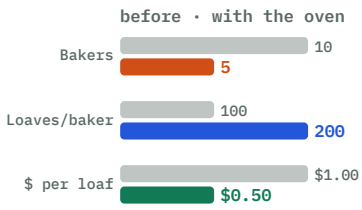
Will AI take your job?

A machine raises output per worker, the cost and the price fall, people buy more and spend the savings elsewhere, and work moves: some people lose today, others are hired later and elsewhere. AI (artificial intelligence) is the newest machine; the first studies are estimates. Question 10 of the ten to ask about any app.

1 The oven

Macro 10 · productivity

- **Productivity** = output per worker in a given time
- **Kai** (bakery on **Coralia**, toy island) · baker `$100` a day
- Before: `10 × 100 = 1,000` loaves · `$1,000 ÷ 1,000 = $1.00` a loaf
- Oven: `200` per baker → `1,000 ÷ 200 = 5` bakers · `$500 ÷ 1,000 = $0.50`
- Output per worker ×2 → wage cost per unit ÷2
- Practice, laundry (`$80` a day): `8 × 50 = 400` shirts, `$1.60` → machine `100` each → `4` workers, `$0.80`



2 The price answers

Micro 3 · elasticity

- Price follows cost: `$1.00 → $0.50` → Coralians buy `1,500` → bakers `1,500 ÷ 200 = 7.5` (fewer than 10, more than 5)
- Bread spending `1,000 × $1.00 = $1,000` → `1,500 × $0.50 = $750` → `$250` kept → spent on other things → made by **other workers**
- `ELASTIC DEMAND` buyers answer the price strongly → more units → more jobs where the machine is used · weak answer → fewer jobs there
- Practice, wash at `$0.80` : `400` shirts → `4` workers · `600` → `6` · `1,000` → `10` (> 8 before) · `$640 − $480 = $160` kept → `÷ $80 = 2` café wages → `6 + 2 = 8` jobs

3 A fixed amount of work?

the lump-of-labor fallacy

- `LUMP OF LABOR` the mistaken idea that there is a **fixed amount of work** to share (fallacy = mistaken idea)
- US farms: ≈ `4 in 10` workers (≈ 1900) → ≈ `2 in 100` (2000) → no `40%` unemployment → jobs moved
- **James Bessen** (American economist, 2015) · ATMs (cash machines) 1990 → ≈ 2010: fewer tellers (counter staff) per branch, cheaper branches → more branches → total tellers held or rose · fallen since → one period, not a law
- Pattern: fewer workers per unit → more units → new jobs elsewhere

4 The other half

Trade 2 · winners ≠ losers

- Chain: machine doubles output per worker → cheaper loaf → people buy more + spend savings elsewhere → some bakers lose jobs **today** → others hired **later, elsewhere** (not the same people)
- **Luddites**, England `1811-16` : textile workers smashed the machines → not fools: they lost their income; the economy grew, not for them, not at once
- **Daron Acemoglu** and **Pascual Restrepo** (MIT, Boston University, 2020): US areas with more industrial robots → lower employment and wages → wages for the tasks a machine does can fall while the economy grows

5 AI at work

first studies, estimates

- **Brynjolfsson, Li, Raymond** (Stanford, MIT, 2023): ≈ `5,000` support agents + AI helper → ≈ `+14%` issues an hour · **new** workers gained more
- **Noy and Zhang** (MIT, 2023): writing with a chatbot (program you type to) → ≈ `40%` less time · short test, not a job
- **Frey and Osborne** (Oxford, 2013): ≈ `47%` of US jobs at high risk → **could** be automated (done by machines), not "will vanish", debated
- **IMF** (International Monetary Fund, lender to governments, Jan 2024): ≈ `40%` of jobs worldwide **exposed** → could change, not end · **Acemoglu** (2024): ≤ ≈ `0.7%` more US productivity in ten years · others expect more
- Sort, 2026 (changes every year): `MACHINE` adding up a bill · translating a menu · spell check · sorting letters `HELPS` first draft of an email · angry customer · report summary · cover letter `PEOPLE, FOR NOW` van in a crowded city · leaking pipe · haircut · bedside care

6 So what?

all ten questions

- **Ten questions to ask about any app** · **1 · Who pays, if not you?** · **2 · How many others are on it?** · **3 · What does one more copy cost?** · **4 · What does it know about you, and what is that worth?** · **5 · Why did the price just move?** · **6 · Could a rival take its place?** · **7 · Who gets paid when you press play?** · **8 · Who carries the risk of a slow day?** · **9 · Does it do what money does?** · **10 · What does the machine do, and what is left for people?**
- Ask: which tasks does the machine do → what happens to cost and price → who does the new work · Noa meets it in the job she wants · Kai in the oven
- Debate, no verdict: `OPTIMISM` machines raised growth before, new tasks appeared · `CAUTION` workers who lose jobs pay today, gains slow and uneven

Watch out: "could be automated" or "exposed" ≠ "will disappear" · the total of jobs can hold while some people lose · cheaper output adds jobs only if buyers answer the price · the evidence is dated: the sort moves every year