Macroeconomic activity, objectives and policy (3.1-3.7)

International Baccalaureate · IB Diploma · Economics · SL

Macroeconomic activity, objectives and policy

IB Diploma Programme Economics SL, Unit 3 *Macroeconomics* (first assessment 2022). This topic covers the SL content of sections 3.1 to 3.7: measuring the economy, its ups and downs, aggregate demand and supply, the government's goals, inequality and poverty, and the three kinds of policy (monetary, fiscal and supply-side). One model runs through the worked examples: real GDP in $billion, aggregatedemand$P = 90 - Y/2, $short - runaggregatesupply$P = 20 + Y/2$ and full-employment output 80. All numbers are original. The multiplier, the Phillips curves, government debt and the calculations are HL extensions, so they are left out here.

In 2020 many countries saw output fall faster than at any time since the 1930s. Shops closed, workers lost hours, and governments spent huge sums to support incomes. Central banks cut interest rates close to zero. Two years later, inflation in many rich countries reached its highest level in about 40 years, and the same central banks raised rates quickly. Macroeconomics explains why output, jobs and prices move together like this, and what policy can do about it.

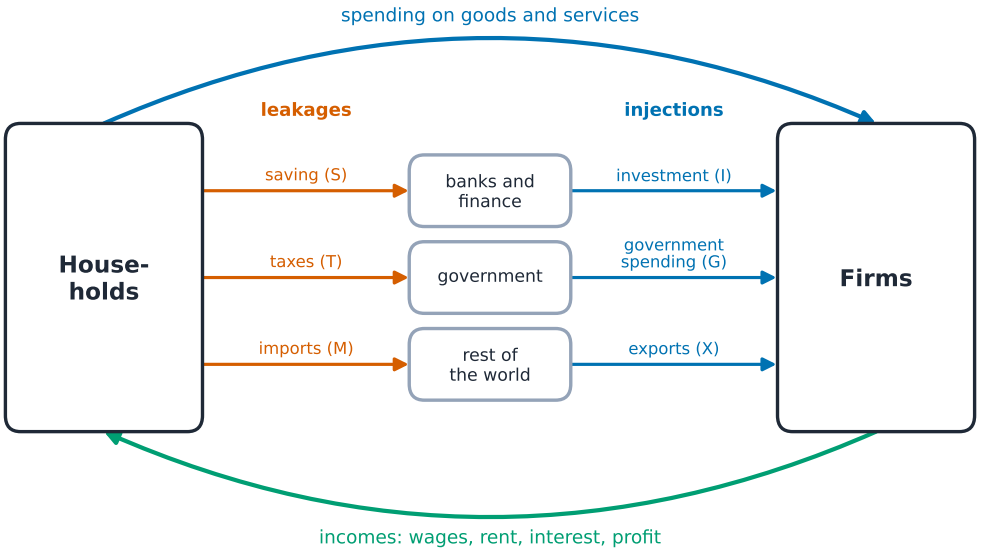
Must-know for this topic:

Idea	Key relationship
GDP	output = income = expenditure; real GDP removes price changes
aggregate demand	AD $= C + I + G + (X - M)$
equilibrium	AD meets SRAS at $Y = 70$, $P = 55$; full employment 80, so a recessionary gap of 10
objectives	low unemployment, low and stable inflation, growth, equity
policy	monetary (interest rates), fiscal (G and T), supply-side (LRAS)

Measuring economic activity

The circular flow of income

Households own the **factors of production** (land, labour, capital and enterprise). They sell them to firms and earn incomes. They spend these incomes on firms' goods and services. Money therefore flows in a circle.



Leakages leave the flow of income; injections come back in

Some money leaves the circle. These are **leakages** : saving (S), taxes (T) and spending on imports (M). Other money enters it. These are **injections** : investment (I), government spending (G) and export revenue (X). If injections are larger than leakages, national income grows. If leakages are larger, income falls.

