goods Unemployment increases (due to ↓ in SRAS/AD

Definition List

Factors of production	Resources used to produce Goods and services (Land, Labour, Capital, enterprise)
Income	Factor income from land, labour, capital and enterprise (Rent, wages, interest and profits)
Savings	Income that is not spent on consumption, deposited in banks
Taxes	Income spent on goods and services, what part of income goes to government as government revenue.
Imports	Expenditure on goods that are produced in foreign countries, income flows abroad
Investment	Expenditure on capital (Human, Physical) by firms, expenditure may be financed by borrowing.
Government Expenditure	Public spending by Gvt (eg. healthcare, education, subsidies, interventionalist policies, provision of public goods, infrastructure, etc)
Exports	Expenditure on domestically produced goods by foreign countries, inflow of income from foreign countries.
Withdrawals	Income that is not spent domestically within the economy
Injections	Income spent on domestically produced goods, aside from consumption
GDP	Total value of output of all factors of production within national boundaries of a country
GNP	GDP + net factor income from abroad
Nominal GDP	GDP valued at current prices
Real GDP	GDP valued at fixed prices (based on a base year, with inflation taken into account
CYP	Weighted average price level of all components of GDP in the present
BYP	Weighted average price level of all components of GDP in the base year
GDP Deflator	Used to 'deflate' prices levels of all components of GDP that have increased due to inflation. Used to calculate real GDP from nominal GDP
Economic Growth	Increase in real GDP of a country over a period of time
Material standards of living	Standards of living indicated by value of goods and services that people can afford (GDP/Capita)
Purchasing Power parity rate	Rate of currency conversion that equalises purchasing power of different currencies due to different domestic price levels in different countries.
Unrecorded market activities	Economic activity where output is not recorded and income is not declared and subjected to income tax. May be legal or illegal unrecorded economic activity
HDI	A composite indicator of material and non-material living standards which factors in GDP/Capita, level of education and health.
Business cycle	A cycle that shows the periodic fluctuation of Real GDP about the long run potential output, with respect to time

Macroeconomics: Aggregate Demand and Aggregate Supply

Section 2: Macroeconomics

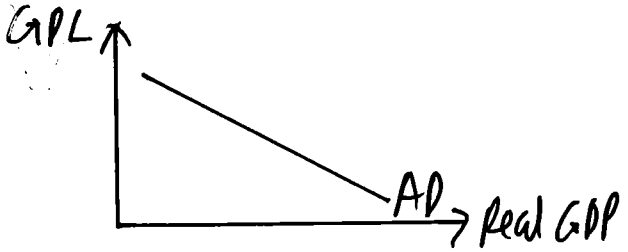
Topic 2: AD & AS

(a) Aggregate Demand

(i) Introduction to AD

- AD: Total expenditure on all domestically produced final goods and services in the whole economy within a fixed time period at various General Price Levels (GPL)
- AD= C+I+G+(X-M)

AD diagram



Negative relationship between GPL and real GDP

Reasons for downward sloping AD curve

1. **Real income effect**
1. GPL↓, real income ↑,expenditure↑, AD↑, real GDP↑
2. **Interest rate effect**
2. GPL↓, money required for expenditure ↓, demand for money↓, interest rates (cost of money)↓, ↑borrowing to finance C & I, AD↑, real GDP ↑
3. **International trade effect**
3. Domestic GPL↓, consumers substitute imported goods for cheaper domestic goods (M↓), foreigners import more domestic goods (X↑), (X-M)↑, AD↑, real GDP↑

Comparing Microeconomics DD and Macroeconomics AD

	DD	AD
Definition	W&A of consumers to buy a specific good at a various prices in a time period	W&A of all buyers to buy whole economies output at various GPLs
Reasons for negative relationship	Law of diminishing marginal utility	Real income effect, interest rate effect, International trade effect
Variables	x axis: Quantity of specific good y axis: Price of a specific good	x axis: Real GDP y axis: GPL

(ii) Determinants of AD (C+I+G+(X-M))

(a) Consumption

1. Consumer confidence (High stable income, secure employment)
2. Interest rates (↓ interest rates, ↓ (opportunity) cost of borrowing, ↑ consumption expenditure financed by borrowing)
3. Level of disposable income (↑ income tax will decrease disposable income)

(b) **Investment**: Expenditure by firms on capital (physical capital: machinery, factories)

1. Interest rate (↓interest rate, opportunity cost of borrowing ↓, investment profits maximised, Investment expenditure financed by borrowing ↑

2. Improvements in technology (eg. more advanced machinery that is more efficient, firms will invest in such physical capital as it increases productivity and value of output)

(c) Government expenditure

1. Political reasons: ↑expenditure on sectors that gain political popularity during elections (eg. healthcare, education)
2. Economic reasons: Expansionary/deflationary fiscal policies (↑/↓ AD)

(d) Net Exports (X-M)

1. Domestic prices vs foreign prices (if foreign goods cheaper, M↑, X↓, if PED>1 (***Marshall-Lerner condition***)
2. Exchange rate (eg. appreciation of SGD against THB causes imported Thai goods to be cheaper, M↑ if PED_M>1, (***Marshall-Lerner condition)***

(b) Aggregate Supply

(i) Classical model

i. Short Run Aggregate Supply (SRAS)

SRAS: Total value of output of all goods and services by all producers in the whole economy, within a fixed period and at various GPLs

Short run:

- Prices of factors of productions do not change (wages do not change in response to change in GPLs). Inflexible & rigid due to labour contracts that fix wages/labour unions/min wage law
- No major changes in technology, Quantity & Quality of resources and amount of investment (Assumed constant in short run)—***Determinants of LRAS***

Reason for upward sloping SRAS: Profitability (As GPL↑, producer profit↑, producers in whole economy ↑ value of output

Determinants of SRAS (Factors affecting Cost of production)

1. **Factor prices** (Cost of production↑, Profits↑, SRAS↓)
2. **Indirect taxes/subsidies** (Tax: ↓SRAS & Subsidy:↑ SRAS)
3. **Supply shocks** (unfavourable weather conditions affecting agricultural output)

ii. Long Run Aggregate Supply (LRAS)—Classical model

- Concept that applies for Classical Model
- LRAS (Y_{FE}): Potential output of economy at full employment of resources/ **natural rate of unemployment** (Productive capacity of economy)
- Long run, economy tends towards Y_{FE}
- Y_{FE}: No inflationary/ deflationary gap

Assumptions of Classical model

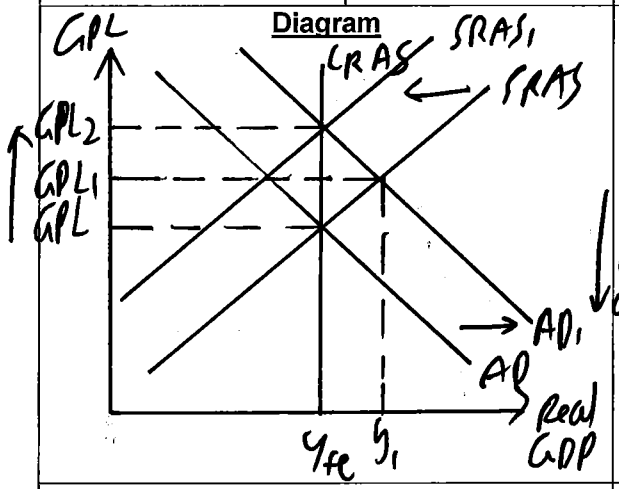
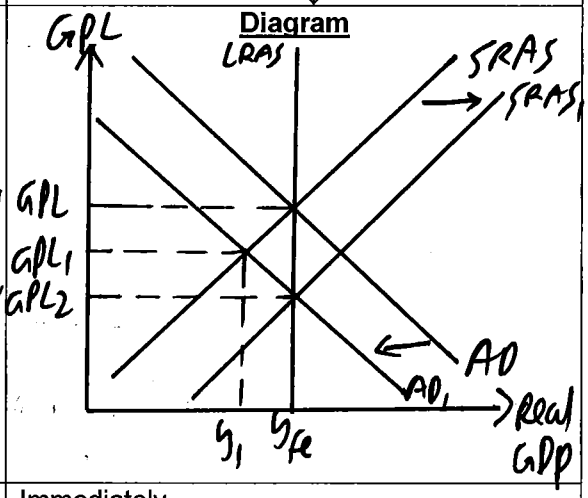
- Price flexibility (prices are not stuck/ sticky)-- self-correcting mechanism to restore Y_{FE}
- Price mechanism allocates resources (Belief in the free market)

Determinants of LRAS (Factors that can increase potential output of economy)

Note: ↑ LRAS leads to a delayed ↑ SRAS

1. **Quantity of resources**
a. Qty of factors (Labour, Land, etc)
b. Capital Investment (Physical Capital)
2. **Quality of resources**
a. Capital investment (Human Capital)
b. Improvements in technology (increase labour productivity and efficiency in production)

Changes in AD (Classical model)

AD↑	AD↓
Diagram 	Diagram 
Immediately **AD↑ (AD to AD_1)**, GPL↑ GPL↑, producers profits ↑, Producer ↑ output Demand (Labour)↑,wages ↑ Long Run High wages, Cost of production↑, Profits↓ **SRAS↓ (SRAS to $SRAS_1$)**	Immediately **AD↓ (AD to AD_1)**, GPL↓ GPL↓, producers profits ↓, Producer ↓ output Demand (Labour)↓, wages ↓ Long Run Lower wages, Cost of production↓, Profits↑ **SRAS↑ (SRAS to $SRAS_1$)**
In both cases, **Y_{FE} is restored** when changes in AD occurs at Y_{FE} **Assumption: Economy producing at Y_{FE} before Δs in AD**	

Classical Model

1. At Y_{FE}, changes in AD only lead to change in GPL. Real output does not change (In Long Run)
2. Economy can produce at $<Y_{FE}$ only in short run (Long Run: Tends towards Y_{FE})
3. When AD is low, low consumption leads to high savings. (Savings→ Investment→ Economic growth)
4. Equilibrium output level was Y_{FE}
5. **Supply creates demand** (Circular income flow model)

➢ When firms produce G+S (output), households/workers earn income, Income spend on goods (AD: Consumption). Income not spent on goods deposited in banks as savings, Firms borrow for investment (AD)

(ii) Keynesian Model

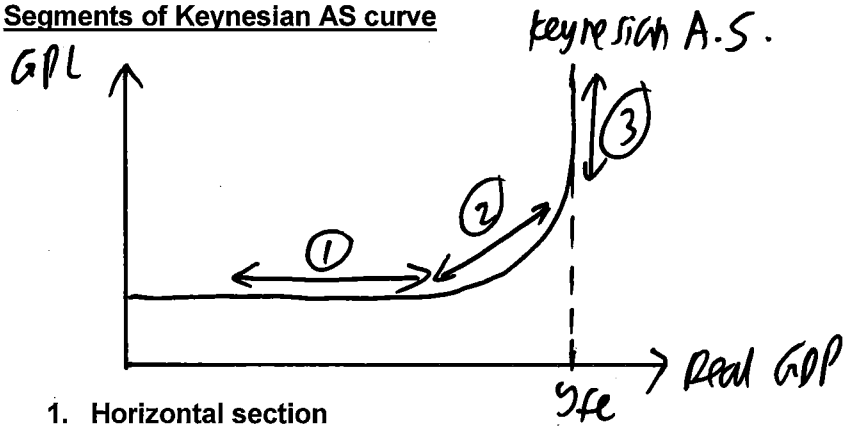
➢ **Wages inflexible downwards** (trade union activities, minimum wage, etc).
➢ ∴ GPL inflexible downwards (Firms cannot reduce price was factor cost doesn't ↓
➢ Economy not necessarily producing at Y_{FE} in long run/ **long term**

