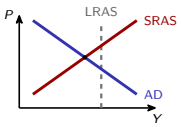
National Income & Price Determination

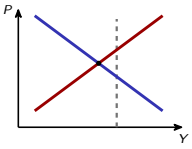
AP Macroeconomics ▪ Unit 3

AP Macroeconomics



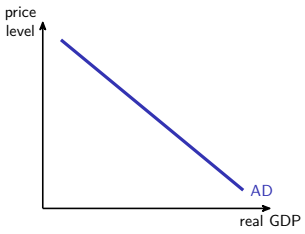
What we will cover

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



1 Aggregate demand

Aggregate demand slopes down

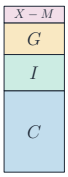


Aggregate demand 总需求: total output all buyers want at each price level. It slopes down for three economy-wide reasons:

- **wealth effect** 财富效应 – money held is worth more
- **interest-rate effect** 利率效应 – more lending, cheaper borrowing
- **exchange-rate effect** 汇率效应 – weaker currency lifts net exports

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

Aggregate demand is total spending



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

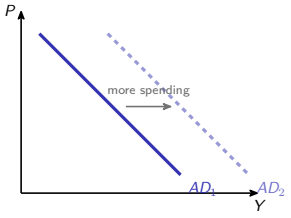
What shifts AD?

Four spending components

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

consumption, investment, government, net exports.

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



2 The multiplier

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 ($MPC = 0.75$)

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

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

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.

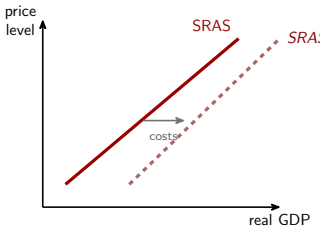
The two propensities, and the multipliers

Marginal propensity to consume	The **marginal propensity to consume** 边际消费倾向 (MPC) is the fraction of each extra dollar of income that is spent.
Marginal propensity to save	The **marginal propensity to save** 边际储蓄倾向 (MPS) is the rest: MPC + MPS = 1.
Spending multiplier	$\frac{1}{1-\text{MPC}} = \frac{1}{\text{MPS}}$ – the total change in output from one dollar of new spending.
Tax multiplier	$\frac{-\text{MPC}}{\text{MPS}}$: 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.

3 Aggregate supply

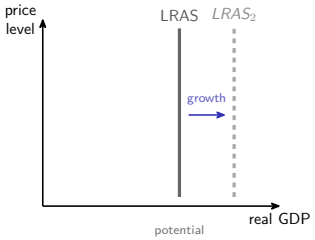
Short-run aggregate supply



In the short run some costs are **sticky** 粘性 – above all **nominal wages** 名义工资. A higher price level with fixed wages ⇒ more profit per unit ⇒ more output. So SRAS slopes up. Shifters: input prices, **productivity** 生产率, **supply shocks** 供给冲击.

- higher costs ⇒ shift left
- better productivity ⇒ shift right

Long-run aggregate supply



In the long run wages and prices are **fully flexible** 完全灵活, so output settles at **potential GDP** 潜在 GDP – the **full-employment output** 充分就业产出. LRAS is vertical: the same real output at any price level.

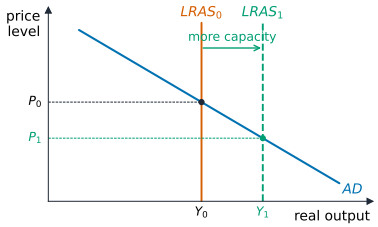
More resources, capital, or better technology shift LRAS right – that is **economic growth** 经济增长.

Potential output, and the curve that shows it

Full-employment output	**Full-employment (potential) output** 充分就业产出 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)** 生产可能性曲线 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.

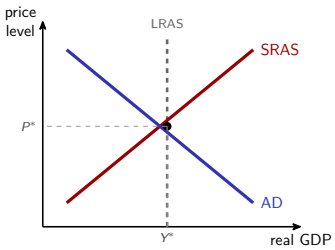
Supply-side policy shifts long-run aggregate supply



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

4 Equilibrium & gaps

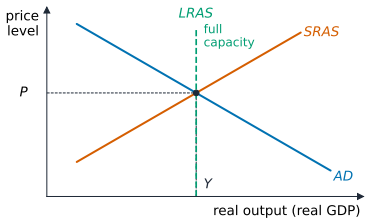
AD–AS equilibrium



Short-run equilibrium 短期宏观经济均衡 is where AD crosses SRAS. Read the price level and real output straight off the axes.

