



Who sets the interest rate?

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

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Demand for money

why hold cash?

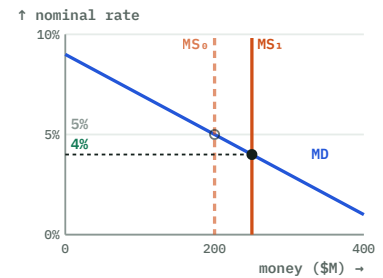
- Cash pays **0** · a bond pays interest $\Rightarrow$ cost of holding \$100 = **nominal rate** $\times$ \$100 (5% $\Rightarrow$ \$5 a year)
- Rate $\uparrow \Rightarrow$ people hold **less** cash $\Rightarrow$ **MD slopes down** · at 7% only \$100M wanted
- MD shifts **right** when price level $\uparrow$ or real GDP $\uparrow$ (more shopping) · left when they fall

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Money market

where the rate settles

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



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Open-market operations

buy / sell bonds

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

- **Bond:** $\text{rate} = \text{yearly payment} \div \text{price}$ · \$50 $\div$ \$1,000 = 5% · \$50 $\div$ \$1,250 = **4%** · \$60 $\div$ \$750 = 8%
- Bank buys $\Rightarrow$ price $\uparrow \Rightarrow$ rate $\downarrow$ · Bank sells $\Rightarrow$ price $\downarrow \Rightarrow$ rate $\uparrow$ · **opposite moves**

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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%** $\Rightarrow$ move the two rates, all rates follow
- Reserves plentiful (\$325M) $\Rightarrow$ demand is **flat at the IOR** $\Rightarrow$ buying bonds does **little** · IOR 4% $\rightarrow$ 3% $\Rightarrow$ rate **3%** · IOR 4% $\rightarrow$ 6% $\Rightarrow$ rate 6%

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Rate to GDP

the chain

- **Expansionary:** buy bonds, cut IOR / discount rate $\Rightarrow$ rate $\downarrow \Rightarrow$ loans cheaper $\Rightarrow$ investment and consumption $\uparrow \Rightarrow$ **AD right** $\Rightarrow$ real GDP and prices $\uparrow$
- **Contractionary:** sell bonds, raise IOR / discount rate $\Rightarrow$ rate $\uparrow \Rightarrow$ spending $\downarrow \Rightarrow$ **AD left**
- Each point off the rate $\Rightarrow$ AD **\$40M** · recession \$960M at 90: rate 5% $\rightarrow$ 3% $\Rightarrow$ **\$1,000M at 100** · boom \$1,040M at 110 $\Rightarrow$ sell bonds, rate $\uparrow$

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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 $\Rightarrow$ prices +9% $\Rightarrow$ Fed rate $\sim$ 0% $\rightarrow$ over 5% $\Rightarrow$ inflation $\sim$ 3% (rates and fading supply problems)
- Watch out: buying bonds **lowers** the rate · bond price $\uparrow \Rightarrow$ rate $\downarrow$ · MS is vertical: the rate moves **along** MD · ample reserves $\Rightarrow$ steer with the IOR