- Economy does not self-correct, can be stuck at level of output< Y_{FE}. Government intervention necessary to restore economy to Y_{FE}
- Level of AD determinants AS up to Y_{FE}.
- Savings (When AD is low) does not lead to investment, and hence no growth

1. Low AD, business confidence low, low investment, ∴No ↑AD/LRAS, no actual/potential growth
2. Low AD does not justify investment by firms (physical capital: eg. machinery)

Determinants of Keynesian AS: Same as Classical LRAS

Segments of Keynesian AS curve



1. **Horizontal section**
- Low output, **high spare productive capacity** (high unemployment of resources)
- Can ↑ output by employing unemployed resources, without significant ↑ in factor cost
- ∴ Cost of production relatively constant, GPL relatively constant

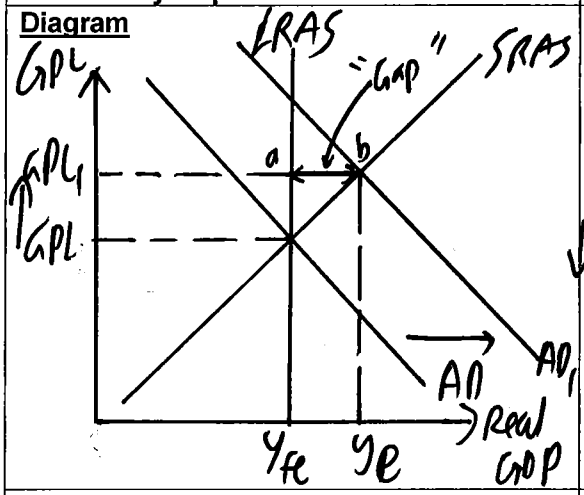
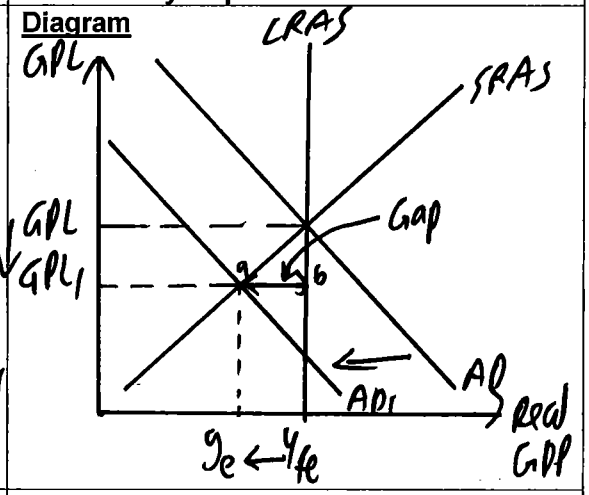
2. **Intermediate/ upward sloping section**
- As output ↑, more resources employed, spare productive capacity↓, ↑ **bottleneck in resources**
- To increase output, factor prices ↑ more, COP ↑, GPL↑ more

3. **Vertical section (Y_{FE})**
- Max output with existing resources, no more spare productive capacity
- Efforts to increase output only lead to increase in GPL without increase in real output

Overview of differences between Classical & Keynesian models

Classical Model	**Keynesian Model**
Price flexibility	Prices inflexible downwards (Sticky wages)
Long run: Economy tends towards Y_{FE}	Long Run: Economy can be at any level of output ($\leq Y_{FE}$)
$<Y_{FE}$ in Short Run only	$< Y_{FE}$ in Short & Long run
At Y_{FE}, ↓AD only leads to **ΔGPL** **No Δ in real output**	At Y_{FE}, ↓AD leads to **ΔGPL & ΔReal Output**
Output<Y_{FE}: price mechanism is self-correcting mechanism for economy to restore Y_{FE}	Output<Y_{FE}: Government intervention necessary to increase AD to increase output to Y_{FE} (Economy is stuck at <Y_{FE})
Savings → investment → economic growth	Savings ≠ investment, ∴No growth
AD & SRAS determine level of output up to Y_{FE}	AD determines level of output up to Y_{FE}
Belief in the free market: Price mechanism allocates resources	Belief that G.I is necessary.

(c) Inflationary & Deflationary Gaps

Inflationary Gap	Deflationary Gap
Diagram 	**Diagram** 
Actual output (Y_e) > Y_{FE} output Excess AD (AD_1) relative to the AD_{FE} that would give rise to Y_{FE} Unemployment rate < Natural rate of unemployment "Gap": Amount by which GDP (Actual output)>Y_{FE} Demand-pull inflation occurs (↑GPL) <u>Reducing Inflationary Gap</u> in SHORT RUN Reduce AD: Contractionary monetary and fiscal policies, ↑Withdrawal, ↓injection	Actual output (Y_e) > Y_{FE} output Deficient AD (AD_1) relative to the AD_{FE} that would give rise to Y_{FE} Unemployment rate < Natural rate of unemployment (Cyclical Unemployment) "Gap": Amount by which Y_{FE} > GDP (Actual output) <u>Reducing Deflationary gap IN SHORT RUN</u> Increase AD: Expansionary fiscal and monetary policies, ↓Withdrawal, ↑injection

- Equilibrium Level of output where <u>actual output > Y_{FE}</u> (or) <u>actual output < Y_{FE}</u> only possible in the short run. In the long run, Economy tends towards Y_{FE}

Definition List

Aggregate Demand	Total expenditure on domestically produced G&S over a time period
SRAS	Actual output of an economy/ Total value of output of G&S of economy over time period
LRAS	Potential output of economy (Output at full employment of resources/ factors)
Consumption expenditure	Expenditure by consumers on final goods and services
Investment expenditure (Private)	Expenditure by firms (private sectors) on physical capital (eg. machinery, factories)
Government expenditure	Public expenditure/ investment by government or by public firms Eg. Investment in human capital (govt spending on education) Expenditure on infrastructure (physical capital) Expenditure on R&D
Full employment level output	Value of output of economy when all resources/ factors are employed to produce G&S
Classical model	Basic ideas: In the long run, economy tends towards full employment level of output. Model assumes price flexibility, which is a self-correcting mechanism to restore Y_{FE}. Price mechanism allocates resources (Belief in the free market)
Keynesian model	GPL is downward inflexible/ sticky. Economy can be at any level of output and does not tend towards Y_{FE} in the long run. Government intervention necessary to restore economy to Y_{FE}
Inflationary Gap	Difference in the real value of output at the equilibrium level output (Y_E) and the full employment level of output (Y_{FE}) (occurs when $Y_E > Y_{FE}$)
Deflationary Gap	Difference in the real value of output at the equilibrium level output (Y_E) and the full employment level of output (Y_{FE}) (occurs when $Y_E > Y_{FE}$)

Section 2: Macroeconomics

Topic 3.1: Macroeconomic objective 1: Low unemployment rate

(a) Introduction to unemployment and definitions

Unemployed: People of working age who are willing and able to work but do not have a job. They are actively seeking employment or waiting to get employed.

Workforce: Total number of employed and unemployed (looking for a job) people who are willing and able to work and are of working age. (Economically active)

Economically inactive: People who are not willing and/or able to work (eg. not willing, housewives, retirees/ unable: handicapped, prisoners

Diagram summarising employment in a country

<table>
<tr><td colspan="3">Population</td></tr>
<tr><td colspan="2">Working Age</td><td>Non-working age</td></tr>
<tr><td colspan="2">Economically active</td><td>Economically inactive
Eg. housewives, prisoners</td><td>Eg, housewives, retirees</td></tr>
<tr><td colspan="2">Labour force</td><td></td></tr>
<tr><td>Employed</td><td>Unemployed</td><td></td></tr>
</table>

↔ Looking for job

↔ **W&A to work**

Unemployment rate: Percentage of people who are W&A to work but do not have a job

$$\textbf{\textit{Unemploymet rate}} = \frac{Number\ of\ unemployed\ people}{Number\ of\ people\ in\ workforce} \times 100\%$$

$$\textbf{\textit{Labour force participation rate}} = \frac{Number\ of\ people\ in\ workforce}{Number\ of\ people\ of\ working\ age} \times 100\%$$

(b) Measures of unemployment

Claimant count: Measure of unemployment by no of people who claim unemployment benefits (eg. welfare states: UK (job seekers allowance), Netherlands)

Standardised count: Unemployment measured by compiling national labour force surveys

Generally: Claimant count< standardised count (Not all people bother to claim unemployment benefits)

Difficulties in measuring unemployment

(i) Underestimation of unemployment

1. **Part time work**
   - Counted as employed, but not fully employed eg. part time clerical staff/secretaries)
2. **Underemployment**

- Employed in a job that does not make full use of skills (eg. Chemistry PHD but pre-school teacher)

3. Discouraged workers*

- Many unsuccessful attempts to get a job (leads to Hysteresis)
- Stopped looking for a job, but still W&A to work
- Dropped out of labour force (No longer counted as unemployed)
- If offered a job they will take the offer
- Since they should be counted as unemployed (W&A) but are not counted as unemployed (stopped looking for job), unemployment is underestimated

4. Reluctance to claim unemployment benefits

- Some unemployed may not claim benefits (eg. pride)

(ii) Overestimation of unemployment

1. Unrecorded economy

(a) Legal: Private tuition (do not declare income, do not play income tax)
(b) Illegal: Drug trading

2. False interpretation

- Fraudulent claims: some claim benefits but not interested in getting job

(iii) Unemployment is average over entire population

- National unemployment rate not indicative of unemployment rate for different regions/groups of people
- Eg. Unemployment rate differ for: Different regions, gender, ethnic groups, Age (eg Youths, lower qualifications/skills)

(c) <u>Costs of unemployment</u>

(i) Private costs

- Loss of income (reduced material living standards)
- Depression/ stress (eg suicide/stress)

(ii) Social Costs

- Increase in homelessness
- Increase in violence/ crime rate
- Increased income inequality (Lower income groups more likely to lose jobs, job instability for low skilled jobs)

(iii) Economic costs (Economy & Government)

- Reduced output, reduced GDP, reduces economic growth
- Smaller income, less income tax revenue for govt./ Less income, Consumption expenditure decreases, GST tax revenue decreases
- Opportunity cost to government
    - **Administrative cost to run benefit offices** especially in welfare state
    - Burden on **govt. budget from giving out unM benefits** (transfer payment)
    - Increased **cost in dealing with social issues** (eg. higher cost of policing as crime rate increases/running mental institutions for unemployed people who may suffer from stress/depression

