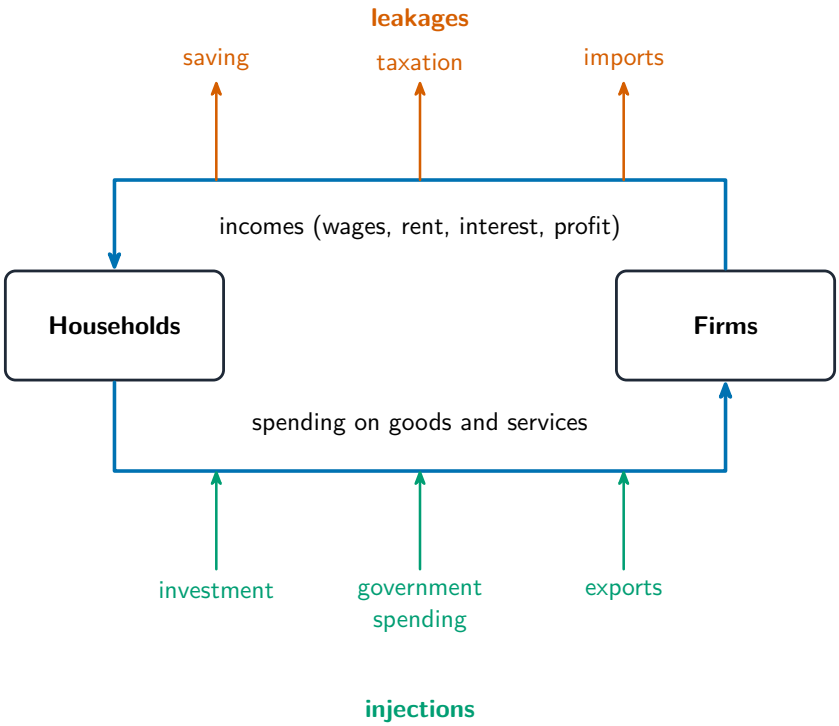
Economic Indicators and the Business Cycle

AP Macroeconomics

The Circular Flow and GDP

The **circular-flow model** 循环流动模型 shows money moving between **households** and **firms**: households supply factors and earn income; firms sell goods and earn revenue. Every dollar of spending is someone's income, which is why output and income are two sides of the same total.



The circular flow of income, with its leakages and injections

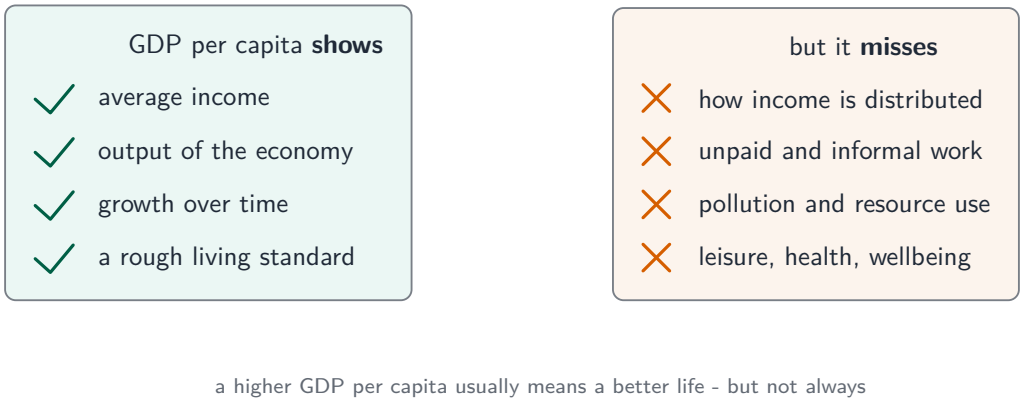
Gross domestic product (GDP) 国内生产总值 is the market value of all **final** goods and services produced **within a country** in a year. Three ways to measure it give the same number:

- **Expenditure approach:** $GDP = C + I + G + X_n$ –**consumption** 消费, **investment** 投资 (business spending on capital, plus new housing and inventory), **government purchases** 政府购买, and **net exports** 净出口 (exports minus imports).
- **Income approach:** add up all wages, rent, interest, and profit.

Exclude intermediate goods (avoid double counting), used goods, purely financial transactions, and transfer payments.

