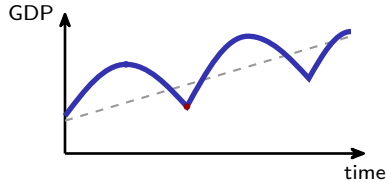


Economic Indicators & the Business Cycle

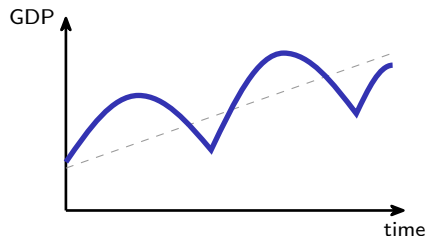
AP Macroeconomics ■ Unit 2

AP Macroeconomics



What we will cover

- 1 GDP and the circular flow
- 2 Limitations of GDP
- 3 Unemployment
- 4 Price indices and inflation
- 5 The costs of inflation
- 6 Real vs nominal GDP
- 7 The business cycle



1

GDP & circular flow

GDP: one number for total output

Gross domestic

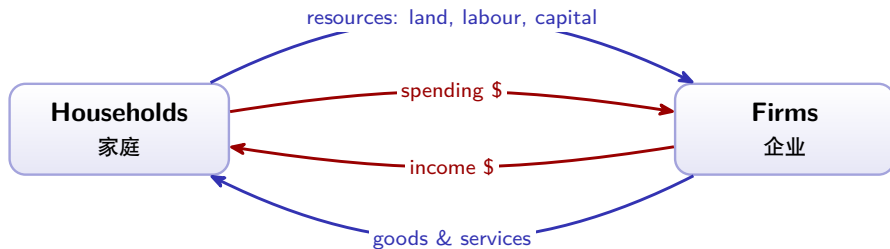
product 国内生产总值 is the **market value** of all **final goods** 最终产品 and services produced inside a country in one year. Three ways to measure it – all must give the same answer:

- **expenditure** – add up all spending
- **income** – add up all incomes
- **value added** – add up value at each stage



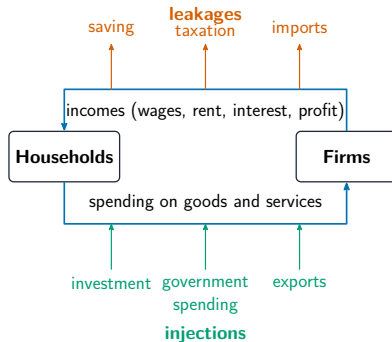
GDP totals the value of a year's output

The circular flow model



Every dollar spent is a dollar earned, so **total spending = total income**.

The circular flow of income



The circular flow of income, with its leakages and injections

The circular flow, and the four spending categories

Circular-flow model

The **circular-flow model** 循环流量模型: households supply factors and buy goods; firms buy factors and sell goods. One side's spending is the other's income.

Consumption and investment

C is household spending; I is firms' spending on capital, plus new housing and inventory changes.

Government purchases

Government purchases 政府购买 G counts spending on goods and services – *not* transfer payments, which buy nothing new.

Net exports

$X - M$. Imports are subtracted because they were produced elsewhere, so $GDP = C + I + G + (X - M)$.

Gross domestic product (GDP) 国内生产总值 is the market value of all *final* goods and services produced within a country in a year.

Measuring GDP by spending

The expenditure approach

$$\text{GDP} = C + I + G + (X - M)$$

consumption, investment, government, net exports. Subtract imports M – made abroad.

Left out on purpose:

- **intermediate goods** 中间产品 – avoid double-counting
- **used goods** 二手商品 – counted when new
- **stocks & bonds** – nothing new made

Worked example (\$b)

$$C = 700, \quad I = 200, \quad G = 300, \\ X = 150, \quad M = 100.$$

$$\text{GDP} = 700 + 200 + 300 + (150 - 100)$$

$$= 1,250 \text{ billion}$$

Net exports $(X - M) = +50$: sold more abroad than bought.

2

Limitations of GDP

What GDP misses

Nonmarket 非市场: home cooking, volunteering – unpaid, so uncounted

Underground 地下经济: hidden work escapes the figures

Externalities 外部性: pollution lowers well-being, not GDP

GDP measures **output**, not well-being – it ignores leisure and the **distribution of income** 收入分配.

To compare living standards, use **GDP per capita** 人均国内生产总值

$$= \frac{\text{GDP}}{\text{population}}.$$

A huge total can still hide a low average.

What the measures leave out

The underground economy

The **underground economy** 地下经济 – unreported and illegal activity – is real output that no figure records.

Non-market production

Housework, childcare and volunteering produce value and are never counted.

The CPI

The **consumer price index (CPI)** 消费者价格指数 prices a fixed basket, so it overstates inflation when buyers substitute away from what got dearer.

Distribution

GDP per head is a mean. It says nothing about who received the income.

Each limitation has a direction. Say whether the measure *over* or *under* states, and why.