■ Three ways to measure output

Gross domestic product (GDP) is the value of all final goods and services produced in a country in one year. The circular flow shows three ways to measure it, and in principle they give the same answer:

- the **output method**: add the value of what each industry produces;
- the **income method**: add all incomes (wages, rent, interest, profit);
- the **expenditure method**: add all spending, $C + I + G + (X - M)$.

Gross national income (GNI) is GDP plus income that residents earn abroad, minus income that foreigners earn in the country. It matters for countries with many workers abroad or much foreign-owned industry.

■ Nominal and real, totals and per person

- **Nominal GDP** uses each year's own prices.
- **Real GDP** removes the effect of price changes, so it shows whether the country really produced more.
- **GDP per capita** divides by the population, which is better for comparing living standards.

- **Purchasing power parity** (PPP) converts currencies at rates that buy the same basket of goods in each country. A dollar buys more haircuts in Chengdu than in London, so PPP figures compare real living standards more fairly.

Limits of GDP and other measures

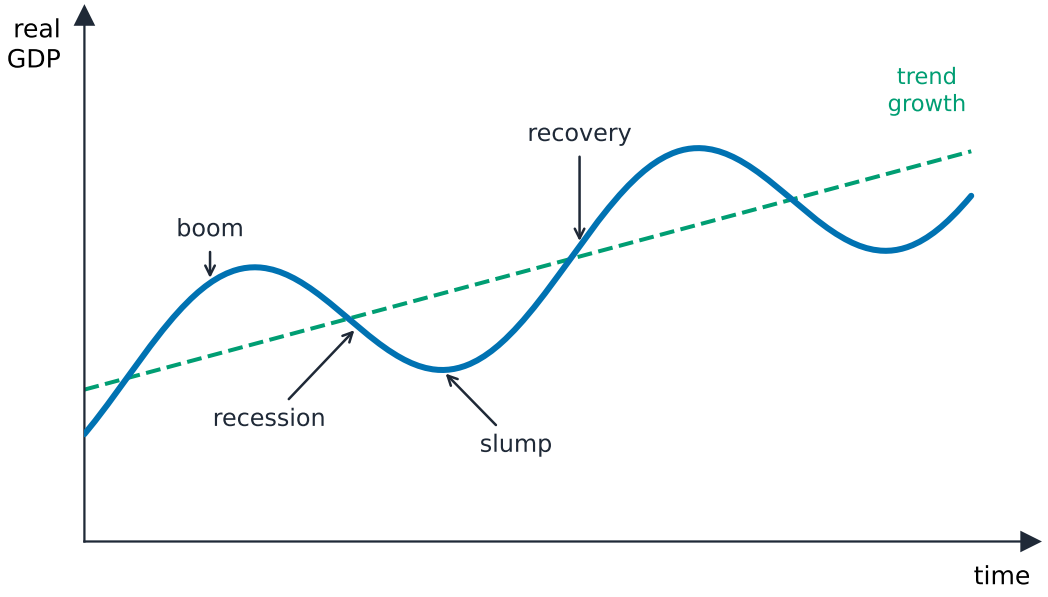
GDP is not the same as well-being. It leaves out unpaid work at home and the **informal economy** . It says nothing about how income is shared. It counts the output of a polluting factory but not the damage the pollution does. It ignores leisure time and the quality of goods.

So economists also use other measures:

- the **Human Development Index** (HDI), which combines income per head (GNI per capita at PPP), health (life expectancy) and education (years of schooling);
- the OECD Better Life Index, the Happy Planet Index and the Genuine Progress Indicator, which add measures such as the environment, health, work-life balance and how satisfied people say they are.

The business cycle

Real GDP does not grow smoothly. It moves up and down around its long-term **trend** in a pattern called the **business cycle** .



Real GDP rises and falls around its long-term trend

- In a **boom** , output is above trend, unemployment is low and inflation tends to rise.