Limitations of GDP

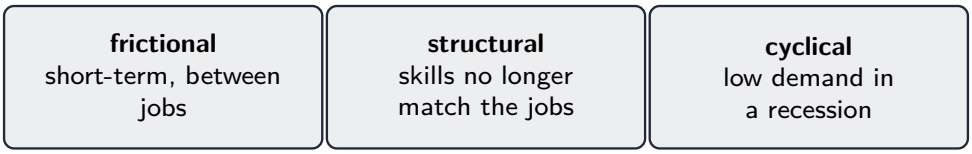
GDP measures market output, not well-being. It **omits** non-market production (unpaid housework, volunteering), the **underground economy** 地下经济, leisure, and the **distribution** of income, and it ignores **environmental** damage and resource depletion. So a higher GDP does not automatically mean a better standard of living. **GDP per capita** (GDP ÷ population) is a better welfare proxy than total GDP.



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

Unemployment

The **labor force** 劳动力 is the employed plus the **unemployed** (those without work who are actively looking). People not looking are **not** in the labor force.



Three types of unemployment: frictional, structural, and cyclical

$$\text{Unemployment rate} = \frac{\text{unemployed}}{\text{labor force}} \times 100\%, \qquad \text{Labor-force participation} = \frac{\text{labor force}}{\text{working-age population}} \times 100\%.$$

Worked example. A country has 150 million employed and 10 million unemployed (actively looking), with 40 million working-age adults not looking. The labor force is $150 + 10 = 160$ million, so the unemployment rate is $\frac{10}{160} = 6.25\%$ and the participation rate is $\frac{160}{200} = 80\%$.

Three types of unemployment:

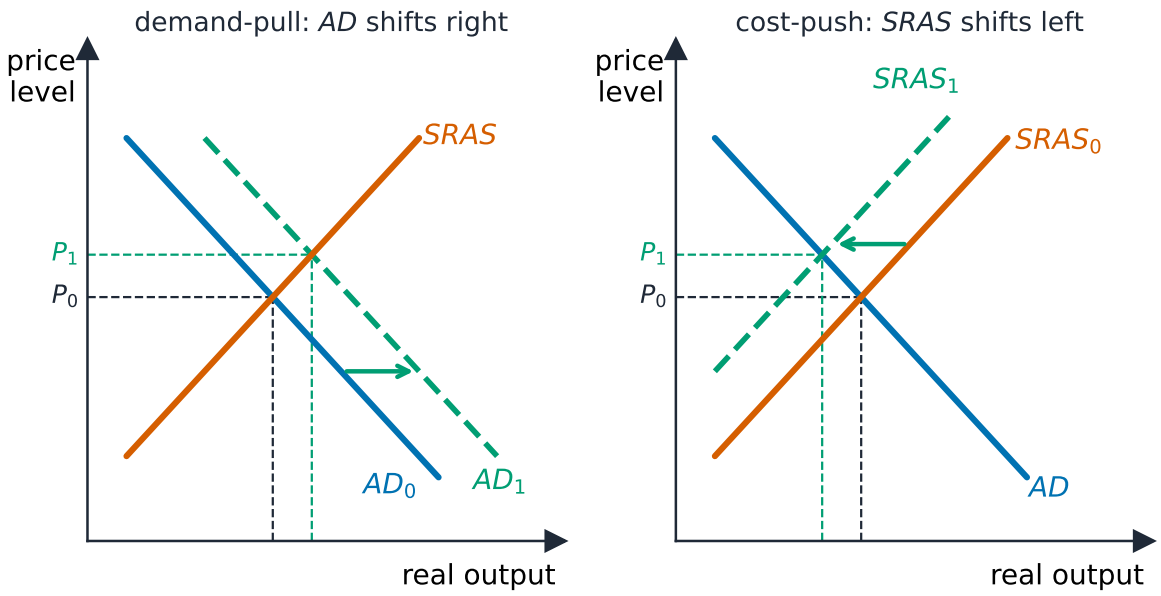
- **Frictional** 摩擦性失业: between jobs or searching for a first job (normal, short).

- **Structural** 结构性失业: skills or location don't match available jobs (technology, trade).
- **Cyclical** 周期性失业: caused by a recession (a downturn in the business cycle).

Frictional + structural make up the **natural rate of unemployment** 自然失业率. At the natural rate cyclical unemployment is zero and the economy is at **full employment** 充分就业. The rate understates joblessness because it omits **discouraged workers** 灰心工人 and the **underemployed**.

Price Indices and Inflation

Inflation 通货膨胀 is a sustained rise in the average price level. It is measured with a **price index** 价格指数, most often the **consumer price index (CPI)** 消费者价格指数, built from a fixed **market basket** of goods a typical household buys:



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

$$CPI = \frac{\text{cost of basket this year}}{\text{cost of basket in base year}} \times 100.$$

The **inflation rate** is the percent change in the index between two years. **Deflation** 通货紧缩 is a falling price level; **disinflation** is a slowing of inflation.

Worked example. If the CPI is 200 this year and was 190 last year, the inflation rate is $\frac{200-190}{190} \times 100\% = 5.3\%$. A basket that cost \$190 then costs \$200 –the same goods, more dollars.

