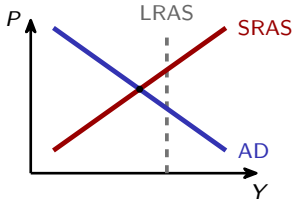


National Income & Price Determination

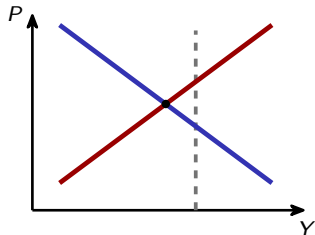
AP Macroeconomics ■ Unit 3

AP Macroeconomics



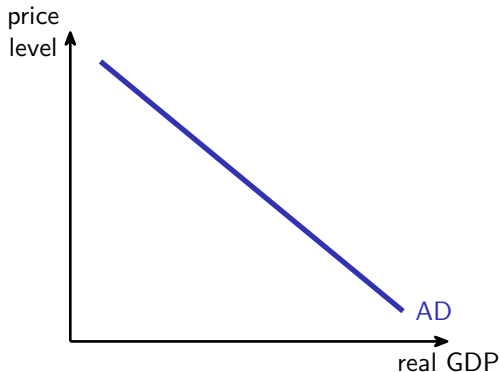
What we will cover

- 1 Aggregate demand (AD)
- 2 The multiplier
- 3 Short-run aggregate supply (SRAS)
- 4 Long-run aggregate supply (LRAS)
- 5 AD-AS equilibrium and gaps
- 6 Demand and supply shocks
- 7 Long-run self-adjustment
- 8 Fiscal policy and stabilizers





Aggregate demand slopes down



Aggregate demand : total output all buyers want at each price level. It slopes down for **three economy-wide reasons**:

- **wealth effect** – money held is worth more
- **interest-rate effect** – more lending, cheaper borrowing
- **exchange-rate effect** – weaker currency lifts net exports

Not substitution – AD covers *every* good at once.

Aggregate demand is total spending

$X - M$
G
I
C

net exports: exports — imports

government spending

investment - spending by firms on capital

consumption - spending by households (the biggest part)

$AD = C + I + G + (X - M)$: total spending on a country's goods and services

Aggregate demand is total spending: consumption, investment, government, and net exports

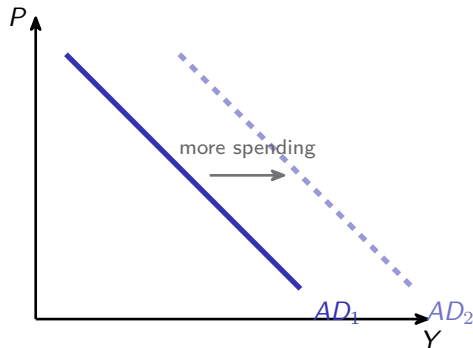
What shifts AD?

Four spending components

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

consumption, investment, government, net exports.

Price level changes $\Rightarrow$ move **along**.
A change in C , I , G or $(X - M)$ $\Rightarrow$ the whole curve **shifts**.





The multiplier effect

One person's spending is another's income, re-spent again and again:

Key fractions

$$MPC + MPS = 1$$

$$\text{spending mult.} = \frac{1}{1 - MPC} = \frac{1}{MPS}$$

$$\text{tax mult.} = -\frac{MPC}{1 - MPC}$$

Worked example ($MPC = 0.75$)

$$\text{Spending multiplier} = \frac{1}{1 - 0.75} = 4.$$

$$\Delta G = 50 \Rightarrow \Delta \text{GDP} = 4 \times 50 = 200$$

$$\text{Tax multiplier} = -\frac{0.75}{0.25} = -3:$$

$$\Delta T = -50 \Rightarrow \Delta \text{GDP} = 150$$

A tax cut is weaker – part is saved first.

The two propensities, and the multipliers

Marginal propensity to consume

The **marginal propensity to consume** (MPC) is the fraction of each extra dollar of income that is spent.

Marginal propensity to save

The **marginal propensity to save** (MPS) is the rest: $MPC + MPS = 1$.

Spending multiplier

$\frac{1}{1 - MPC} = \frac{1}{MPS}$ – the total change in output from one dollar of new spending.

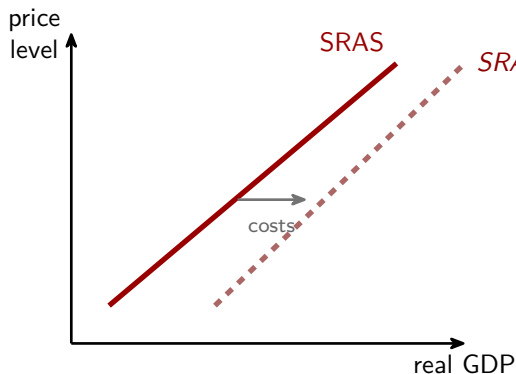
Tax multiplier

$\frac{-MPC}{MPS}$: smaller in size, because the first round of a tax cut is partly saved.

