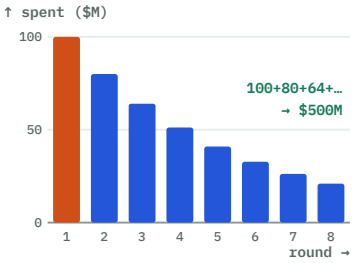
Where does a dollar go?

A government dollar is spent again and again: the multiplier, taxes, and how spending and taxes close gaps.

1 Ripple

one dollar, many rounds

- Spending = income: government pays builders $100M ⇒ builders spend ⇒ bakers earn ⇒ bakers spend… **multiplier effect**
- **MPC** (marginal propensity to consume) = share of each extra $ spent · Coralia `0.8` · **MPS** = share saved · `MPC + MPS = 1` ⇒ 0.2
- Rounds: 100 → 80 → 64 → 51.2 → … each = 0.8 × the last ⇒ total → **$500M**, not ∞ · saving = **leak**



2 Spending multiplier

government spending G

- `multiplier = 1 ÷ (1 − MPC) = 1 ÷ MPS` · ΔGDP = multiplier × ΔG
- MPC 0.8 ⇒ 1 ÷ 0.2 = **5** · $100M ⇒ $500M

MPC	MPS	MULTIPLIER	$100M ⇒
0.5	0.5	2	$200M
0.6	0.4	2.5	$250M
0.75	0.25	4	$400M
0.8	0.2	5	$500M
0.9	0.1	10	$1,000M

- MPC ↑ ⇒ multiplier ↑ · find MPC backwards: total ÷ first round = 2.5 ⇒ 1 − MPC = 1 ÷ 2.5 = 0.4 ⇒ MPC = **0.6**

3 Taxes

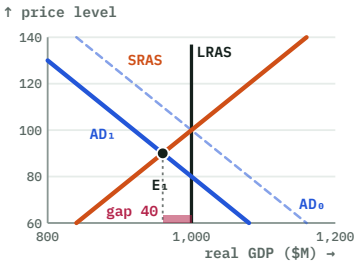
smaller than G

- Tax cut: families **save part first** ⇒ round 1 = MPC × cut (not the full cut)
- `tax multiplier = −MPC ÷ (1 − MPC)` = −0.8 ÷ 0.2 = **−4** · minus: taxes ↓ ⇒ GDP ↑ · cut $100M ⇒ 4 × 100 = **+$400M** < G: +$500M
- Example MPC 0.75: school $60M ⇒ 4 × 60 = **$240M** · tax cut $60M ⇒ 4 × (0.75 × 60 = 45) = **$180M** (multiplier −3)
- **Balanced budget**: G ↑ $100M and taxes ↑ $100M ⇒ +500 − 400 = **+$100M** · multiplier = 1

4 Closing gaps

fiscal policy on AD/AS

- **AD** = aggregate demand, all spending on the island's goods · **potential** = real GDP at full employment (LRAS)
- `RECESSIONARY GAP` real GDP < potential ⇒ **expansionary**: G ↑ or taxes ↓ ⇒ AD → · `INFLATIONARY GAP` real GDP > potential ⇒ **contractionary**: G ↓ or taxes ↑ ⇒ AD ←
- How much: `ΔG = AD shift ÷ spending multiplier` · `Δtaxes = AD shift ÷ tax multiplier`
- Tourists −80 ⇒ real GDP 960M, gap 40 · AD must go → 80 ⇒ ΔG = 80 ÷ 5 = **$16M** (more than gap ÷ 5, price level rises) · shock −40 ⇒ tax cut 40 ÷ 4 = **$10M** (or G: 40 ÷ 5 = $8M)



5 Stabilizers

no vote needed

- **Automatic stabilizers** = taxes and benefits that change by themselves with the cycle
- Recession ⇒ pay ↓ ⇒ income tax ↓ · unemployment benefits ↑ ⇒ jobless still spend ⇒ AD falls **less** · boom ⇒ the opposite
- Versus new laws (spending plans, tax changes): slow ⇒ **time lags**

6 Limits

why real ≠ formula

- **Time lags**: see the recession, vote, build ⇒ years · harbor opens late, in a boom ⇒ AD ↑ above potential ⇒ prices ↑
- **Leaks**: each round also pays taxes and buys imports ⇒ multiplier < 1 ÷ (1 − MPC)
- **Crowding out**: government borrows ⇒ interest rates ↑ (price of a loan) ⇒ firms borrow, invest ↓ ⇒ boost partly taken back (Lesson 8)
- Real case: US 2009, ~$800bn plan · estimated spending multiplier ≈ 0.5–2.5 · economists disagree
- Watch out: $100M of tax cut ≠ $100M of spending: part is saved ⇒ smaller effect · and the multiplier 5 is only the simple formula