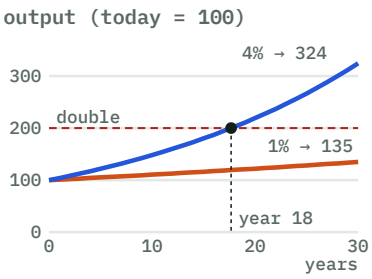
What stopped the Japanese miracle?

Rule of 70 and two growth speeds, a land bubble and the gap it leaves, balance-sheet recession, why a zero rate did not help, deflation and the real interest rate, Tokyo 1989 and the decades after, the debate, checklist sign 6.

1 Two speeds

Macroeconomics, Lesson 10

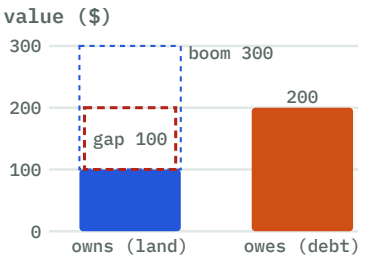
- **Rule of 70**: years to double ≈ `70 ÷ g` (g = growth rate, % a year) · a shortcut, close but not exact
- `4%` → ≈18 years · `1%` → 70 years ⇒ a quarter of the speed = four times as long
- Output index today = 100, after 30 years: 4% → **324** · 1% → **135** ⇒ same start, 4% path ends > twice as high
- Practice: `70 ÷ 3 ≈ 23` years at 3% · 46 years = two doublings → 100 → 200 → ≈**400**



2 The bubble

land up, then back

- Coralia (toy island) boom: land `$100 → $300` → bank lends **$200** against it
- Boom ends: land `$300 → $100` · debt stays **$200** ⇒ owes `200 − 100 = $100` more than it owns
- **Debt overhang** = owing more than you own after prices fall
- Practice: land 400, loan 300 → +$100 · land falls to 150 → gap `300 − 150 = $150` · $50 profit a year to the bank → `150 ÷ 50 = 3` years, nothing invested



3 The hangover

balance-sheet recession

- Every firm in the same hole → profit repays the bank, no new factory
- Central bank (bank of the government and of the banks) cuts the **interest rate** (price of a loan) to **zero** → investment (new factories, machines) still low: firms want **less** debt, not a new loan, even a free one
- **Balance-sheet recession** = a slump in which firms and families repay debt instead of spending · **Richard Koo**, Taiwanese-American economist in Tokyo
- The loop: land ↓ → firms owe more than they own → repay instead of investing → demand stays low → prices ↓ → debt heavier
- Practice: a family's house −⅓, loan the same → spends less · every family at once → demand stays low

4 Deflation

History, Lesson 3

- **Deflation** = prices falling over time → same debt, smaller sales: debt 200, sales `100 → 50` → `2 → 4` years of sales
- Prices expected lower → **waiting pays** → everyone waits → spending ↓ → prices ↓ more
- **Real interest rate** = interest rate − inflation (Personal Finance, Lesson 5) · rate 0%, prices −2% a year → `0% − (−2%) = +2%` ⇒ a "free" loan still costs
- Practice: debt 300, sales `150 → 100` → `2 → 3` years of sales

5 Japan 1989-2024

the real story

- **Nikkei 225** = index of the shares of 225 large Japanese companies · peak **38,916** on 29 Dec 1989 · ≈**−60%** by Aug 1992 (low 14,309, 18 Aug) · back above the peak 22 Feb 2024 → **34 years**
- Legend: the land under the Imperial Palace in Tokyo (home of Japan's emperor) "worth more than all of California" → a claim of the peak, not an official count
- "Miracle" = decades of very fast growth after the war · output ≈4% a year 1971-90 · output per person 1991-2000: Japan **+6%** in total, United States **+26%** ⇒ slow, not zero · a share index ≠ output
- **Bank of Japan** (Japan's central bank): its interest rate ≈**0** from Feb 1999 · prices falling · government debt ≈**240%** of GDP (2.4 years of output; IMF = International Monetary Fund, world body that tracks and lends to countries, 2023)

6 Debate, checklist

checklist sign 6

- The bubble, the debt, deflation or the choices after? Economists weigh them differently · **Spend more**: when firms repay, the government spends instead and keeps demand up · **Spend less**: adds to a debt already > 200% of output, can delay reforms that raise growth · no verdict
- **Bubble checklist** · **Sign 1 · Bought to resell** · **Sign 2 · Money is a promise** · **Sign 3 · A run fills itself** · **Sign 4 · Printing to pay** · **Sign 5 · A supply shock cuts both ways** · **Sign 6 · Debt outlives the bubble**

Watch out: the price falls, the **debt does not** · a zero rate does not help a firm that wants less debt · deflation makes debt **heavier** · 70 ÷ g, not g ÷ 70 · a crashed share index is not a shrinking economy