That is why a spending increase moves AD more than a tax cut of the same size – a standard FRQ comparison.



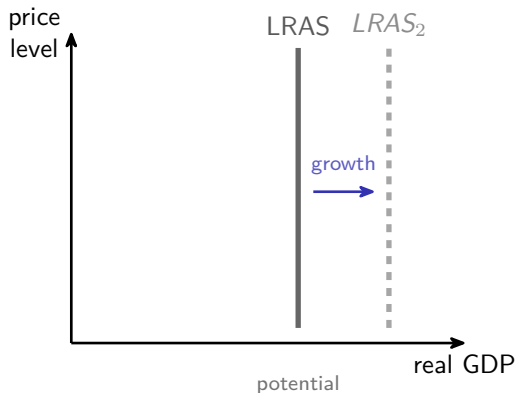
Short-run aggregate supply



In the short run some costs are **sticky** – above all **nominal wages**. A higher price level with fixed wages $\Rightarrow$ more profit per unit $\Rightarrow$ more output. So SRAS slopes **up**. Shifters: input prices, **productivity**, **supply shocks**.

- higher costs $\Rightarrow$ shift **left**
- better productivity $\Rightarrow$ shift **right**

Long-run aggregate supply



In the long run wages and prices are **fully flexible**, so output settles at **potential GDP** – the **full-employment output**. LRAS is **vertical**: the same real output at any price level.

More resources, capital, or better technology shift LRAS **right** – that is **economic growth**.

Potential output, and the curve that shows it

Full-employment output

Full-employment (potential) output is what the economy produces when unemployment sits at its natural rate.

LRAS

Vertical at that output: in the long run the price level does not change what the economy can produce.

The PPC

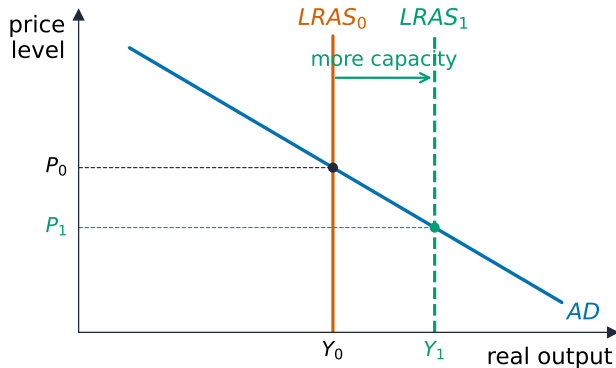
The **production possibilities curve (PPC)** shows the same limit in goods-against-goods form – and both shift out for the same reasons.

What shifts it

More or better resources, more capital, better technology, higher productivity.

An AD shift moves output only until wages adjust. Only an LRAS shift raises output permanently.

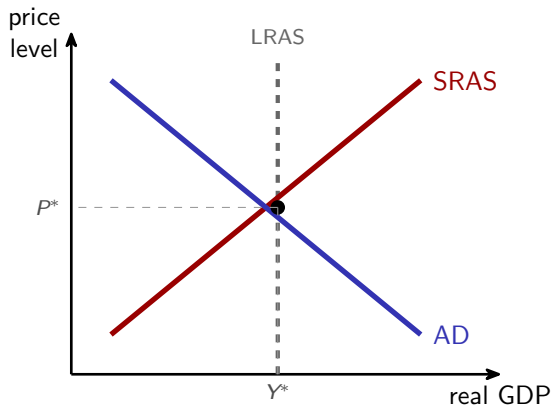
Supply-side policy shifts long-run aggregate supply



Supply-side policy shifts long-run aggregate supply right: more output, lower prices



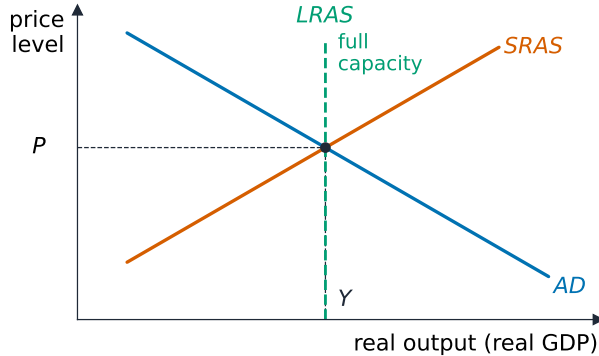
AD-AS equilibrium



Short-run equilibrium is where **AD** crosses **SRAS**. Read the price level and real output straight off the axes.