(d) Types and causes of unemployment

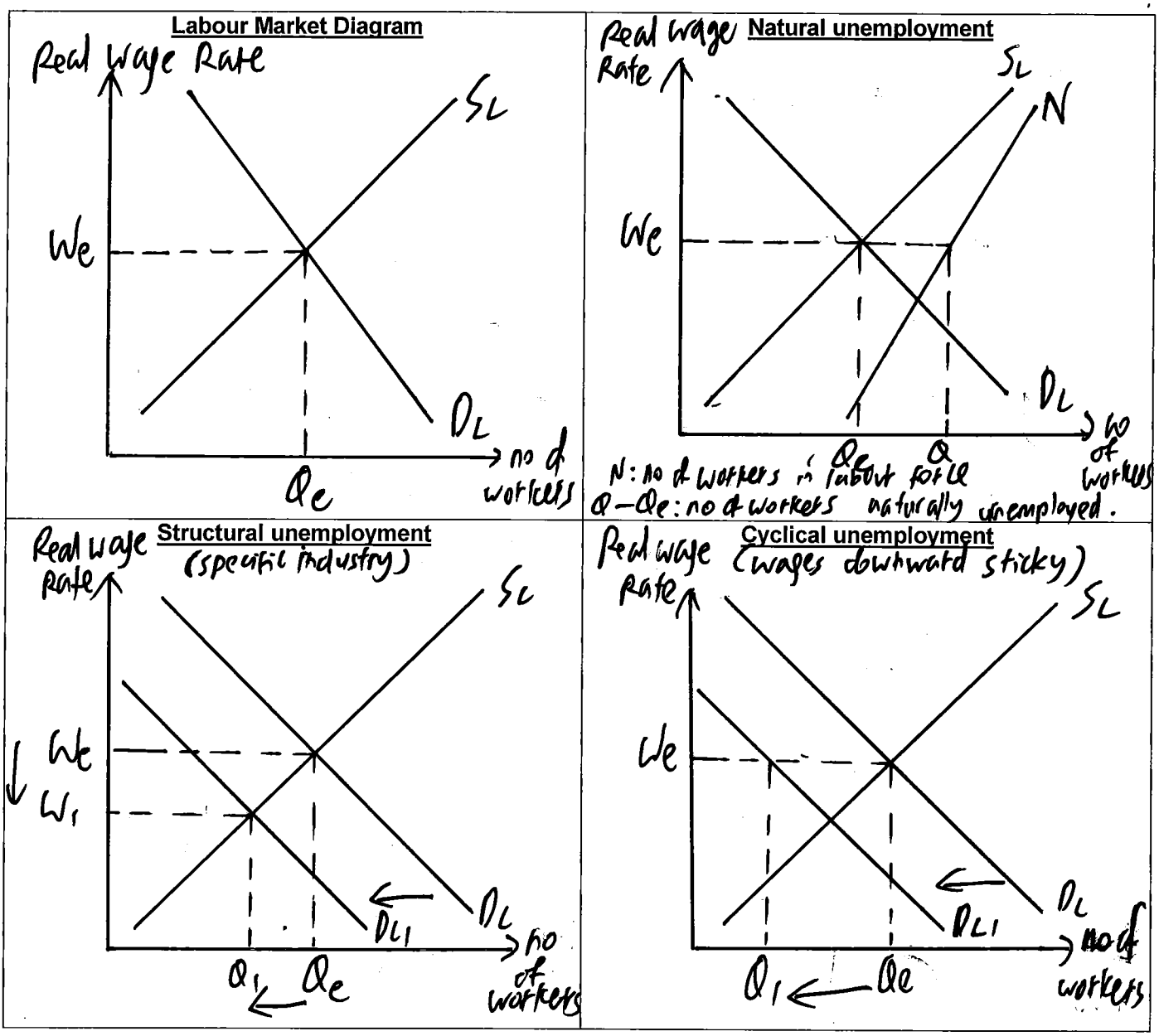
Frictional (Natural) Unemployment	
What it is	Search unemployment (people between jobs/searching for new jobs, waiting to begin new job) <u>Eg. Teacher waiting for MOE to allocate her to new school</u>
Causes	➢ Information failure (Employers not informed of people who can ake the job/ Employees not aware of jobs available) ➢ Time required to get jobs (Employer searching for more qualified or cheaper labour/ Unemployed workers may not accept first job offered, may look for job with higher pay) ➢ These are ***<u>labour market rigidities</u>***

Seasonal (Natural unemployment) Unemployment	
What it is	Employment fluctuates with time due to fluctuating demand for labour Eg. Low demand for ski instructors during summer High demand for farmers during harvest season, etc
Causes	Similar to frictional unemployment (Seasonal unemployment falls under frictional, eg. a ski coach may be looking for another job in summer)

Structural (Natural) Unemployment (Applies for a SPECIFIC industry)	
What it is	Mismatch of skills (Between skills supplied by labour and skills demanded by firms) Changes in structure of economy Most serious form of unemployment, last for the longest period of time
Causes	**(i) Changes in demand for labour skills** ➢ Advancement in technology/increased automation (eg. manufacturing sector). Workers jobs replaced by machines, skills become obsolete ➢ Changes in consumer tastes/change in types of goods in demand ➢ Loss of comparative advantage (Firms in developed economies shift to developing countries where factor cost is lower). Demand for labour in developed economy decreases D_L is in other countries. **(ii) Change in geographical location of industries** ➢ Geographical immobility of workers (Cost of relocating too high) **(iii) Labour Market Rigidities** ***Labour Market Rigidities (inflexibilities):*** *Factors preventing supply and demand from operating freely in the labour market, leading to inefficiency in the labour market.* ➢ Minimum wage legislation (Increases cost of labour, increases factor cost, decreases demand for labour) ➢ Labour union activities (seeking higher wages/better working conditions ➢ Employment protection laws (Job security requirements/ severance pays, etc) *These factors make employment of workers more unfavourable/ less incentive for firms to hire*

Cyclical Unemployment/Keynesian Unemployment	
What it is	Demand (AD)- deficient unemployment Occurs during recessionary phases of business cycle
Causes	Decrease in AD (decrease inC/I/G/(X-M)) ➢ Decrease in AD, $Y_e<Y_{fe}$ ➢ Decrease in demand for G+S in whole economy ➢ Firms reduce output, demand for labour (derived demand) decreases. ➢ $S_L>D_L$ (unemployment occurs)

(e) Diagrams illustrating unemployment



Comparison between Natural unemployment and cyclical unemployment (A summary)

Natural unemployment	Cyclical unemployment
Occurs at all levels of output ($<Y_{FE}$, at Y_{FE}, $>Y_{FE}$)	Occurs at $<Y_{FE}$
Dealt with using supply side policies	Dealt with using demand side policies
Frictional: Search time/ info failure Seasonal: same Structural: Change in structure of economy, mismatch of skills	Caused by deficient AD

(f) Policies to reduce unemployment

(i) Natural unemployment (Supply-side policies)

Frictional unemployment	
Market oriented policies	**Interventionalist policies**
➢ Lowering unemployment benefits (encourages unemployed people to seriously seek employment) ➢ Lowering personal income tax (increases after tax disposable income, incentive to work)	➢ Government organising job fairs ➢ Setting up employment agencies ➢ Career guidance programmes in schools *Reduce information failure/search time for job*
Evaluation	
Market oriented policies	**Interventionalist policies**
➢ Lower living standards (reduced unemployment benefits) if cannot get job	➢ Opportunity cost for government ➢ Large expenditure/ high admin cost to run job fairs/ employment agencies

Seasonal Unemployment: Same as frictional unemployment

Structural	
Market oriented policies	**Interventionalist policies**
➢ **Reducing unemployment benefits/ personal income tax** (incentive to equip themselves with skills to get employed) ➢ **Deregulating labour market/ Labour market reforms** (eg. reduce min. wage, reduce trade union power, reduce job security requirements). Lower factor cost, incentive to hire & send workers for training.	➢ Government setting up training centres (eg. WDA in Singapore) to equip workers with skills in greater demand ➢ Govt grants/ subsidies to firms which hire structurally unemployed workers and send them for training ➢ Assist workers to relocate to areas where D_L is higher (eg provision of housing)
Evaluation	
Market oriented policies	**Interventionalist policies**
➢ Lower living standards (reduced unemployment benefits) if cannot get job ➢ Deregulation of labour markets may lead to worse labour conditions (eg. minimal protection from governments/ trade unions) ➢ Deregulation of labour markets may be impractical (eg. For countries in the EU, abolishing minimum wage means having to leave the European Union)	➢ Opportunity cost, high expenditure in setting up training centres ➢ Resistance from older workers in sunset industries to acquire new skills ➢ Low level of education/literacy among structurally unemployed workers may hinder acquisition of news skills

(ii) Cyclical unemployment (Demand-side policies)

Expansionary Monetary policy	**Expansionary fiscal policy**
➢ Lowering of interest rates by central banks ➢ Reduces cost of borrowing for Consumption and Investment	➢ Increase in G (eg. infrastructure) and decrease in direct taxes (eg. income/corporate) ➢ ↓ income/ corporate tax increases

expenditure ➢ Increase in C/I increases AD ➢ For firms to increase output, demand for labour increases (Labour is a derived demand for output)	after tax disposable income/ investment profits, increasing C& I ➢ ↑C/I/G increases AD
Evaluation: Refer to Topic 2.4	

Definition list

Unemployment	People of working age who are willing and able to work but do not have a job. They may be actively seeking unemployment or waiting to be employed
Workforce (economically active)	People of working age, W&A to work, sum of all employed and unemployed workers in an economy
Economically inactive	People not willing/ not able to work
Unemployment rate	Percentage of people who are W&A to work but do not have a job
Labour force participation rate	Percentage of people of working age who are in the workforce
Claimant unemployment count	Unemployment rate derived from number of people who claim unemployment benefits
Standardised unemployment count	Unemployment rate complied from national labour force surveys
Underemployment	People who are employed in a job that do not make full use of their skills/ qualifications
Natural unemployment	Frictional, structural, seasonal unemployment Can occur when economy producing at Y_{FE}
Frictional unemployment	Search unemployment Unemployment due to people being in between jobs who are searching a new job or waiting to be employed
Seasonal unemployment	Unemployment due to seasonal fluctuations in demand for labour. Causes people to be searching for new jobs/ waiting to be employed in new job (similar to frictional unemployment)
Structural unemployment	Unemployment in a **specific industry** due to structural changes in the economy. There may be a mismatch of skills between skills supplied by workers and skills demanded by firms
Cyclical unemployment	Unemployment due to deficient AD, where economic value of output decreases. Unemployment increases as labour is a derived demand for output of G+S

Section 2: Macroeconomics

Topic 3(b): Macroeconomic objective 2: Low and stable inflation

(a) Introduction to inflation

Inflation: Sustained increase in GPL in an economy over a period of time

Deflation: Sustained decrease in GPL in an economy over a period of time

Disinflation: Decrease in rate of inflation

Degrees of inflation		
Mild inflation	<5%	High business and consumer confidence
Galloping inflation	10-100%	
Hyper inflation	>1000%	Excess money supply (excessive AD), breakdown of monetary system, currency withdrawn

(b) Measures of inflation

1) Consumer Price Index (CPI)

- % change in CPI gives rate of inflation
- Index for prices of Goods and services that **consumers pay**

Computation of CPI:

- Fixing a basket of goods and services (G+S consumed by an **average** household)
- Assigning weights to different G+S (More important G&S that people spend large proportion of income on have a larger weight

2) Producer Price Index (PPI)*

- Indices of **prices received by producers** of goods at various stages in the production process (eg. PPI for inputs/raw materials, PPI for intermediate goods and PPI for wholesale value of final goods)
- Measures price changes from POV of producers
  Wholesale: Prices received by producers and manufacturer
  Retail: Final price paid by consumers.