- In a **recession** , real GDP falls. Often this means two quarters in a row of falling output. Unemployment rises.
- At the bottom (the slump), output is furthest below trend.
- In the **recovery** , output and jobs grow again.

The gap between actual and potential output is the **output gap** .

Aggregate demand and aggregate supply

Aggregate demand

Aggregate demand (AD) is total planned spending on a country's goods and services at each price level:

$$AD = C + I + G + (X - M)$$

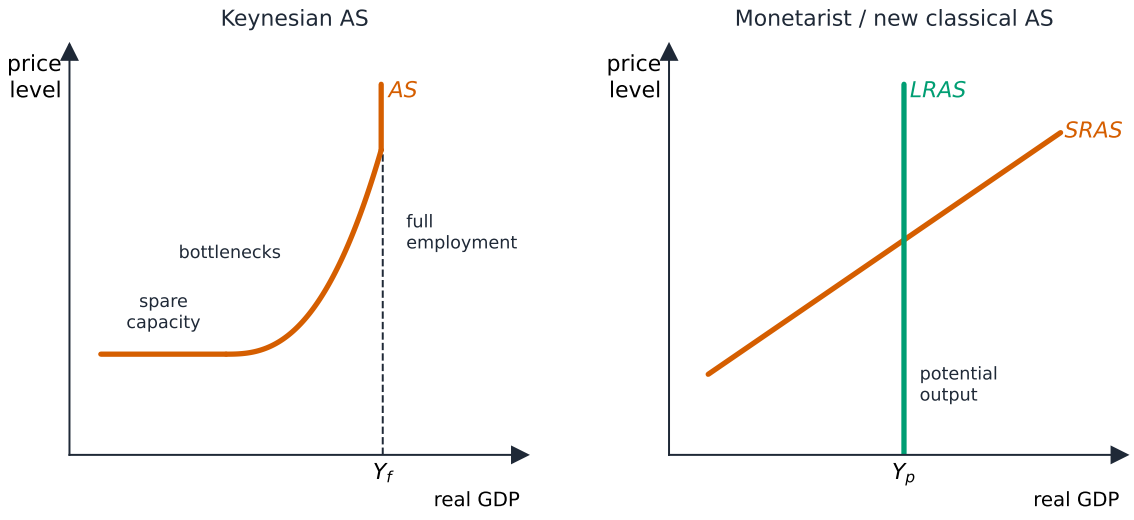
Component	What changes it
consumption (C)	income, interest rates, confidence, wealth, household debt
investment (I)	interest rates, business confidence, technology, profits
government spending (G)	government priorities, the state of the economy
net exports (X − M)	incomes abroad, the exchange rate, trade policy

The AD curve slopes down. A higher price level makes people's money and savings worth less, raises interest rates and makes exports dearer, so real spending falls. A change in the price level is a movement ALONG AD. A change in any component (at the same price level) SHIFTS AD.

Aggregate supply

Short-run aggregate supply (SRAS) slopes up: when the price level rises and wages stay fixed for a while, production becomes more profitable. SRAS shifts when firms' costs change: wages, oil and raw material prices, business taxes, or a supply shock such as a drought.

Economists disagree about the long run.