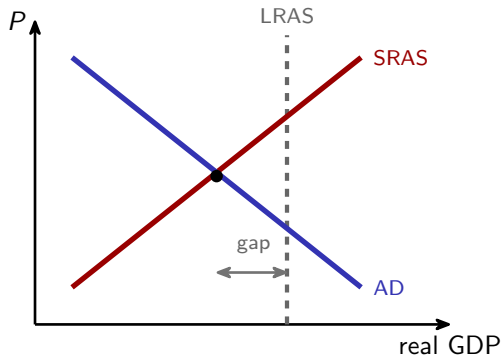
Compare Y^* with LRAS (potential): **on** it = full employment; **left** = recessionary gap; **right** = inflationary gap.

Equilibrium in the AD-AS Model



Macroeconomic equilibrium where aggregate demand meets aggregate supply

Recessionary vs inflationary gap



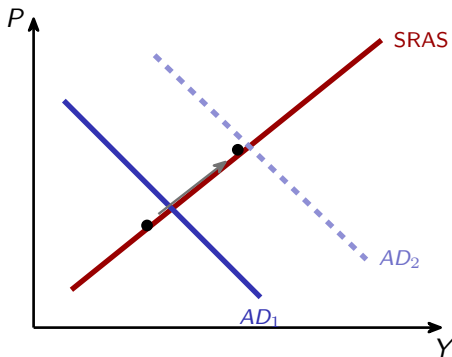
The **output gap** is the distance from Y^* to LRAS.

- Y^* **below** potential – **recessionary gap**, high unemployment
- Y^* **above** potential – **inflationary gap**, prices pushed up

Example: potential 1,000, actual 920 $\Rightarrow$ recessionary gap of 80.



A shift in AD – demand-pull inflation

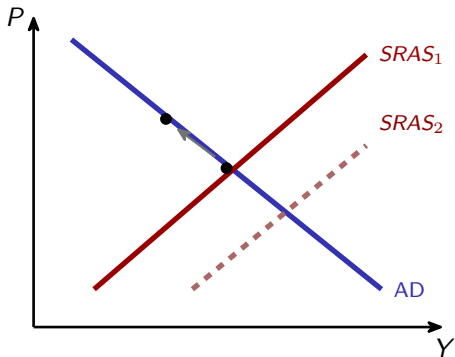


AD shifts **right** (more confidence, a tax cut, more G). Along SRAS the crossing rises:

- price level **rises** – **demand-pull inflation**
- real output **rises**, unemployment falls

An AD shift moves price and output the **same** way.

A supply shock – stagflation



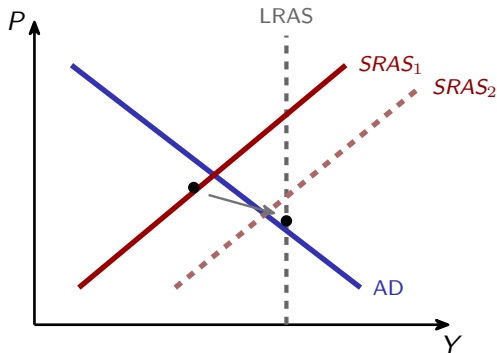
A negative supply shock (oil jumps) shifts SRAS **left**. Along AD:

- price level **rises**
- real output **falls**, unemployment rises

Stagflation : rising prices *with* falling output. A shock moves them **opposite** ways – and it is hard to cure.



Long-run self-adjustment



Left alone, a gap heals by moving **SRAS** (not AD):

- recessionary gap: high unemployment $\Rightarrow$ wages fall $\Rightarrow$ SRAS **right**
- inflationary gap: scarce labour $\Rightarrow$ wages rise $\Rightarrow$ SRAS **left**

Output returns to potential; the price level ends **lower** (or higher) – but slowly.

Fiscal policy

Fiscal policy : the government uses *spending and taxes* to steer AD.