Uses of PPI:

- Changes in price levels measured by PPI is a predictor for changes in CPI (eg. Increased cost of raw materials → Increase price of G+S sold to consumers). Increase in cost passed from producers to consumers
- Predictor of future inflation (by measuring price changes at earlier stages of the production prices.
- Allow Govt. to identify cause of inflation (Cost-push/Demand-pull)

<u>Usefulness of CPI</u>

Uses:

- Formulate wage policies and social welfare schemes (eg state pensions) to ensure **real value of wages/pensions maintained.**

- Allows firms to estimate revenue, cost and profit potential

Limitations:

- Different households have different consumption patterns (eg. Increase in transport costs, household which spend larger proportion of their income on transport will experience a higher inflation). Inflation rate (national average) can be overstated/understated for different households. Unrepresentative of inflation rate experienced by all households.
- Changes in consumption habits (eg. consumers switch to substitute goods due to price changes/ introduction of new products). Causes weights on different products to be inaccurate
- CPI does not reflect changes in quality of goods. If price increases proportionately with quality, inflation may be overstated.
- CPI cannot be used for international comparison of inflation rate (Different countries have different basket of goods)
- CPI cannot be used to compare inflation over time (Change in basket of goods due to changes in consumption habits)

Core rate of inflation

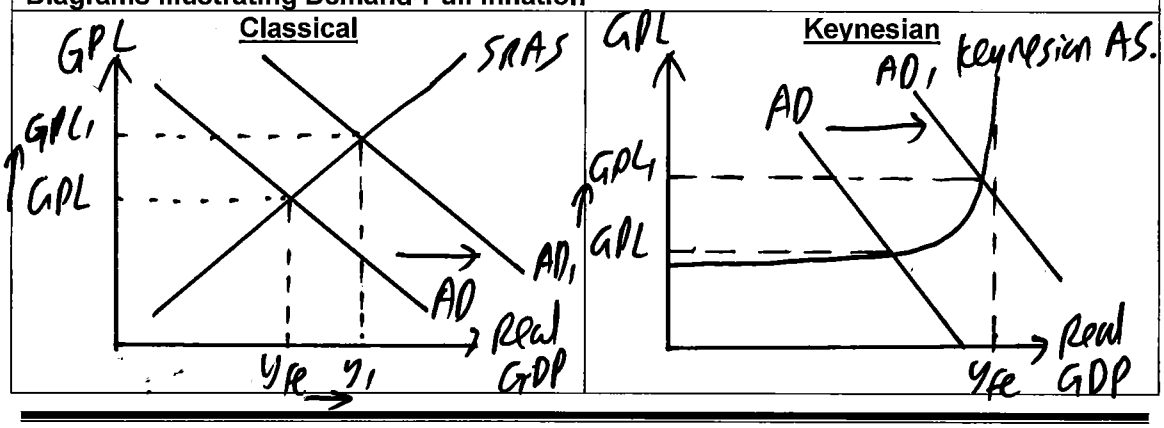
- Rate of inflation that excludes G&S with volatile prices from basket of goods used to compute CPI.
- Types of goods: Primary products/basic necessities (eg. food, oil, transport, accommodation
- Eg. Singapore: Accommodation and private road transport excluded from CPI
- Reason for price volatility: PED<1, PES<1. Small changes in demand/supply, large changes in price.
- If included in CPI, large fluctuations in price can cause inflation rate to be severely overstated/understated
- Core rate of inflation is more stable (less fluctuations) than general rate of inflation (including price volatile goods)

(c) Types and causes of Inflation

(i) Demand-Pull inflation

Demand pull inflation (Caused by increase in AD)	
Causes	**1. Excess AD over AS** ➢ Increase in AD due to increase in C/I/G/(X-M)
	2. Increase in money supply ➢ ↑Supply of money (Supply of money>>output of goods) ➢ Increases AD (C/I), excess AD over AS

Diagrams illustrating Demand-Pull inflation



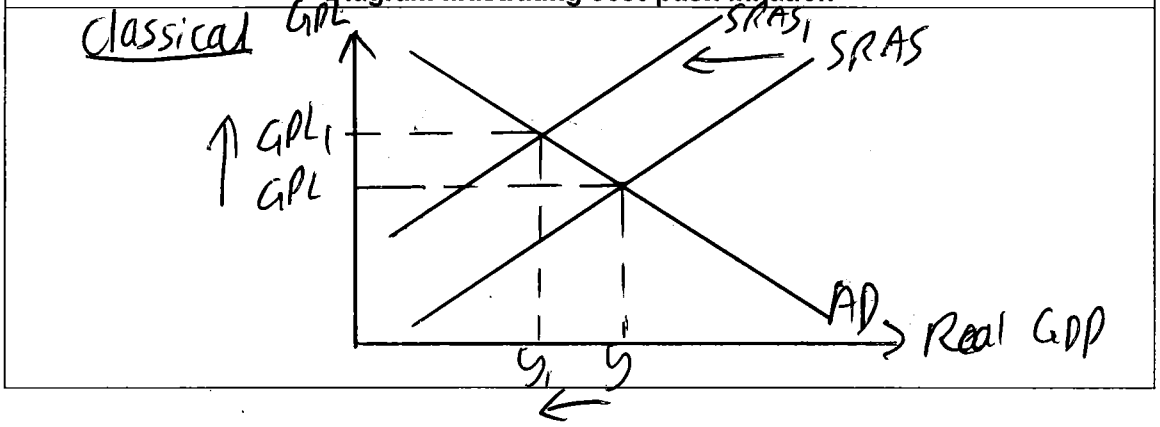
Diagrams illustrate D.P inflation when level of output< Y_{fe}. At Y_{fe}, IF AD increases, economy will tend towards Y_{fe} but at a higher GPL (also inflation).

- In Keynesian model, GPL only starts to rise significantly when the economy producing near/at Y_{FE} (where Keynesian AS curve is more upward sloping than at horizontal section)

(ii) Cost-Push inflation

Cost-Push inflation: Caused by decrease in SRAS due to increase in factor costs (Cost of production).	
Causes	**1. Wage push inflation** ➢ ↑ in wages>↑ in productivity (output/unit cost) ➢ ↑ in wages: Trade union activities/ min wage by govt. ➢ Increased factor costs, SRAS decreases (reduced profitability)
	2. Imported Inflation ➢ High prices of imported raw materials for production ➢ High prices: depreciation of domestic currency, inflation in country in which goods imported from ➢ Cost of production increases, SRAS decreases.
	3. Tax-push inflation ➢ Increase in **indirect taxes** ➢ Increase in cost of production, SRAS decreases.

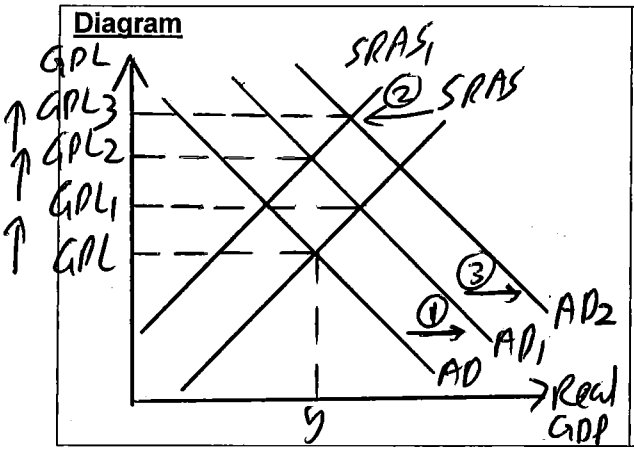
Diagram illustrating cost-push inflation



Comparing Demand-Pull and cost-push inflation

Demand-Pull inflation	**Cost-push inflation**
Caused by increase in AD (Increase in C/I/G/(X-M)/ Increase in money supply)	Caused by decrease in SRAS (Increase in factor costs)
GPL↑, Y (real output/GDP)↑	GPL↑, Y (real output/GDP)↓

Interaction of Demand-pull and cost-push inflation: <u>Inflationary Spiral</u>

Diagram	Explanation
	(1) **AD increases** (AD to AD_1), GPL↑ (2) Workers negotiate for higher wages Due to: Increased output, decrease real value of wages Factor cost increases, **SRAS decreases** (SRAS to $SRAS_1$), GPL↑ (3) Increase in income→ Increase Consumption expenditure (C)→ AD increases (AD_1→AD_2)

(d) Consequences of <u>High rate inflation</u> (Stakeholders)

High rate of inflation: >10%

Acceptable rate of inflation: 1-3% (minimal impacts on economy)---by Alan Greenspan, former chairman of US federal Reserve

Benefits	Costs
Employers ➢ Benefit if wages do not rise as fast as inflation (Larger profits)	**Fixed income earners (retirees, pensioners)** ➢ Lack of industrial muscle (pensions cannot increase unless govt. uses <u>indexation</u> ➢ Real value of pensions decrease, material living standards decrease
Employees ➢ Benefit if employees in strong trade unions can secure wage increases> inflation rate	**Savers** ➢ If interest rate (savings)< inflation rate, real value of savings decrease ➢ High inflation discourages savings (W), ∴ reducing investment (J) ➢ Short Run: ↓ Savings, ↑C, ↑AD ➢ Long Run: ↓Investment (I), ↓ potential output (less physical capital),↓ LRAS. Longer term, Real GDP↓
Firms (D.Pull inflation) ➢ Production cost same, but prices increases as AD increases. Profits increases	**Firms (C.Push Inflation)** ➢ Increased factor cost, but difficult to pass on higher price to consumers due to lack of excess AD ➢ Profits ↓
Debtors ➢ Real value of returned money has less value than present real value of loan. eg. Loan: $100000 5% inflation, value of loan: $105000 If $100000 is returned, debtor benefits	**Creditors** ➢ Returned money has less value than money loaned
Fall in cyclical unemployment (D-Pull	**Economy (Level of confidence/ investment**

inflation ONLY) ➢ Increase in AD. As labour is a derived demand for output of goods, Demand for labour increases.	**in economy)** ➢ Uncertainty about future GPL, lack of business confidence ➢ ↓ Investment, ↓AD ➢ ↓Investment, ↓LRAS→↓SRAS (in future) ➢ Real GDP increases
Increase in Real output of economy (Real GDP)—Demand-Pull inflation ONLY ➢ AD increase ➢ GPL increase ➢ Real GDP/ real value of output increases.	**Economy (Import and export competitiveness)** ➢ High export prices (Reduced Export competiveness). Value of X decreases if M.L condition holds ➢ Lower import prices (Increase import competitiveness). Value of M increases if M.L condition holds ➢ X↓, M↑, AD↓