Keynesian and monetarist views of aggregate supply

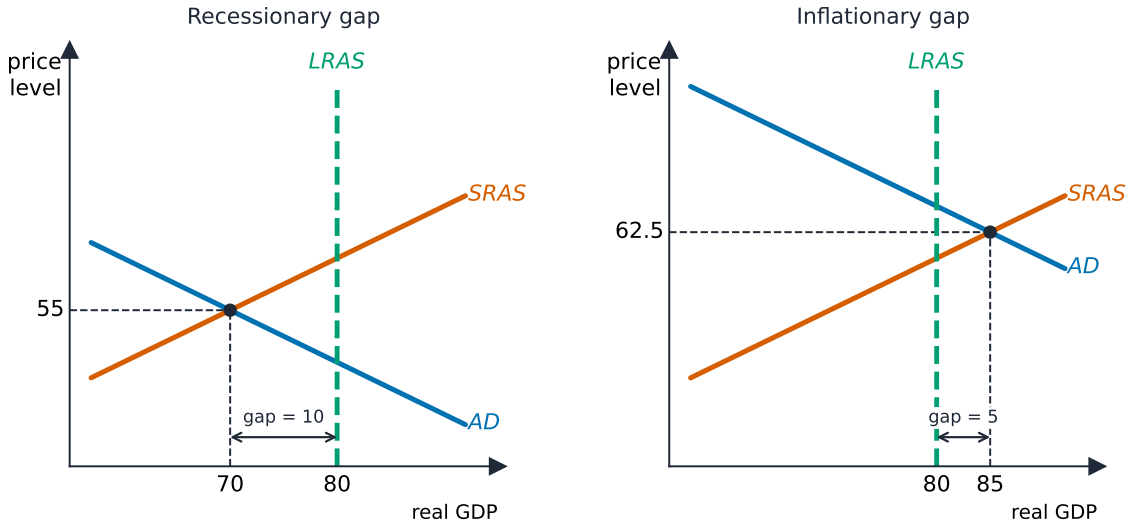
- In the **monetarist** (new classical) view, the **long-run aggregate supply** (LRAS) curve is vertical at **potential output**. In the long run wages adjust, so the economy returns to full employment by itself. Demand changes only move the price level.
- In the **Keynesian** view, the economy can stay stuck below full employment. When there is a lot of spare capacity, AS is flat: more demand raises output without raising prices. Near full capacity, bottlenecks push prices up, and at full employment AS is vertical.

LRAS (and the vertical part of Keynesian AS) shifts right when the quantity or quality of factors of production increases: more workers, better education, new technology, more capital, better institutions.

■ Equilibrium and output gaps

> **Worked example.** AD is $P = 90 - Y/2$ and SRAS is $P = 20 + Y/2$. Full-employment output is 80.

- Equilibrium: $90 - Y/2 = 20 + Y/2$, so $Y = 70$ and $P = 55$.
- Output is 10 below full employment. This is a **recessionary gap** (also called a deflationary gap), with cyclical unemployment.
- If AD rises to $P = 105 - Y/2$: $105 - Y/2 = 20 + Y/2$, so $Y = 85$ and $P = 62.5$. Output is 5 above full employment. This is an **inflationary gap**: the price level is pushed up.



A recessionary gap and an inflationary gap on the same SRAS and LRAS

In the monetarist view, both gaps close by themselves in the long run. With a recessionary gap, unemployed workers accept lower wages, SRAS shifts right and output returns to 80. Keynesians reply that wages rarely fall, so a recession can last for years unless the government acts.

Macroeconomic objectives

Low unemployment

A person is **unemployed** if they are of working age, have no job, and are actively looking for work (the ILO definition).

The unemployment rate is the number unemployed as a percentage of the **labour force**: everyone who is employed plus everyone who is unemployed.

The official rate can hide problems. It leaves out **discouraged workers** who have stopped looking, and people working part-time who want more hours. It also hides big differences between regions, ages and ethnic groups.

Type	Cause	Example
cyclical (demand-deficient)	AD falls in a recession	factory jobs cut as orders fall
structural	skills or location no longer match the jobs	coal miners after mines close
frictional	time spent moving between jobs	a graduate searching for a first job
seasonal	demand changes with the season	ski instructors in summer

Unemployment costs the jobless (lost income, lost skills, stress and poor health) and the whole economy (lost output, lower tax revenue, higher benefit spending, and possibly crime and social tension).