3

Unemployment

Measuring unemployment

Labour force 劳动力 = employed + unemployed (actively looking).

$$\text{unemployment rate} = \frac{\text{unemployed}}{\text{labour force}} \times 100$$

$$\text{participation rate} = \frac{\text{labour force}}{\text{working-age pop.}} \times 100$$

Discouraged workers 灰心工人 quit looking – so they leave the labour force and the rate looks **lower**.



Only those looking count as unemployed

Three types of unemployment

Frictional

摩擦性

between jobs;
normal and healthy

Structural

结构性

skills or location no
longer match jobs

Cyclical

周期性

caused by a down-
turn in demand

Natural rate 自然失业率 = frictional + structural (cyclical = 0). At **full employment** 充分就业 the actual rate equals the natural rate – not zero.

The natural rate, and the business cycle

The natural rate

The **natural rate of unemployment** 自然失业率 is frictional plus structural – what remains at full employment.

Cyclical

Cyclical unemployment is the extra caused by a downturn, and it is the only kind demand policy removes.

Contraction/recession

A **contraction/recession** 收缩/衰退 is falling real output; the trough, then expansion, then peak complete the cycle.

The link

Actual unemployment above the natural rate means a recessionary gap; below it, an inflationary one.

Full employment does not mean zero unemployment. It means unemployment at the natural rate.

4

Inflation

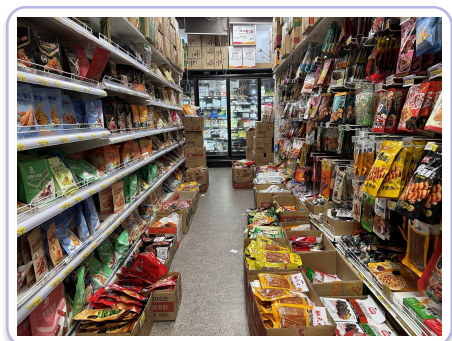
The price level and the CPI

Three words for how the **general price level** 一般价格水平 moves:

- **inflation** 通货膨胀 – prices **rising**
- **deflation** 通货紧缩 – prices **falling**
- **disinflation** 反通货膨胀 – still rising, but *slower*

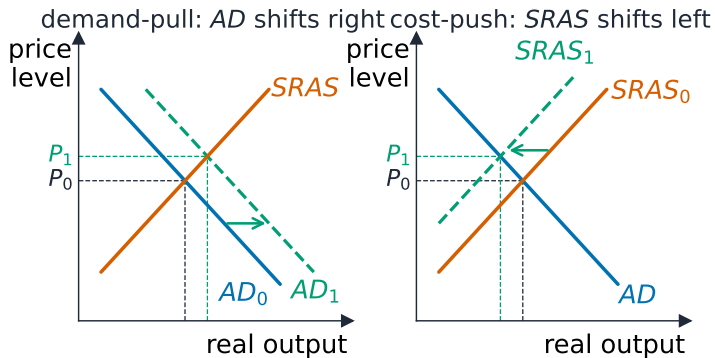
The **CPI** 消费者价格指数 prices a **fixed basket** of goods each period.

$$\text{index} = \frac{\text{basket cost now}}{\text{basket cost in base year}} \times 100$$



The CPI tracks a fixed consumer basket

Price Indices and Inflation



Demand-pull and cost-push inflation on the AD-AS diagram

Reading the CPI – and its bias

Worked example

A basket costs 400 in the base year, 440 now.

$$\text{index} = \frac{440}{400} \times 100 = 110$$

$$\text{inflation} = \frac{110-100}{100} \times 100 = 10\%$$

The CPI can be a **biased** 有偏差 measure of the true cost of living:

- **substitution** 替代 – shoppers switch to cheaper goods, but the fixed basket does not
- **quality change** 质量变化 – a better phone at the same price is really cheaper

5

Costs of inflation

Who inflation hurts

Surprise (**unanticipated** 未预期到的)
inflation **redistributes purchasing power**:

Borrowers gain

repay with cheaper money

Lenders lose

repaid dollars buy less

Anticipated 预期到的 inflation is planned for –
far less harmful.

Real running costs on everyone:

- **menu costs** 菜单成本 – reprinting prices
- **shoe-leather costs** 皮鞋成本 – extra trips to the bank
- **erodes** savings and fixed **pension** 养老金 incomes

Hyperinflation 恶性通货膨胀 (> 50%/month) can make people abandon money for barter.

6

Real vs nominal

Real vs nominal GDP

GDP can rise because output grew *or* because prices rose. Split them:

- **nominal GDP** 名义国内生产总值 – at **current** prices (mixes both)
- **real GDP** 实际国内生产总值 – at **constant** base-year prices (output only)

Real GDP is the true measure of how output changes over time.