Consequences of deflation

1. (Economy) Increase in cyclical unemployment, decrease in real national output
2. (Economy) Deflation increases the real value of debt. As incomes are lower, firms and consumers who cannot repay debt will become bankrupt. Widespread bankruptcy leads to financial crisis.
3. (Debtors) Returned money has more value than loan value
4. (Firms) AD decreases, GPL decreases (deflation), cost of production same, profits of firms decrease.
5. (Firms)
6. (Employees) Employees is strong unions, minimal decreases in wages when GPL decreases

(e) Policies to reduce a high rate of inflation

Policies	
Demand-side policies (To reduce demand-pull inflation)	Contractionary monetary policy
	Contractionary fiscal policy
Supply-side policies (To reduce cost-push inflation)	Market oriented policy
	Interventionist policy

(i) Demand side policies

Expansionary monetary policy	
How it works	➢ Increase in interest rates by central bank ➢ Increases (opportunity) cost of borrowing to finance consumption investment expenditure (reduces after investment profits). ➢ C & I decrease, AD decrease, GPL decrease
Evaluation	➢ Higher interest rates may not reduce borrowing if consumer/ business confidence high (eg. stable jobs (consumers)/ high output by firms, confident of repaying interest for loan). AD may not↓ ➢ Firms may use past savings/unspent profits to finance investment expenditure. AD may not ↓ ➢ Decrease in AD to reduce inflation may lead to cyclical unemployment & lower actual growth

	➢ Time lag in reducing inflation. Use of interest rate is indirect method to decrease AD

Expansionary fiscal policy	
How it works	**Manipulation of government spending and direct tax levied to affect AD.** ➢ Government decreases G, increases direct taxes (income/corporate tax) ➢ Increase income tax: After tax disposable income decreases, C↓ ➢ Increase corporate tax: After tax investment profits decreases, I ↓ ➢ ↓C,I&G, ↓AD, ↓GPL
Evaluation	➢ Increase tax may not decrease C/I if consumer/business confidence is high. AD may not decrease. ➢ Government expenditure inflexible (**Cannot stop long term public projects** eg. building of roads, suddenly/ **cannot reduce G on important public sectors eg. healthcare & education/ govt budget planned at start of year**) ➢ Contractionary fiscal policy (Increase direct tax, reduce G) may reduce political popularity ➢ Decrease in AD may lead to cyclical unemployment & lower actual growth ➢ Increase income tax→ disincentives to work→income↓→Savings↓→Investment↓→Potential output/LRAS ↓ (Limits actual economic growth in longer term)

(ii) Supply side policies

➢ Supply side policies can affect both SRAS and LRAS

(a) Wage push inflaton	
Market Oriented policies	**Evaluation**
1. Deregulating Labour markets ➢ Eg. reduction of minimum wage, cost of production/ factor cost decrease, SRAS increase, GPL decrease	➢ Worser working conditions ➢ Income ↓, material living standards↓& ↑ income inequality
2. Reducing personal income tax ➢ Increase in after tax disposable income ➢ Incentive to work harder, labour productivity increases ➢ Potential output↑, LRAS↑ →SRAS↑, GPL↓	**(+ve)** ↓ frictional and structural unemployment **(+ve)** People may work shorter hours for the same income. Potential output decrease, LRAS decrease, ∴SRAS decrease.
3. Reduction in corporate tax ➢ Reduces cost of borrowing for firms to finance investment on physical capital (eg. machinery) ➢ Increase in physical capital increases potential output, LRAS increase. Physical capital increases labour productivity (output/man hour), reducing cost per unit output, SRAS decreases ➢ **(OR)** Physical capital may be a cheaper factor of production than labour. Firms substitute labour with	➢ Increase in investment increases AD. ➢ Lead to demand-pull inflation

capital. Factor cost decrease, SRAS increase	
Interventionist Policies	
4. Provide training & education for workers ➢ Increase in skill level of workers ➢ Quality of labour increases (LRAS↑) ➢ Labour productivity increases ➢ Cost/unit output decreases (SRAS↑) ➢ SRAS ↑, GPL↓	➢ Large and long term expenditure required by government (opportunity cost) ➢ Resistance by older workers to acquire new skill ➢ Low skilled workers lack basic education/literacy to learn new skills
5. Government spending on R&D	
➢ Govt. spending on R&D to improve state of technology in economy. ➢ Advancement technology, potential output increase, LRAS increase ➢ Technology increases labour productivity, increasing output ➢ Cost/unit output decrease, factor cost decrease, SRAS increase, GPL decrease	➢ Opportunity cost incurred for government ➢ Technology may replace labour, as productivity is higher with technology. Leads to structural unemployment

(b) Imported inflation	
Policy	**Evaluation**
➢ Government appreciates domestic currency ➢ Reduces price of imported raw materials for production of final goods ➢ Cost of production decreases, SRAS increases, GPL decrease	**Advantage: Can also reduce demand-pull inflation** ➢ Price of exports increase, price of imports decrease ➢ Export competitiveness decreases, Import competitiveness increase ➢ Value of X decreases, value of M increases (Provided Marshall-Lerner condition holds: $PED_X+PED_M>1$) ➢ (X-M)↓, AD↓, GPL↓

- Such policies are used in **inflation targeting**
- **Inflation targeting:** Setting an acceptable rate of inflation
- Targetting inflation is beneficial as it reduces inflationary expectations. It means that as long as people believe that the central banks can control interest rates to control inflation, they will not expect higher rates of inflation. Hence, they will not demand higher wages since they won't expect their real wages to fall. This prevents cost push inflation.

Definition list

Inflation	Increase in the GPL of an economy over a time period
Deflation	Decrease in the GPL of an economy over a time period
Disinflation	Decrease in the rate of inflation
Consumer Price Index	Index indicating price levels of goods and services consumed by the average household in the economy
Producer Price Index	Indices of prices received by producers of goods at different stages in the production process (PPI for inputs, PPI for intermediate goods, PPI for final goods)
Core rate of inflation	Rate of inflation that excludes goods which have volatile prices (eg. food, energy)
Demand-pull inflation	Increase in GPL of economy caused by excessive AD over AS.
Cost-push inflation	Increase in GPL of an economy due to decrease in SRAS caused by increased factor costs
Wage push inflation	Increase in GPL of an economy due to decrease in SRAS caused by increased wages/ cost of labour
Imported inflation	Increase in GPL of an economy due to decrease in SRAS caused by increased cost of imported raw materials
Tax push inflation	Increase in GPL of an economy due to decrease in SRAS caused by increased factor cost due to indirect taxation

Section 2: Macroeconomics

Topic 3(c): Macroeconomic objective 3: Economic Growth

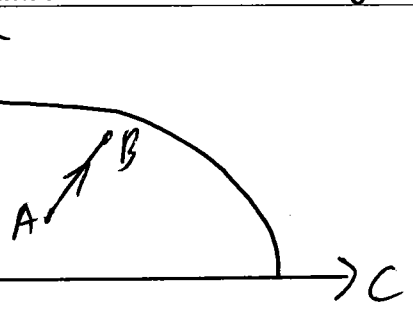
(a) **Types of economic growth**

(i) nActual growth

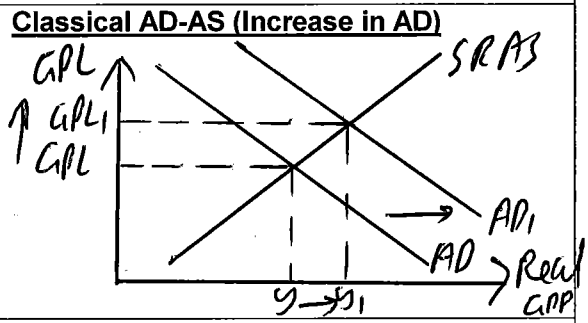
- Increase in real GDP over a period of time

Diagrammatic illustration of actual growth

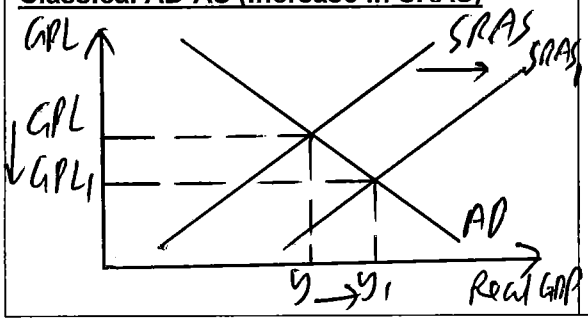
PPC



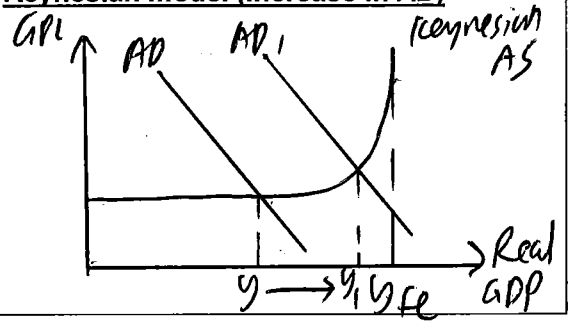
Classical AD-AS (Increase in AD)



Classical AD-AS (Increase in SRAS)



Keynesian model (Increase in AD)

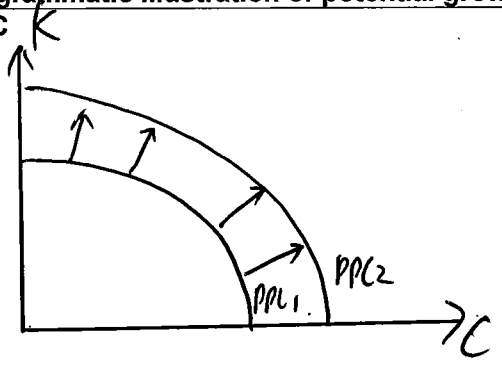


(iii) Potential Growth

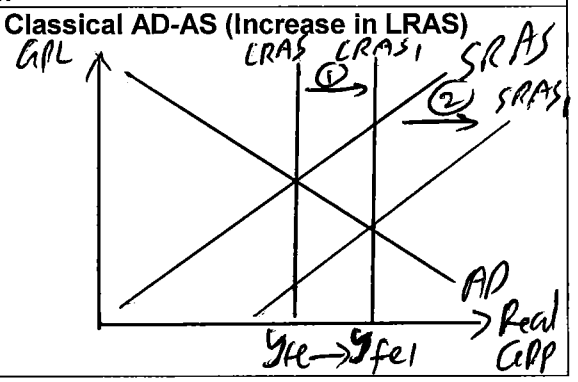
- Increase in productive capacity of an economy
- Increase in Full employment level of output in an economy

Diagrammatic illustration of potential growth

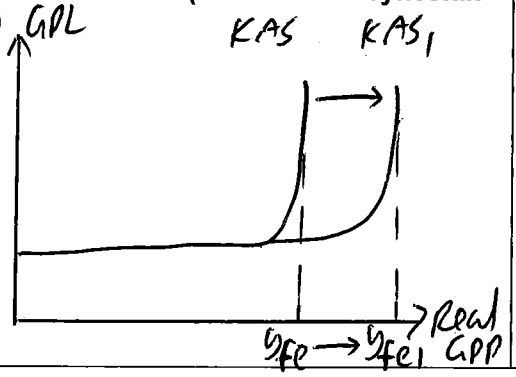
PPC



Classical AD-AS (Increase in LRAS)



Keynesian model (Increase in Keynesian AS)



(b) **Causes of growth**

(i) Causes of actual growth

1. Increase in AD

- Increase in AD: Increase in C/I/G/(X-M)
- Expansionary Fiscal policy: Increase C/I/G
- Expansionary monetary policies: Increase C/I

2. Increase in SRAS

- Caused by reduced **factor costs**
- Reduced factor costs: Decrease in indirect taxation, increase in subsidies, reduction/abolishment of minimum wage

Limitations of increasing AD to cause actual growth in the long run

- Increase in AD can only cause actual growth up to Y_{FE}
- When AD increases beyond Y_{FE}, leads to inflationary pressures (Inflationary Gap)
- In the long run, economy tends towards Y_{FE}
- To cause growth in long run, **necessary to increase potential output/LRAS**

(ii) Causes of potential growth

- Potential growth leads to actual growth.
- When LRAS increases, SRAS increases in the longer term when the increased potential is actualised.