■ Low and stable inflation

Inflation is a sustained rise in the general price level. **Deflation** is a sustained fall. **Disinflation** is a fall in the rate of inflation: prices still rise, but more slowly. Inflation is measured with a **consumer price index** (CPI), the weighted average price of a basket of goods that a typical household buys. The CPI has limits. A household's own basket may be different, quality improvements are hard to count, and people switch to goods whose prices rose less.

- **Demand-pull inflation**: AD grows faster than the economy can produce (an inflationary gap).
- **Cost-push inflation**: firms' costs rise (oil, wages, imported materials) and SRAS shifts left. Prices rise while output falls.

High inflation hurts people on fixed incomes and savers, makes planning hard, and makes exports less competitive. Deflation is also harmful: consumers delay spending because goods will be cheaper later, the real value of debts rises, and firms cut output and jobs. This is why most central banks aim for low, steady inflation of about 2%.

■ Economic growth

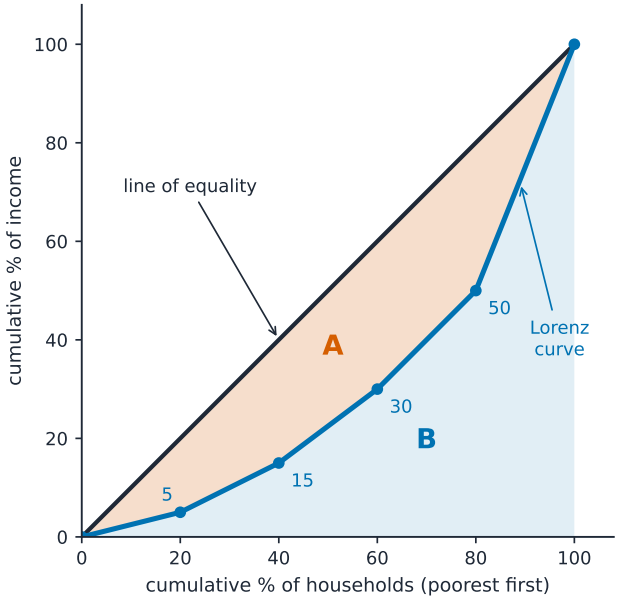
Economic growth is an increase in real GDP. In the short run, growth can come from more AD using spare capacity. In the long run it needs more or better factors of production, shown by LRAS (or the production possibilities curve) shifting right. Growth raises incomes and tax revenue and can reduce poverty, but it can also harm the environment and widen inequality. So the goal is sustainable growth.

The economics of inequality and poverty

Measuring inequality

Income is a flow (money earned each year). **Wealth** is a stock (the value of what people own). Wealth is usually far more unequal than income.

The **Lorenz curve** plots the share of income received by the poorest 20%, 40%, and so on. The straight line is perfect equality. The further the curve sags below it, the more unequal the country. The **Gini coefficient** is area A divided by the whole area under the line of equality (A + B). It runs from 0 (perfect equality) to 1 (one person has everything). In the example below, the five fifths of households earn 5%, 10%, 15%, 20% and 50% of national income, which gives a Gini of 0.40.



The quintile shares give a Gini coefficient of 0.40

Poverty

- **Absolute poverty** : income too low to buy basic needs. The World Bank's international poverty line is $3.00 a day per person (at 2021 PPP prices).
- **Relative poverty** : income far below others in the same country, often below 50% or 60% of the median income.
- The **Multidimensional Poverty Index** (MPI) counts lack of health, education and living standards (such as clean water, electricity and cooking fuel), not only income.

Causes of inequality and poverty include differences in education and skills, inherited wealth, discrimination, unemployment, weak social protection, and tax systems that favour the rich. Globalisation and new technology have also raised the pay of highly

skilled workers faster than others.

Policies to reduce inequality

- **Progressive taxes** : richer people pay a higher share of their income. A **regressive tax** takes a larger share from the poor (indirect taxes such as VAT often do). A proportional tax takes the same share from everyone.
- **Transfer payments** : pensions, unemployment benefits and child benefits.
- Spending on education and health, so that poor children get the same chances.
- A minimum wage, and laws against discrimination.

