Who sets the interest rate?

The money market, buying and selling bonds, the interest on reserves, and how a rate cut reaches GDP.

1 Demand for money

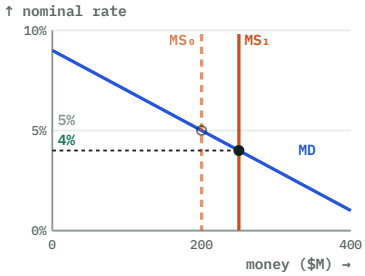
why hold cash?

- Cash pays **0** · a bond pays interest ⇒ cost of holding $100 = **nominal rate** (not corrected for inflation) × $100 (5% ⇒ $5 a year)
- Rate ↑ ⇒ people hold **less** cash ⇒ **MD slopes down** · at 7% only $100M wanted
- MD shifts **right** when price level ↑ or real GDP ↑ (more shopping) · left when they fall

2 Money market

where the rate settles

- **MS** = money supply, chosen by the Bank (Bank of Coralia = central bank) ⇒ **vertical** (does not depend on the rate)
- **MD = MS** ⇒ equilibrium rate: Coralia $200M ⇒ **5%**
- Rate above 5% ⇒ too much cash ⇒ people buy bonds ⇒ rate ↓ back to 5%



3 Open-market operations

buy / sell bonds

BANK	MONEY	MS	RATE
buys $50M of bonds	+ new money	$250M	5% → 4%
sells $50M of bonds	– money leaves	$150M	5% → 6%
sells, and MD +$50M	MD right	$150M	7%

- **Bond**: `rate = yearly payment ÷ price` · $50 ÷ $1,000 = 5% · $50 ÷ $1,250 = **4%** · $60 ÷ $750 = 8%
- Bank buys ⇒ price ↑ ⇒ rate ↓ · Bank sells ⇒ price ↓ ⇒ rate ↑ · **opposite moves**

4 Today's toolkit

ample reserves

- **IOR** (interest on reserves) 4% = floor: no bank lends below what the Bank pays · **discount rate** 5% = ceiling: no bank pays more than the Bank charges
- Market rates stay between **4% and 5%** ⇒ move the two rates, all rates follow
- Reserves plentiful ($325M) ⇒ demand is **flat at the IOR** ⇒ buying bonds does **little** · IOR 4% → 3% ⇒ rate **3%** · IOR 4% → 6% (discount rate up too) ⇒ rate 6%

5 Rate to GDP

the chain

- **Expansionary**: buy bonds, cut IOR / discount rate ⇒ rate ↓ ⇒ loans cheaper ⇒ investment and consumption ↑ ⇒ **AD right** (AD = aggregate demand, total spending) ⇒ real GDP and prices ↑
- **Contractionary**: sell bonds, raise IOR / discount rate ⇒ rate ↑ ⇒ spending ↓ ⇒ **AD left**
- Each point off the rate ⇒ AD **$40M** · recession $960M, price level 90: rate 5% → 3% ⇒ **$1,000M at 100** · boom $1,040M at 110 ⇒ sell bonds, rate ↑

6 Who decides

and watch out

- Monetary policy = **central bank** (money, rates) · fiscal policy = government (taxes, spending, Lesson 5)
- The Bank acts in a day · a new rate takes **months** to change spending
- Real case: US 2022–23 ⇒ prices +9% ⇒ Fed (US central bank) rate ~0% → over 5% ⇒ inflation ~3% (rates and fading supply problems)
- Watch out: buying bonds **lowers** the rate · bond price ↑ ⇒ rate ↓ · MS is vertical: the rate moves **along** MD · ample reserves ⇒ steer with the IOR