1. Increase in quantity of resources	
a. Increase quantity of labour	➢ Population growth/ inflow of foreign labour (increases size of labour force) ➢ LRAS/potential output increases with more labour ➢ When additional labour is employed, the increased potential is actualised, SRAS increases
b. Investment in physical capital	➢ Expenditure by firms on physical capital (eg. tools, machinery, factories) ➢ Increase in resources (capital) increases potential output of goods, LRAS increases ➢ Increases labour productivity (output/unit cost↑), LRAS increases.

2. Increase in quantity of resources	
a. Increase/ advancement in	➢ R&D to develop technologies (Higher quality of resources) that allow more efficient production,

state of technology	increasing productivity. ➢ Labour intensive technology can improve labour productivity (esp in developing countries)
b. Investment in human capital	➢ Training and education to improve skills of workers ➢ Increase in quality of labour, labour productivity increases, LRAS/potential output increases
c. Investment in infrastructure (A type of physical capital)	➢ Infrastructure: Facilities/ physical capital in a country necessary for economic activity to take place (eg. transport & communication systems) ➢ Eg. ERP on roads are more efficient than toll stations. More efficient transport system, more efficient economic production/ transport of goods.

(c) Consequences of Economic Growth.

Generally positive	Generally negative
Improved living standards ➢ Increase in real GDP, income/capita is larger ➢ Larger income allows people to afford more consumer goods and services ➢ Increased material living standards **(Negative)** ➢ High GDP may have been achieved by long work hours, reduced leisure time ➢ This reduces non- material living standards	**Threat to sustainability** ➢ Higher output= greater usage of resources Effect on sustainability a. Increase in usage of non-renewable resources (eg.coal) ➢ Lack of resources for future generations b. Pollution and waste ➢ Externalities generated from higher output reduce non-material living standards for present and future generations ➢ Eg. Higher industrial output, higher levels of industrial pollution (air/water) **(Positive)** ➢ With larger growth, government can use larger tax revenue to fund subsidies for sustainable use of resources/ cleaner technologies ➢ e.g. electric car subsidies, R&D for renewable resources
Reduced unemployment ➢ Increase in AD & SRAS decreases cyclical and natural unemployment respectively **(Negative)** ➢ Growth may have been achieved by increase in state of technology/ increased automation ➢ Presence of technology makes workers skills obsolete. Demand for labour with obsolete skills decrease, leads to structural unemployment	**Inflation** ➢ Growth achieved by increase in AD leads to Demand-pull inflation **(Positive)** ➢ Growth achieved by increase in LRAS and increase SRAS can reduce inflation
Greater income redistribution, reduced income inequality ➢ Incomes increase, greater govt. tax revenue ➢ Increased consumption: Greater tax revenue from GST ➢ Higher incomes, govt. revenue from progressive income taxes increase ➢ Tax revenue can be used for income	

redistribution (transfer payments, subsidies, direct provision, price floors) **(Negative):** means to achieve growth can increase income inequality ➢ Reduced income taxes for higher income groups to increase incentive to work and increase productivity to increase potential output. Less tax revenue for redistribution of income ➢ More government expenditure on emerging sectors (eg. R&D), less expenditure (eg. subsidies) on sunset industries (primary industries). Hence, incomes of low wage workers remain low. Increased income inequality.	

Definition list

Actual growth	Increase in real GDP of an economy over a time period
Potential growth	Increase in the productive capacity of an economy/ increase in the full employment level of output of an economy
Physical capital	Good that produces consumer goods and services (eg. machinery, factories, tools, roads, buildings)
Human capital	Refers to the skills, knowledge and abilities of people, as well as their health. These contribute to economic productivity.
Sustainability	Use of resources to satisfy the need of present generations without compromising the ability of future generations to meet their needs

Section 2: Macroeconomics

Topic 2.3(d): Macroeconomic objective 4: Equity in income distribution

(a) Meaning of equity and inequality

Income equity: fair distribution of income

- Equity: normative term (subjective, cannot measure, value judgement)

Income equality: Equal distribution of income

- Equality: Positive term (can be measured & verified)

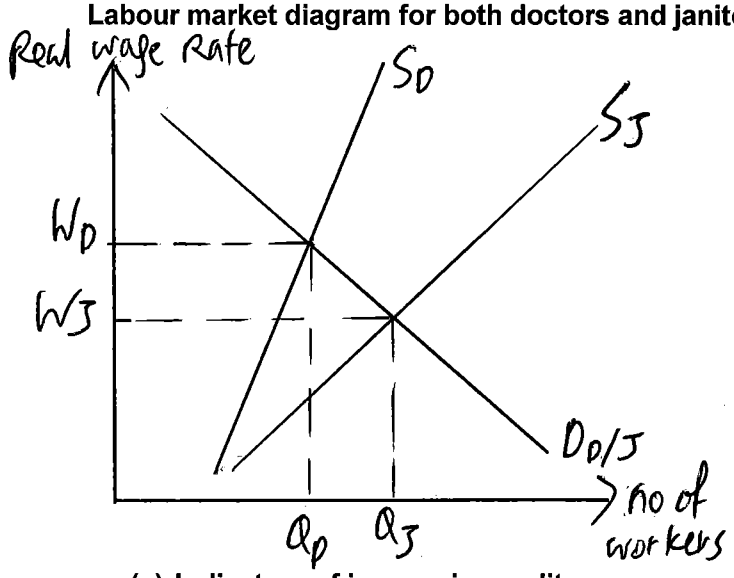
Terms are used interchangeably, however equity mentioned refers to equality

(b) Causes of income inequality

1. Unemployment (Without job, no source of income)
2. Lack of skills/ education (lower income jobs, unable to get employed with lack of skills)
3. Poverty
4. Gender differences
5. Opportunity
6. Unequal factor endowment between people (Some people own additional factors aside from labour e.g. land. Which they can sell for additional income in resource markets

Diagram illustrating income equality (e.g between doctors and janitors)

Labour market diagram for both doctors and janitors



Assumption: Common demand curve (for simplicity)

PES<1 for doctors: difficult to train doctors, a lot of time required to train doctors.

PES>1 for janitors: less skills and education required

The same applies for PED if a common supply curve is assumed

As shown in diagram, wages of doctors (W_D)> wages of janitors (W_J). This shows income inequalitym

(c) Indicators of income inequality

(i) Size distribution

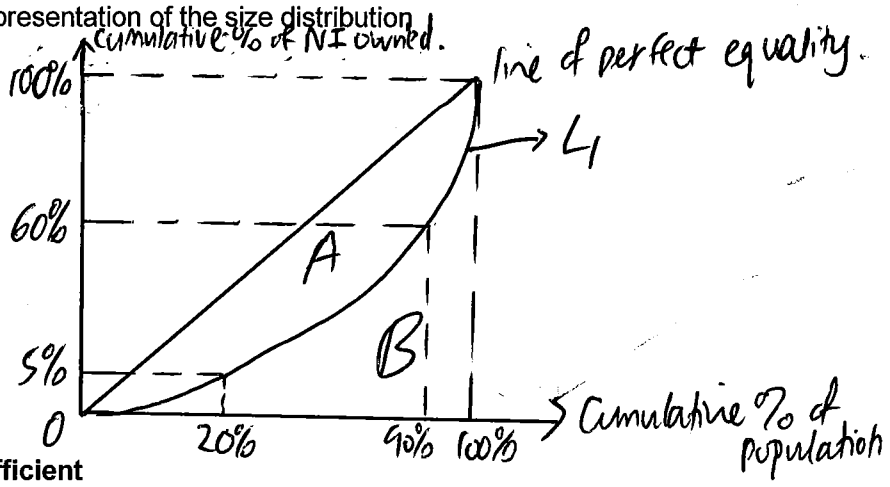
- Table showing income distribution

- Shows percentage of country's national income owned by each groups of population (eg. Quintiles/ 20%)
- Lowest quintile to highest quintile

(ii) Lorenz curve

- Graphical representation of the size distribution

Lorenz Curve



(iii) Gini coefficient

Gini coefficient = $\frac{Area\,(A)}{Area\,(A+B)}$

Larger area A, larger Gini coefficient, higher income inequality.