The GDP deflator

$$\text{deflator} = \frac{\text{nominal GDP}}{\text{real GDP}} \times 100$$

Worked example (\$b)

Nominal = 1,320, deflator = 110:

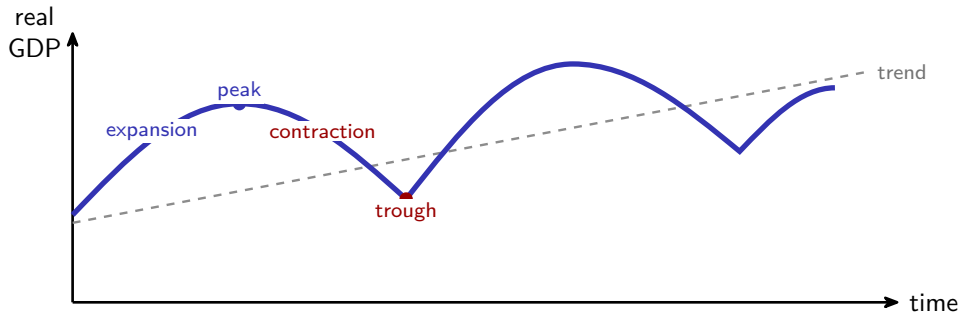
$$\text{real} = \frac{1,320}{110} \times 100 = 1,200$$

Output grew 20%, not the 32% nominal.

7

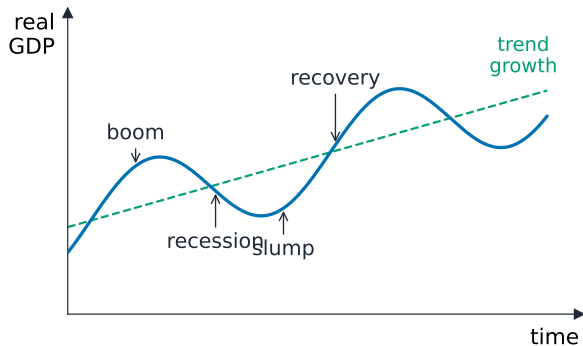
Business cycle

The business cycle



Four phases: **expansion** → **peak** → **contraction (recession)** → **trough**. A recession is often *two quarters* of falling real GDP.

The four measures at a glance



- Compute GDP by the expenditure method $C + I + G + X_n$ and count only **final** goods (avoid double counting).
- Unemployment rate = unemployed $\div$ labor force; discouraged workers leave the labor force (so the rate can understate joblessness).
- Know the three unemployment types (frictional, structural, cyclical) and that the natural rate excludes cyclical.
- Inflation is the % change in the CPI; convert nominal to **real** with a price index and always use real GDP for growth.

Output gaps

Compare actual output to **potential output** 潜在产出 (real GDP at full employment):

$$\text{output gap} = \text{actual} - \text{potential}$$

- **recessionary gap** 衰退缺口: actual **below** potential – running cold
- **inflationary gap** 通货膨胀缺口: actual **above** potential – running hot

Worked example (\$b)

Potential = 1,200, actual = 1,140:

$$\text{gap} = 1,140 - 1,200 = -60$$

A recessionary gap – idle workers and factories, a case for **stabilization policy** 稳定政策.

Limitations of GDP

GDP per capita **shows**

- ✓ average income
- ✓ output of the economy
- ✓ growth over time
- ✓ a rough living standard

but it **misses**

- ✗ how income is distributed
- ✗ unpaid and informal work
- ✗ pollution and resource use
- ✗ leisure, health, wellbeing

a higher GDP per capita usually means a better life - but not always

GDP per capita shows average output but misses distribution, unpaid work, and more

Unemployment

frictional
short-term,
between
jobs

structural
skills no longer
match the jobs

cyclical
low demand in
a recession

Three types of unemployment: frictional, structural, and cyclical

Exam tips

- Compute GDP by the expenditure method $C + I + G + X_n$ and count only **final** goods (avoid double counting).
- Unemployment rate = unemployed $\div$ labor force; discouraged workers leave the labor force (so the rate can understate joblessness).
- Know the three unemployment types (frictional, structural, cyclical) and that the natural rate excludes cyclical.
- Inflation is the % change in the CPI; convert nominal to **real** with a price index and always use real GDP for growth.
- Place events on the business cycle (expansion $\rightarrow$ peak $\rightarrow$ contraction $\rightarrow$ trough).

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Recap

Unit 2 – key takeaways

1

GDP

market value of final output;
spending = income = value
added

2

Unemployment

labour force = employed + looking;
natural rate at full employment

3

Inflation

CPI prices a fixed basket; real
GDP strips price changes out

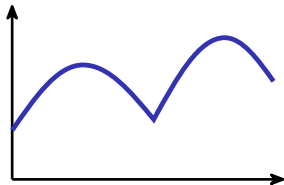
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Business cycle

expansion, peak, contraction,
trough; watch the output gap

Check yourself

- 1 In $C + I + G + (X - M)$, why subtract M ?
- 2 Which unemployment type rises in a recession?
- 3 Nominal GDP up on higher prices only – what is real GDP?
- 4 Actual GDP below potential – which gap?



Answers 1. imports are made abroad 2. cyclical 3. unchanged 4. recessionary gap