Redistribution has costs: high marginal rates may reduce the reward for working or investing, and generous benefits can discourage some people from taking jobs. This is the trade-off between **equity** and **efficiency** .

Monetary policy

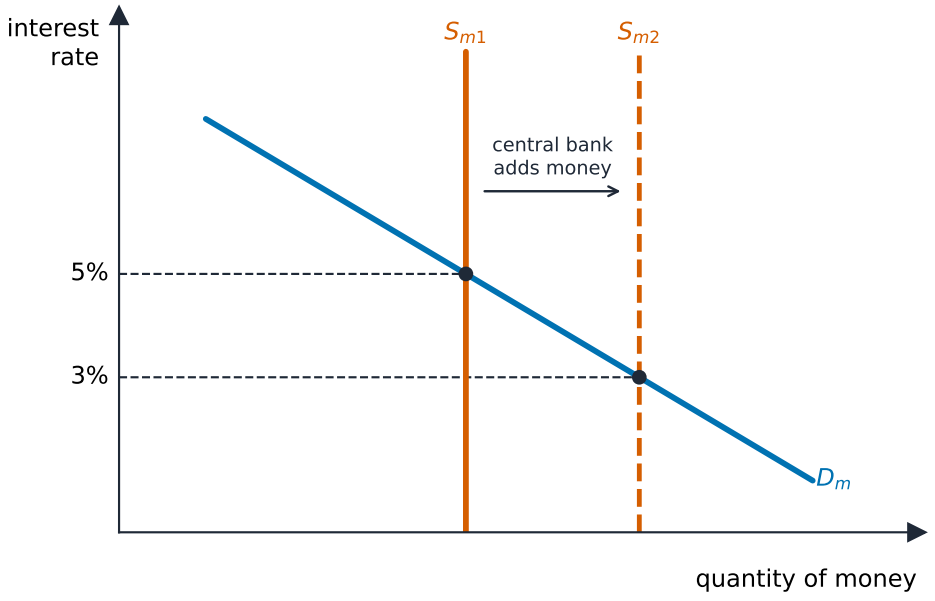
The central bank and its tools

Monetary policy is run by the **central bank** , such as the People's Bank of China or the US Federal Reserve. Many central banks have an **inflation target** , often 2%. Their tools:

- the **policy interest rate** (the rate at which the central bank lends to commercial banks);
- **open market operations** : buying or selling government bonds to change the money supply;
- **minimum reserve requirements** : the share of deposits banks must keep and cannot lend. Lowering it lets banks lend more;
- **quantitative easing** (QE): large-scale bond buying with newly created money, used when interest rates are already near zero.