(d) Poverty

(i) Types of poverty

1. Absolute poverty

- People living below a certain level of income necessary to meet basic living needs

2. Relative poverty

- People living below a level of income that entitles to a standard of living below the standard of living typical of the society
- Why considered poverty: Cannot afford G+S typical in that society
- How measured: Normally income level 50% below median income of society
- Eg. Median income: $6000, relative poverty: <$3000

(ii) Causes of poverty

- Low incomes
- Unemployment
- Low level of human capital
- Low level of physical capital
- Poverty (reinforces itself without govt. intervention)

Poverty cycle

Low income→ low savings → low investment → low physical/human capital → low productivity/ output → Low income (cycle reinforces itself)

(iii) Consequences of poverty

- Low material living standards
- Low health standards
- Low education standards, low level of skills
- Social problems (high crime rate)
- Wasted economic potential (Quantity of labour is there but low quality of labour/ skills not maximised)—Limits LRAS increase

(e) Policies to promote equity

(i) Taxes

Purposes of taxes:

- Government revenue for public expenditure
- Reduce externalities, correct market failure
- Income redistribution: Direct/ indirect means (discussed later)

Types of taxes:

1. **Direct tax**
- Personal income tax (income)
- Corporate tax investment profits
- Capital gains tax: Tax on gains from sale of assets as a result of increase in value of assets (wealth)
- Property tax: Tax levied on value of property (wealth)
- Death duty: Tax on wealth transfer (wealth)

2. **Indirect tax**
- Consumption tax (eg. GST, VAT, Road tax)
- Excise tax/ duty (tax on demerit goods)
- Custom duties/ tariffs (tax on imported goods) to protect domestic markets

Structure of tax (HL extension/ important for understanding)

1. Progressive tax
- As income increases, Marginal Tax Rate (MTR) increases
- For higher income earners: Average Tax Rate (ATR) increases

2. Proportionate tax
- MTR unchanged as income increases
- ATR same for all income levels

3. Regressive tax
- As income increases, MTR decreases
- ATR smaller for higher income earners

How taxes promote equity & redistribute income

- Implementing progressive personal income tax (Can increase MTR for higher income earners
- Larger proportion of income for higher income earners are taxed (higher ATR), reduces after tax disposable income
- Capital gains tax: More applicable for higher income earners
- Redistribution: Using tax revenue for subsidies, transfer payments, direct provision

Evaluation

- Higher income tax rates, disincentives to work for higher income groups, productivity decreases, LRAS decreases
- Disposable income of higher income groups decreases, Consumption decreases, AD decreases, real GDP decreases
- Savings decrease, Investment decrease, AD decreases, LRAS decreases, real GDP decreases

(ii) Transfer payments

- Payment of benefits tat do not correspond to any output of goods and services
- Eg. State pensions, unemployment benefits (NOTE: CPF is not a transfer payment)

Types of transfer payments:

1. Means-tested benefits: People whose incomes and savings fall below a certain level

2. Universal benefits: available to everyone if they fulfil the conditions (eg. Reach certain age: claim state pensions, unemployed: unemployment benefits

Transfer payments:

- **Direct method of income redistribution** (benefactors receive cash which increase their present income)
- Transfer payments financed by tax revenue collected by government
- It is **NOT considered Government expenditure (G)**. G is part of AD, which means there is a demand for Goods and Services. However, there is no output of goods and services
- Transfer payments increase income, improve material living standards
- Income increase, consumption expenditure increases, AD increases, real GDP increases

Evaluation

- Opportunity cost for government, less spending on other sectors, burden on government budget: may result in high taxes to make up for budget deficit/ get revenue to finance transfer payments
- Government in less developed countries may not have sufficient tax revenue to finance transfer payments
- Disincentives to work
- Fraudulent claims (unemployment benefits)
- Income level for means tested benefit may be too low
- Means tested benefits ignores special needs that some lower income groups may have over others. (eg. amount of housing rent that needs to be paid may differ among different low income households)

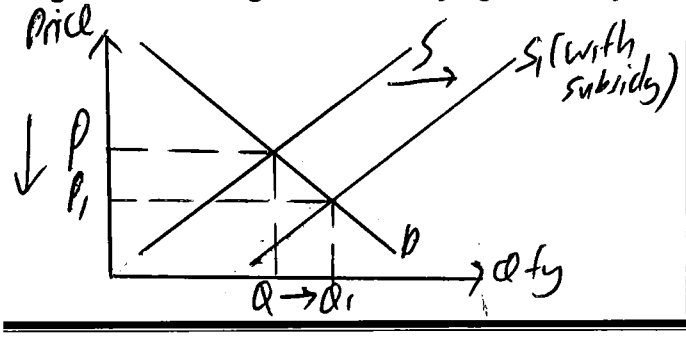
(iii) **Subsidies & direct provision**

- In a free market, 2 of the most important merit goods are underprovided (healthcare & education)

Subsidies:

- **Increases equilibrium quantity** (correcting under provision) of healthcare and education
- **(More importantly) Lowers prices, making healthcare and education more affordable** for lower income groups. (eg. up to 80% subsidy for patients in lower class wards in Singapore)
- Direct provision means good is provided by govt. almost free (eg. primary, secondary and tertiary education is almost free in public schools in Singapore)
- **Indirect method of income redistribution:** tax revenue used to **grant subsidies (redistribution)**. Cash is not given to low income groups to increase their income. Rather, subsidies lower price and increase affordability of good for low income groups.

Diagram illustrating effects of levying a subsidy on healthcare



Subsidy

Levying per-unit subsidy reduces marginal cost of production, increasing supply (S to S_1)

Price decreases from P to P_1

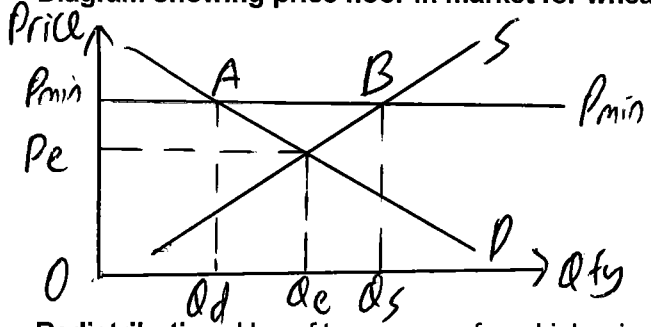
Evaluation

- Opportunity cost for government, less spending on other sectors, burden on government budget: may result in high taxes to make up for budget deficit/ get revenue to finance transfer payments
- Governments of less developed countries may lack budget to finance subsidies

(iv) **Price controls**

- Use of a **price floor** (minimum price) to support low income producers and workers

Diagram showing price floor in market for wheat



Price floor

Increase in price from P_e to P_{MIN}

Revenue increases from OP_eeQ_e to $OP_{MIN}BQ_s$

Hence, income of low income farmers increase

Redistribution: Use of tax revenue from higher income groups to buy up surplus Q_dABQ_s

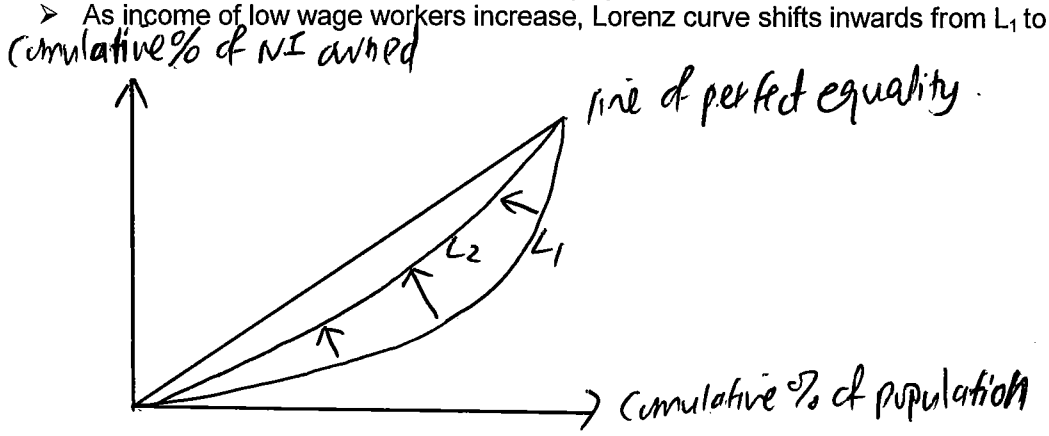
Evaluation: Allocative inefficiency (market cannot adjust to equilibrium)

(v) **Investment in human/ physical capital**

- Lack of skills/ education cause for low incomes and hence income inequality
- Structurally unemployed due to mismatch between skill supplied by workers and skills demanded by firms
- Low skills/ education: unable to hold higher paying jobs, hence income is low

Investment in human capital:

- Setting up training centres (eg. Singapore: Work Development Authority)
- With higher level of skills, able to get employed to earn an income (**Income increase** as income is higher compared to unemployment benefits)
- With higher level of skills, labour productivity increases for lower income groups increase, output increases, **income per worker increases**
- Increase in income= escape from poverty cycle
- As income of low wage workers increase, Lorenz curve shifts inwards from L_1 to L_2.



Investment in physical capital:

- R&D/ govt. spending (eg. subsidies) on labour intensive machines in low income sectors

- Labour productivity increases, output/man hour increases, total output increases, income per worker increases (income of workers increase)
- *May also use increase in LRAS/SRAS (by increased labour productivity) argument to explain when real GDP increases, income/capita increases.

Income redistribution: Government spending tax revenue from higher income groups to set up training centres, subsidise training courses (Investment in human capital), using tax revenue to spend on R&D/ subsidies for labour intensive machines.

Evaluation

- Improving quality of human capital is a long term policy/ takes long time to take effect
- High government spending required (opportunity, burden on govt. budget and high taxes required, developing countries may lack budget to finance such public investments)

Section 2: Macroeconomics

Topic 2.4.1: Demand side policies (Fiscal policy)

(a) Introduction

Demand side policies: Policies used to change the level of AD in an economy

Fiscal policy: Government manipulation of amount of government expenditure and government revenue (from direct taxes) to change the level of AD

Expansionary fiscal policy: Increase G, reduction in direct taxes to increase AD

Contractionary fiscal policy: Decrease G, increase in direct taxes to decrease AD

(b) Government budget

- Comprises of government **revenue** and **expenditure** (G)

(i) Sources of government revenue

1. Indirect (eg. excise duty, GST, VAT) and direct taxes (eg. income & corporate tax)
2. Sale of G&S by government owned companies (eg. revenue from public transport, electrical production firms owned by govt.)
3. Sale of government owned companies, one time revenue (eg. SG: Govt. linked company, eg singtel

(ii) Components of government expenditure

1. Current expenditure
   - Day to day expenditure
   - Eg wages & salaries for workers in public sector
   - Eg operation of public sectors (eg. public healthcare/ education)
   - Subsidies on firms/sectors, govt repayment of interest on bank loans
2. Capital expenditure
   - Expenditure on physical capital (public investment), eg. infrastructure (roads, buildings, transport systems
3. Transfer payments (eg. unemployment benefits)—**Note: transfer payments do not count in G in AD.**

(iii) Budget outcome

- **Balanced budget:** revenue just covers expenditure
- **Budget Surplus:** revenue > expenditure
- **Budget deficit:** expenditure > revenue

(c) Role of fiscal policy

Types: Automatic stabilizers (eg progressive tax structure & transfer payments, **discretionary fiscal policy** (expansionary & contractionary fiscal policy)

Automatic stabilizers: In built stabilizers in economy that stabilize economy without action by govt. during recession and boom. Purpose: To reduce short term fluctuations of business cycle (boost economy during recession, slow economy during boom)

Progressive income tax structure	Transfer payments
➢ During boom, incomes increase ➢ With progressive income tax, ATR for higher incomes is larger. ➢ Lowers after tax disposable income ➢ Consumption (C) decreases ➢ ∴ AD decrease, slows down boom In recession: Vice versa	➢ During recession, unemployment increases ➢ Unemployment benefits given by govt. increases ➢ Unemployment benefits increase disposable income ➢ Consumption (C) increases, ➢ ∴ AD increases, stimulates economy during recession During boom: vice versa

Discretionary fiscal policy: conscious use of fiscal policy by govt. (expansionary & contractionary fiscal policy), Purpose: correct macroeconomic problems (eg. high inflation, unemployment, low growth, etc)

