



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

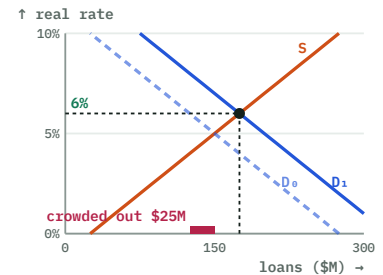
- **Nominal rate** = rate written on the loan, in dollars · **real rate** = what it earns in goods
- $\text{real} \approx \text{nominal} - \text{inflation}$ · $7\% - 3\% = 4\%$ · $9\% - 4\% = 5\%$
- Inflation **higher** than expected $\Rightarrow$ real rate lower than planned ($9\% - 6\% = 3\%$, not 5%) $\Rightarrow$ **borrower gains**, lender loses · lower than expected $\Rightarrow$ the reverse

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Loanable funds

savers meet borrowers

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



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Crowding out

deficit $\Rightarrow$ D right

- **Deficit** = spending – taxes = \$200M – \$150M = **\$50M** $\Rightarrow$ government sells bonds $\Rightarrow$ new borrower
- Chain: deficit $\Rightarrow$ **D right** $\Rightarrow$ rate $\uparrow$ (5% $\rightarrow$ 6%) $\Rightarrow$ loans \$175M $\Rightarrow$ private firms (on D_0) borrow **\$125M** $\Rightarrow$ **\$25M crowded out**
- Deficit \$100M $\Rightarrow$ 7%, \$200M loans, private \$100M, crowded out \$50M
- Same deficit as **public saving** = taxes – spending = $-\$50M \Rightarrow$ **S left** $\Rightarrow$ same 6%, \$125M

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Saving shifts

S moves, D moves

SHIFT	RATE	LOANS	INVESTMENT
S right +50 (save more)	5% $\rightarrow$ 4%	\$175M	$\uparrow$ \$175M
S left -50 (save less)	5% $\rightarrow$ 6%	\$125M	$\downarrow$ \$125M
D right +50 (deficit)	5% $\rightarrow$ 6%	\$175M	private $\downarrow$ \$125M
D +50 and S +50	5%	\$200M	private \$150M

- Two shifts at once $\Rightarrow$ loans surely change one way · rate depends on **which shift is bigger**
- Who is S / D? Deposit, bond buyer $\Rightarrow$ S · hotel loan, boatyard, government bonds $\Rightarrow$ D

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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 $\Rightarrow$ debt stays · **surplus** needed to shrink it

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Why it matters

capital and growth

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