The money market

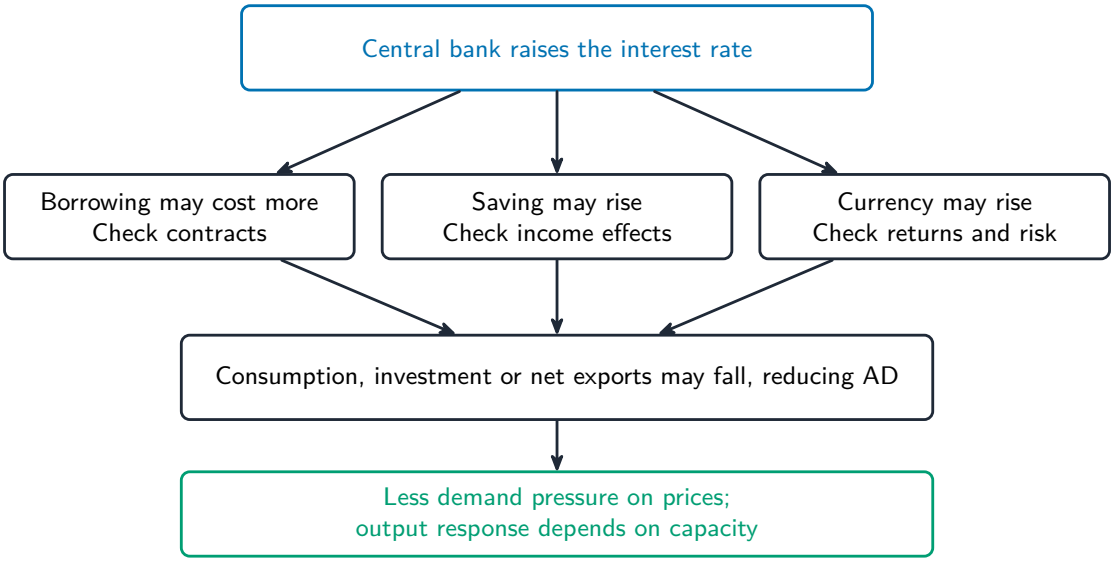
The interest rate is the price of money. The central bank controls the **money supply** , shown as a vertical line. People's demand for money slopes down: at a high interest rate, holding cash means giving up a lot of interest.



More money supply lowers the equilibrium interest rate

The **real interest rate** is the nominal rate minus inflation. A loan at 5% when inflation is 3% costs only 2% in real terms.

How monetary policy reaches AD



A rise in the interest rate reaches aggregate demand through several channels

Contractionary (tight) monetary policy raises interest rates to fight inflation. Borrowing costs more, so households buy fewer homes and cars and firms invest less. Saving becomes more attractive. A higher rate also attracts money from abroad, so

the currency rises and net exports fall. AD shifts left. **Expansionary** (loose) monetary policy cuts rates to fight a recession and works the other way.

Strengths: central banks can act quickly, change rates in small steps, and are independent of politics. Limits: the full effect takes 18 months or more. In a deep recession, low confidence means people will not borrow even at very low rates. Rates cannot go far below zero, so QE is needed. And a rate rise cannot fix cost-push inflation without also cutting output.

Fiscal policy

Fiscal policy uses government spending and taxation to influence AD.

- Government revenue: **direct taxes** (on income and profits), **indirect taxes** (on spending, such as VAT), the sale of goods and services, and the sale of state-owned firms.
- Government spending: **current spending** (wages of teachers and doctors, medicines), **capital spending** (roads, schools, railways) and **transfer payments** (pensions, benefits).
- A **budget deficit** means spending is greater than revenue; a **budget surplus** means revenue is greater.

Expansionary fiscal policy raises G or cuts taxes, so AD shifts right. **Contractionary fiscal policy** cuts G or raises taxes to cool an inflationary gap.

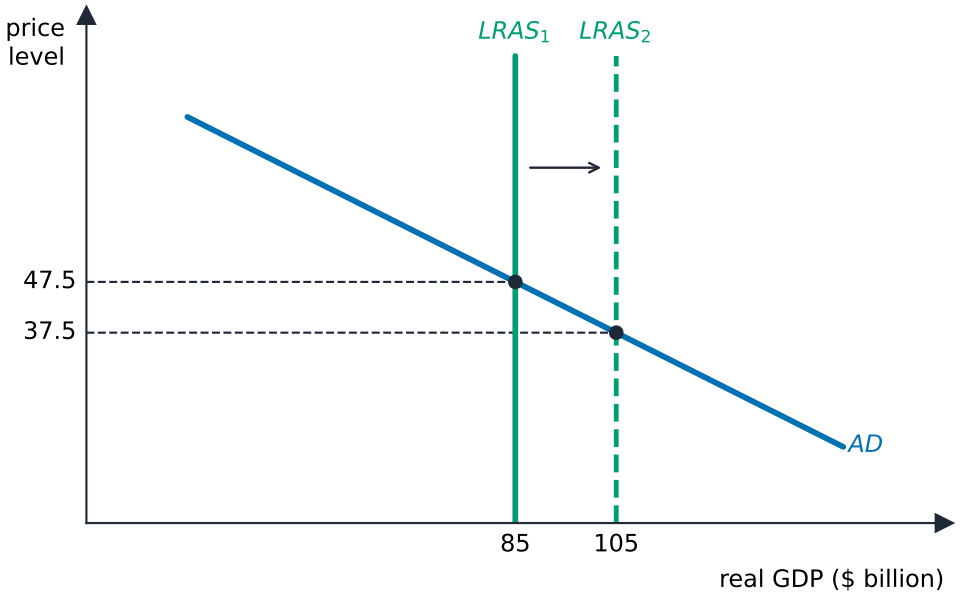
Automatic stabilisers work without any new decision. In a recession, tax revenue falls and benefit spending rises by itself, which supports AD. In a boom, the opposite happens and AD is held back.