Costs of Inflation

Inflation redistributes and distorts:

- It **hurts lenders and savers** and **helps borrowers** when it is unexpected, because loans are repaid in cheaper dollars. It erodes the value of money and fixed incomes.
- **Menu costs** and uncertainty discourage investment.
- **Anticipated** inflation is less harmful because contracts and interest rates adjust for it. This is why we separate **nominal** and **real** values.

Real v. Nominal GDP

- **Nominal GDP** 名义 GDP is valued at **current** prices, so it rises with both output and prices.
- **Real GDP** 实际 GDP is valued at **constant** (base-year) prices, stripping out inflation, so it reflects true output. Real GDP is the honest measure of growth.

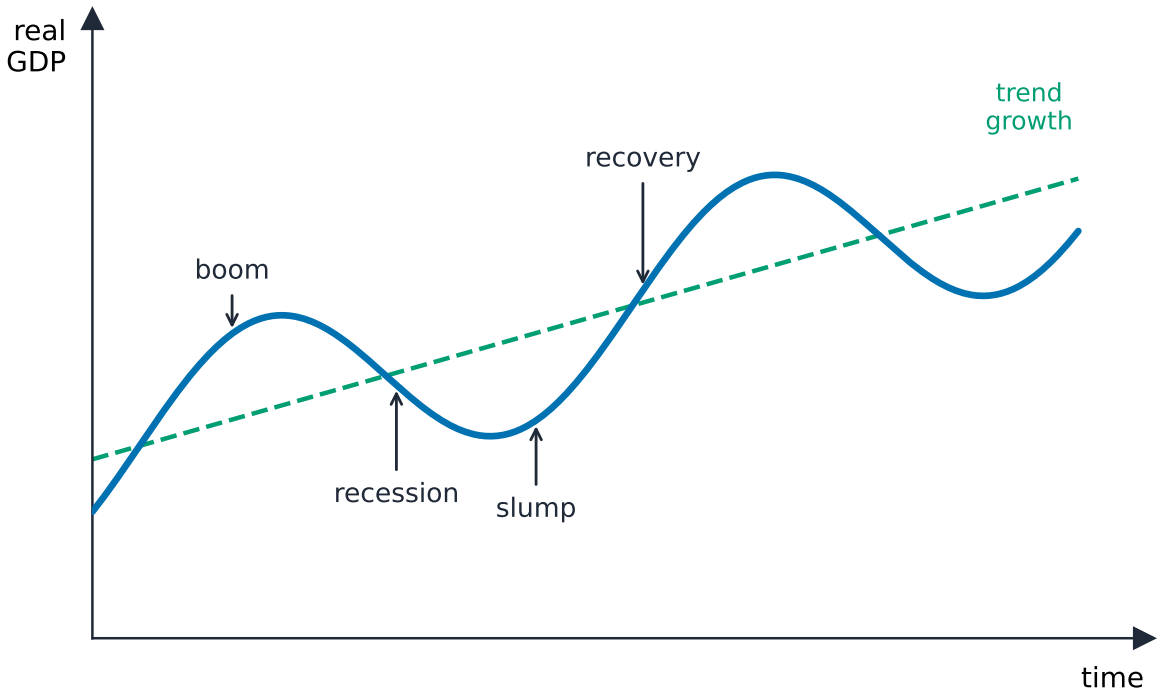
$$\text{Real GDP} = \frac{\text{Nominal GDP}}{\text{price index}} \times 100, \qquad \text{GDP deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100.$$

Worked example. Nominal GDP is \$22 trillion and the GDP deflator is 110. Real GDP is $\frac{22}{110} \times 100 = \$20$ trillion. The extra \$2 trillion of nominal GDP is pure price rise, not real output –which is why growth is always measured with **real** GDP.

Exam skill: be fluent converting nominal to real using a price index, and computing an inflation rate or a growth rate as a percent change.

Business Cycles

The **business cycle** 经济周期 is the economy's short-run ups and downs in real GDP around its long-run growth trend: **expansion** 扩张 (rising output, falling unemployment) up to a **peak** 顶峰, then **contraction/recession** 衰退 (falling output, rising cyclical unemployment) down to a **trough** 谷底, then **recovery**. A recession is commonly two consecutive quarters of falling real GDP. Unemployment and inflation move roughly opposite over the cycle –the tension the rest of the course tries to manage.



Real GDP swinging around its long-run trend

Exam tips

- Compute GDP by the expenditure method $C + I + G + X_n$ and count only **final** goods (avoid double counting).
- Unemployment rate = unemployed ÷ 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 → peak → contraction → trough).