Who pays for the deficit?

Real and nominal rates, the market where savers meet borrowers, and how a deficit crowds out private investment.

1 Real or nominal

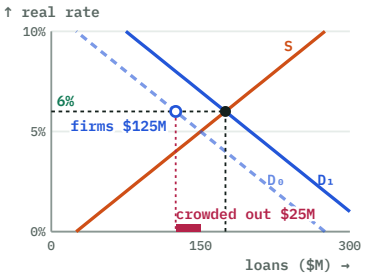
what a loan really costs

- **Nominal rate** = rate written on the loan, in dollars · **real rate** = what it earns in goods
- `real ≈ nominal − inflation` · 7% − 3% = **4%** · 9% − 4% = **5%**
- Inflation **higher** than expected ⇒ real rate lower than planned (9% − 6% = 3%, not 5%) ⇒ **borrower gains**, lender loses · lower than expected ⇒ the reverse

2 Loanable funds

savers meet borrowers

- **S** = saving of families, firms, government ⇒ rate ↑ ⇒ saving ↑ (slopes up)
- **D** = borrowing to invest (firms, government) ⇒ rate ↑ ⇒ fewer projects pay (slopes down)
- Shed $100,000 earning $6,000/yr ⇒ pays at 5% ($5,000), not at 7% ($7,000)
- Price = **real interest rate** · S = D: Coralia **5%, $150M** = the investment in GDP (GDP = value of all goods and services made, Lesson 1)



3 Crowding out

deficit ⇒ D right

- **Deficit** = spending − taxes = $200M − $150M = **$50M** ⇒ government sells bonds (IOUs that pay interest) ⇒ new borrower
- Chain: deficit ⇒ **D right** ⇒ rate ↑ (5% → 6%) ⇒ loans $175M ⇒ private firms (on D_0) borrow **$125M** ⇒ **$25M crowded out**
- Deficit $100M ⇒ 7%, $200M loans, private $100M, crowded out $50M
- Same deficit as **public saving** = taxes − spending = −$50M ⇒ **S left** ⇒ same 6%, $125M

4 Saving shifts

S moves, D moves

SHIFT	RATE	LOANS	INVESTMENT
S right +50 (save more)	5% → 4%	$175M	↑ $175M
S left −50 (save less)	5% → 6%	$125M	↓ $125M
D right +50 (deficit)	5% → 6%	$175M	private ↓ $125M
D +50 and S +50	5%	$200M	private $150M

- Two shifts at once, **both right** ⇒ loans surely ↑ · rate ↑, ↓ or = depending on **which shift is bigger**
- Who is S / D? Deposit, bond buyer ⇒ S · hotel loan, boatyard, government bonds ⇒ D

5 Deficit vs debt

flow vs stock

- **Deficit** = one year's gap (flow) · **debt** = all past deficits − surpluses (stock)
- Debt $400M + deficit $50M = **$450M** · balanced budget ⇒ debt stays · **surplus** needed to shrink it

6 Why it matters

capital and growth

- Investment ↓ ⇒ less **capital** (machines, buildings, tools) ⇒ less output tomorrow ⇒ slower growth (Lesson 10)
- Crowding out ⇒ AD (aggregate demand = total spending) rises by **less** than the multiplier says (Lesson 5: $100M spending → $500M income)
- Depends: spending on a harbor or school is capital too · in a deep recession (output falling) idle savings ⇒ crowding out small
- Real case: US 2020 ⇒ deficit ~15% of GDP, yet rates fell ⇒ saving jumped too (S right > D right)
- Watch out: deficit ≠ debt · real rate ≠ nominal rate · D moves right, **not** along D · private firms stay on D_0