Strengths: fiscal policy can target spending at particular regions or groups, works well in a deep recession, and capital spending also raises LRAS. Limits: **crowding out** (government borrowing may raise interest rates and reduce private investment), long time lags (laws and projects take time), political pressure against cutting spending, and rising debt.

Supply-side policies

Supply-side policies aim to raise the economy's productive capacity, shifting LRAS to the right.

Reading the diagram. LRAS shifts from 85 to 105 along a fixed AD. The price level falls from 47.5 to 37.5 while real GDP rises by 20. Unlike demand-side policy, this gives growth without inflation.



Supply-side policy raises output and lowers the price level

Interventionist (the government acts)	**Market-based (markets work more freely)**
spending on education and training	lower income and business taxes to raise incentives
spending on healthcare	weaker trade union power, more flexible labour laws
infrastructure: roads, ports, broadband	lower or no minimum wage
grants for research and development	deregulation: removing unneeded rules
industrial policy: support for chosen industries	privatisation: selling state-owned firms
	competition policy: more rivals, lower prices

Strengths: supply-side policies can lower unemployment (especially structural), reduce inflation and raise long-run growth at the same time. Limits: most take years to work, education and infrastructure cost a lot of money, and market-based policies such as weaker labour laws can widen inequality.

Checklist

- The circular flow: leakages (S, T, M) and injections (I, G, X); GDP by the output, income and expenditure methods; GNI (3.1).
- Nominal and real GDP; per capita; PPP; the limits of GDP; HDI and other measures; the business cycle and output gaps (3.1).
- AD $= C + I + G + (X - M)$ with what changes each part; movements along and shifts of AD; SRAS and its shifters (3.2).
- Keynesian AS (flat, curving, vertical) against the monetarist vertical LRAS; LRAS shifters (3.2).
- Equilibrium at $(70, 55)$; a recessionary gap of 10 against full employment at 80; an inflationary gap at $(85, 62.5)$ (3.2).
- Unemployment: ILO definition, the rate, hidden unemployment, four types, the costs (3.3).
- Inflation, deflation and disinflation; the CPI and its limits; demand-pull and cost-push; the costs of each (3.3).
- Growth: short run from AD, long run from LRAS; sustainable growth (3.3).
- Inequality and poverty: income against wealth; the Lorenz curve and Gini coefficient; absolute and relative poverty, MPI; causes; progressive, regressive and proportional taxes; transfer payments; equity against efficiency (3.4).
- Monetary policy: central bank tools (policy rate, open market operations, reserve requirements, QE); the money market; real interest rates; transmission to AD; strengths and limits (3.5).
- Fiscal policy: revenue and spending types; deficits; expansionary and contractionary policy; automatic stabilisers; crowding out and other limits (3.6).
- Supply-side policies: interventionist and market-based; LRAS 85 $\rightarrow$ 105 with the price level 47.5 $\rightarrow$ 37.5; strengths and limits (3.7).