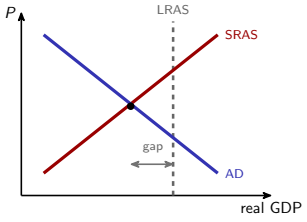
Compare Y^* with LRAS (potential): on it = full employment; left = recessionary gap; right = inflationary gap.

Equilibrium in the AD-AS Model



Macroeconomic equilibrium where aggregate demand meets aggregate supply

Recessionary vs inflationary gap



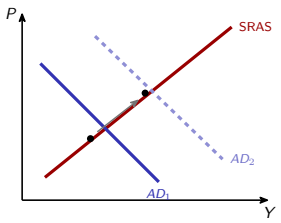
The **output gap** 产出缺口 is the distance from Y^* to LRAS.

- Y^* below potential – **recessionary gap** 衰退缺口, high unemployment
- Y^* above potential – **inflationary gap** 通货膨胀缺口, prices pushed up

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

5 Shocks

A shift in AD – demand-pull inflation

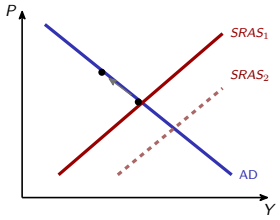


AD shifts right (more confidence, a tax cut, more G). Along SRAS the crossing rises:

- price level rises – **demand-pull inflation** 需求拉动型通货膨胀
- real output rises, unemployment falls

An AD shift moves price and output the same way.

A supply shock – stagflation



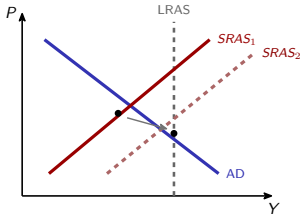
A negative supply shock (oil jumps) shifts SRAS left. Along AD:

- price level rises
- real output falls, unemployment rises

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

6 Self-adjustment & policy

Long-run self-adjustment



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

- recessionary gap: high unemployment ⇒ wages fall ⇒ SRAS right
- inflationary gap: scarce labour ⇒ wages rise ⇒ SRAS left

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

Fiscal policy

Fiscal policy 财政政策: the government uses spending and taxes to steer AD.

Expansionary: raise G / cut T ⇒ AD right (for a recessionary gap)

Contractionary: cut G / raise T ⇒ AD left (for an inflationary gap)

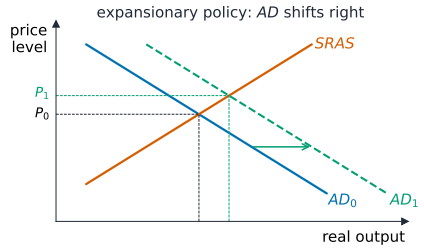
Worked example

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 自动稳定器 dampen the business cycle with no new law:

- **Progressive taxes** 累进税: collect more in booms, less in slumps
- **Transfer payments** 转移支付: benefits rise automatically in a recession

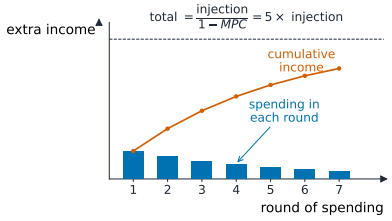
Automatic: instant, built into law – no **legislative lag** 立法时滞.

Discretionary 相机抉择: 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 边际消费倾向	the fraction of extra income that is spent
MPS 边际储蓄倾向	the fraction saved – and MPC + MPS = 1
the spending multiplier	$\frac{1}{1-\text{MPC}} = \frac{1}{\text{MPS}}$
the tax multiplier	$-\frac{\text{MPC}}{\text{MPS}}$ – smaller in size and opposite in sign, because part of a tax cut is saved
potential output 潜在产出	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 ÷ spending multiplier.

7 Recap

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

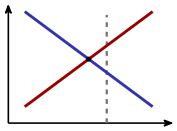
AD shift moves P and Y together; supply shock moves them apart

4 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