(i) Expansionary fiscal policy

- Government increases govt. expenditure, G increases, AD increases
- Decrease corporate tax (tax on investment profits) & decrease income tax
- Increases after tax investment profits and disposable income
- Increase I & C, ∴ Increase AD
- **Used for**: Reducing cyclical unemployment, increasing economic growth, removing deflation

(ii) Contractionary fiscal policy

- Government decreases govt. expenditure, G decreases, AD decreases
- Increase corporate tax (tax on investment profits) & increase income tax
- Reduces after tax investment profits and disposable income
- Decrease I & C, ∴ Decrease AD
- **Used for**: Reducing demand pull inflation

(d) Evaluation of fiscal policy

Advantages:

1. **Ability to affect AD more directly** (Increase in G directly increase AD)
2. **Ability to affect potential output** (Increase in capital expenditure can increase LRAS)
   - "Demand side policy with a supply side effect" (Increases both AD & AS)
3. **Ability to target sectors (Government can increase spending on certain sectors if it is just one sector that is limiting economic output.**

Limitations/ problems

1. **Uncertainty of tax changes on C & I** (eg. if **consumer & business confidence** high, increase in tax may not decrease C & I)
2. **Inflexibility of government expenditure**
   - Cannot increase G easily: Govt. budget drawn up at start of year
   - Cannot decrease G easily: Cannot reduce spending on important sectors (eg. healthcare, education, defence), Cannot stop/postpone ongoing long term projects (eg. construction of roads & buildings)
3. **Crowding out effect**

- To increase AD, increase in G may be financed by govt. borrowing from banks.
- As government borrows large quantities of money, demand for money increases, causing interest rates to increase
- Increase in interest rates reduce C&I as cost of borrowing to finance C&I increases
- This reduction in C&I offsets increase in G, limiting increase in AD.

4. **Time lags**

- Effect time lag: Govt. spending can only increase gradually over time for long term public projects (eg. construction of buildings) as spending is spread out over a longer time period as the buildings are built. By the time AD increases significantly, policy may no longer be relevant as problem has changed.

5. **Opportunity cost/ burden on govt. budget** (To increase G to increase AD)

- Government may run into budget deficit
- Increased spending on one sector may decrease spending on another (opportunity cost)
- High taxes may be imposed to increase government spending (Unpopular)
- Government expenditure may not be possible in LEDCs due to lack of tax revenue (low incomes)

Topic 2.4.2: Demand side policies (Monetary policy)

(a) Introduction

Monetary policy: Conscious attempt by central banks to change level of AD by changing money supply/ interest rates

Expansionary monetary policy: Raising money supply (eg. Quantitative easing)*/ lower interest rates to increase AD

Contractionary monetary policy: Decreasing money supply/ raising interest rate to decrease AD.

(b) Central banks & interest rates

Roles of central bank

1. **Banker to government** (Holds govt. cash/ deposits)
2. **Banker to commercial banks** (Holds deposits for commercial banks)
3. **Regulator of commercial banks** (Make sure banks comply with financial & monetary regulations, eg, ensure banks have sufficient liquidity/cash since funds that banks use to make loans are savings/deposits of consumers/firms)
4. **Conduct monetary policy** (Regulate supply of money/ interest rates/ exchange rates)

Determination of interest rates

- Involves **supply of and demand for money**

Demand for money D_m (by consumers, firms, governments)

- Transactional purposes (Buy Goods and services)
- Buy bonds

Supply for money S_m

- Fixed by central banks, independent of interest rates
- Manipulating money supply by central banks cause change rate of interest

How central banks manipulate money supply (Extra notes)

- Change required reserve ratio (cash ratio). Decrease in cash ration increases S_m
- Change of discount rate (Interest rate for commercial banks borrowing from central banks). Decrease in discount rate increases S_m
- Open market operations. Eg. buying of bonds by central banks, money flows from central banks into market for money, increasing S_m (eg. Quantitative Easing)

(c) Role of monetary policy

Purposes of monetary policy: Maintaining full employment level of output, inflation targeting, etc.

Expansionary monetary policy

- **Lowering of interest rates** by central banks
- Decreases opportunity cost of borrowing to finance consumption & investment (higher investment profits since less interest to be payed)
- C & I ↑, ∴ AD↑
- **Purpose:** Reduce deflation, increase growth, reduce cyclical unemployment

Another type of expansionary monetary policy (Quantitative Easing)—Extra notes

- Central banks buy bonds from commercial banks. Central banks pay commercial banks money for bonds. Increased liquidity in commercial banks (amount cash available for lending), therefore money supply increases.

Contractionary monetary policy

- **Raising of interest rates** by central banks
- Increases opportunity cost of borrowing to finance consumption & investment (lower investment profits since less interest to be payed)
- C & I ↓, ∴ AD↓
- **Purpose:** Reduce demand pull inflation (during economic boom, etc)

(d) Evaluation of monetary policy

Advantages:

1. **Quick implementation** (Central banks operate independently of government, monetary policy no need to go through parliamentary approval)
2. **Interest rates can be adjusted incrementally to make incremental changes to AD** (monetary policy more flexible than government expenditure)
3. **Does not lead to crowding out effect** (fiscal policy)

Limitations:

1. **Time lag in implementation** (Indirect method to change AD: changes AD through interest rates rather than directly manipulating a component of AD)
2. **Ineffectiveness in recession**
   - Low business & consumer confidence, reduced interest rates may not cause C & I to increase
   - Banks may not be willing to lend (unstable incomes due to unemployment may mean consumers may default from loans)
3. **Inflexibility of monetary policy in Monetary unions**
   - Eg. European Union: Common central bank (ECB), common interest rates, monetary policy cannot be changed in one member country to solve macroeconomic problem, as interest rates controlled by ECB

Section 2: Macroeconomics

Topic 2.5: Supply-side policies

(a) Introduction

Supply side policies: Government policies used to increase AS of an economy

Market oriented supply side policies: Policies that work on the basis of the free market (price mechanism to allocate resources, provision of incentives). Less government intervention and regulation. View held by classical economists.

Interventionist supply side policies: Policies that rely on government intervention to increase AS. Belief that free market cannot function itself to increase AS. View held by Keynesian economists.

(b) Supply side policies

(i) Interventionist supply side policies (Increase in quality & quantity of resources)

- Aimed at increasing LRAS (and SRAS in the longer term when the potential is actualised)

1. **Investment in human capital**
   - Govt. spending on training and education (eg WDA in Singapore) improves quality of labour, increases efficiency & productivity. Potential output/ LRAS increases.
2. **Research & Development**
   - R&D conducted by public firms increase state of technology
   - More advanced technology, more efficient capital goods (eg machines), productivity increases. Potential output/ LRAS increases.
3. **Public (Govt.) Investment in physical capital** (eg. Infrastructure)
   - **Infrastructure**: Facilities necessary for economic activity
   - More infrastructure/ more efficient infrastructure (eg. ERP vs Toll stations)
   - More efficient economic activity (eg. Raw material can be transported to firms more quickly, final goods can be transported to markets more efficiently)
   - Potential output/ LRAS increases

Macroeconomic problems that can be addressed with Interventionist supply side policies

- **Reduce structural unemployment** (Training and education to help those with obsolete skills get job,
- **Reduce cost-push inflation** (Greater productivity= output/unit cost decreases). Increase in LRAS leads to increase in SRAS.
- **Reduce income inequality** (Improved technology for low wage sector, higher skill levels for lower income groups)
- **Allow economic growth beyond Y_{FE}** without inflationary gaps occurring (where economy self corrects back to Y_{FE}) by increasing LRAS/Y_{FE}. **Important for long term growth.**

(iii) Market oriented supply side policies

Incentive based policies (Incentives for firms to produce)

1. **Reduce income tax**

- Incentive for people to work harder (after tax disposable income increases), labour productivity increases, LRAS increases
- Incentive for unemployed people to get employed, reduces natural unemployment, SRAS increases
-

2. **Reduces corporate tax**
   - Reduced tax on investment profits, after tax investment profits increase.
   - Larger profits increases investment, leads to increase in LRAS, which increases SRAS in future

Labour market reforms

1. **Reduction in unemployment benefits**
- Causes gap between benefits and wages of employed workers to be larger
- Causes unemployed (natural unemployment) to seriously seek employment
- When people get employed, output increases, SRAS increases.

2. **Reduction of minimum wage**
- Reduced wage reduces cost of production for firms, increasing profits (incentive to produce more)
- Leads to increase in SRAS
- With larger profits, there may be more investment by firms, increasing LRAS

3. **Reduction in trade union power**
- Reduces upward pressure on wages, reduces cost of production for firms, SRAS increase

Policies increasing competition (HL)

1. **Privatisation**: Greater competition puts pressure on firms to adopt more efficient methods of production to reduce price of goods
2. **Trade liberalisation**: greater efficiency in production (eg as opposed to inefficient domestic firms producing what is usually imported when tariff is implemented

Greater efficiency in production= potential output/ LRAS increases

(c) Evaluation of supply side policies

Benefits	Costs
Effect on employment ➢ Interventionist policies (eg. education, training) can reduce structural unemployment ➢ Labour market reforms will reduce natural unemployment	**Effect on employment** ➢ R&D (Interventionist policy) to improve technology & automation may cause structural unemployment as worker's skills are replaced by physical capital. ➢ Policies to encourage competition may cause structural unemployment. (eg. firms using technology in place of workers as capital intensive production may be cheaper)
Effect on inflation ➢ Increase in AS reduces cost push inflation	**Time lags** ➢ Some policies are long term policies, take long time to have an effect on AS (eg. education)
	Impact on government budget ➢ **Interventionist policies** require government expenditure, burden on govt budget

	➢ **Market Oriented policies** involve reduction in taxes (eg, income/ corporate). Fall in tax revenue leads may lead to govt budget deficit.
Impact on Equity/ income equality ➢ **Interventionist policies** that improve quality of human capital reduces income inequality (lower wage workers have better skills and work in higher paying job)	**Impact on Equity/ income equality** ➢ **Market oriented policies** that involve tax cuts (eg. reduced income tax as incentives to work harder) increase inequality. Fall in ATR for higher income groups reduce income redistribution

BONUS SECTION: COMPARISON OF DEMAND SIDE POLICIES AND SUPPLY SIDE POLICIES

DEMAND SIDE POLICIES	SUPPLY SIDE POLICIES
Aimed at **short term actual growth**	Aimed at **long term potential growth** (Potential growth leads to actual growth when potential is actualised)
Beneficial in a **recession** (quick result is desirable), where output level is way below Y_{FE}	Effective for growth when **economy is producing near Y_{FE}**
Can have supply side effects (eg. Government spending (G) on infrastructure may also increase LRAS	Can have demand side effects R&D to increase LRAS may count under G (public investment)
Monetary policy (Interventionist) **Fiscal policy (Interventionist)**	**Market oriented policies (Classical)** **Interventionist policy (Keynesian)**
Policy may be used to **increase or decrease AD**	Policy is used to **increase AS only**
Used to address **demand pull inflation**	Used to address **cost push inflation**
Used to **reduce cyclical unemployment**	Used to **reduce natural unemployment**