Expansionary: raise G / cut T
 $\Rightarrow$ AD right (for a recession-
ary gap)

Contractionary: cut G / raise
 $T \Rightarrow$ AD left (for an inflation-
ary gap)

Worked example

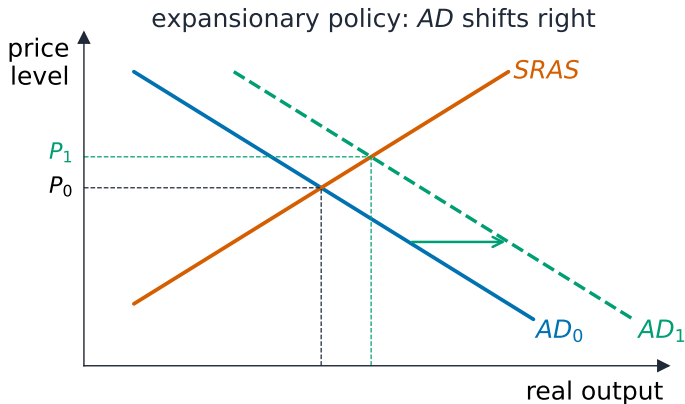
Gap = 200, $MPC = 0.8$ so multiplier = 5.

$$\Delta G = \frac{200}{5} = 40$$



Spending and taxes steer aggregate demand

Expansionary fiscal policy shifts AD right



Expansionary fiscal policy shifts AD right, raising output and prices

Automatic stabilizers

Automatic stabilizers dampen the business cycle **with no new law**:

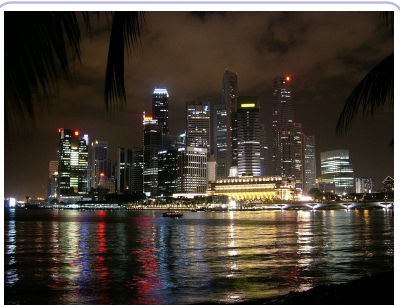
Progressive taxes : collect more in booms, less in slumps

Transfer payments : benefits rise automatically in a recession

Automatic: instant, built into law – no **legislative lag** .

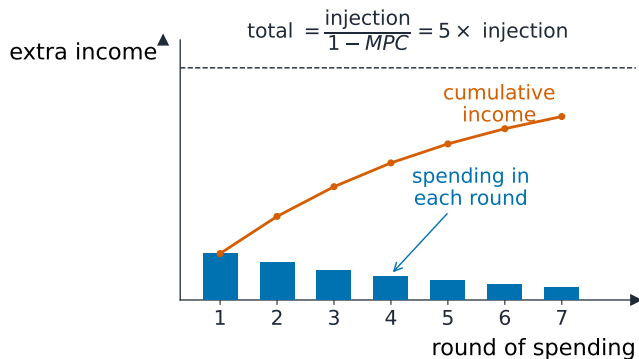
Discretionary : a new bill – precise, but slow to pass.

Aggregate Demand



A city skyline: national output and aggregate demand reflect economy-wide spending

The Spending and Tax Multipliers



One injection multiplies into a larger overall rise in income

The two multipliers, and how fast the economy self-corrects

the idea

a change in spending sets off further rounds, so the final change in GDP is **larger** than the initial one

MPC

the fraction of extra income that is spent

MPS

the fraction saved – and $MPC + MPS = 1$

the spending multiplier

$$\frac{1}{1 - MPC} = \frac{1}{MPS}$$

the tax multiplier

$-\frac{MPC}{MPS}$ – **smaller in size** and opposite in sign, because part of a tax cut is saved

potential output

the full-employment level the economy self-adjusts toward

Computing both multipliers from the MPC and finding the resulting change in real GDP is **almost a guaranteed question**. The debate over how *fast* self-adjustment happens is the case for or against active policy.

Exam tips

- Aggregate demand slopes down for the wealth, interest-rate, and net-export effects; it **shifts** when C , I , G , or X_n changes.
- Compute the **spending multiplier** $\frac{1}{1-MPC}$ and the smaller, negative **tax multiplier** $-\frac{MPC}{1-MPC}$.
- Draw a correctly labeled AD–AS graph, identify a recessionary or inflationary gap, and prescribe the right fiscal action.
- Short-run AS slopes up (sticky wages); long-run AS is **vertical** at full-employment output.
- Size a policy with the multipliers: required spending = gap $\div$ spending multiplier.



Unit 3 – key takeaways

1

AD & AS

AD down (3 effects); SRAS up (sticky wages); LRAS vertical at potential

2

Multiplier

$1/(1 - MPC)$; tax multiplier smaller and negative

3

Shocks

AD shift moves P and Y together; supply shock moves them apart

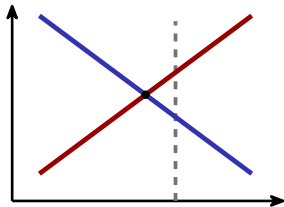
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Policy

expansionary for recession, contractionary for inflation; stabilizers act alone

Check yourself

- 1 With $MPC = 0.8$, what is the spending multiplier?
- 2 Which curve is vertical, and at what output?
- 3 A supply shock: which way do P and Y move?
- 4 To close a recessionary gap, which fiscal policy?



Answers 1. 5 2. LRAS, at potential output 3. opposite ways (stagflation) 4. expansionary