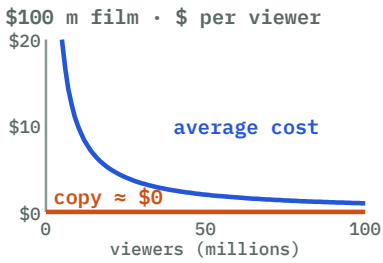
Why does a movie cost nothing to copy but $15 to watch?

A digital good costs a lot to make and almost nothing to copy: why the cost per viewer keeps falling, why a price equal to the marginal cost fails, and how selling versions earns more. Question 3 of the ten to ask about any app.

1 Two kinds of cost

once · per copy

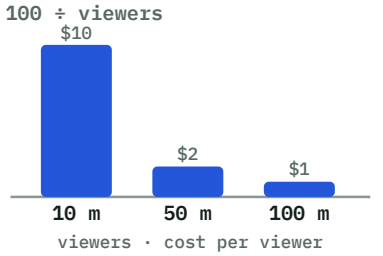
- **Tide** = film and music service on **Coralia** (toy island) · one film = **$100 m** to make
- **Fixed cost** = paid **once**, however many copies you sell · film, code, music, actors (Micro 5)
- **Marginal cost (MC)** = the extra cost of **one more copy** · a stream, a download → **≈ $0** (a tiny bit of electricity)
- Not always $0 · practice: a **boxed disc** ≈ `$3` per copy (disc, box, truck)
- Sort · `PAID ONCE` code · music · voice actors `PER COPY` download · server power · boxed disc



2 Average cost falls

cost per viewer

- **Average cost** = total cost ÷ copies → `fixed ÷ copies + ≈ $0`
- Tide: `100 ÷ 10 = $10` · `100 ÷ 50 = $2` · `100 ÷ 100 = $1` → keeps falling, never hits $0
- Practice **Reefcraft** game, **$40 m**: `5 → $8` · `10 → $4` · `20 → $2` · `40 → $1` (millions of players)
- 2 × players ⇒ ½ cost each · boxed disc never below `$3` : at 20 m, `40 ÷ 20 + 3 = $5`
- ⇒ the seller with **most users** has the **lowest cost** per user → Lesson 6 (monopolies?)



3 Price = MC fails

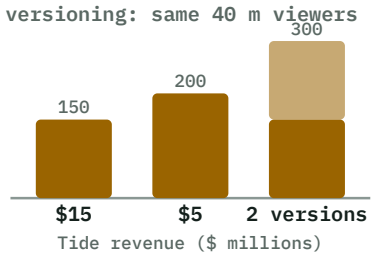
pay the fixed cost

- Crowded market (Micro 6) → price ≈ **marginal cost** · here MC ≈ $0 ⇒ price ≈ $0 ⇒ fixed cost **never comes back** ⇒ the film is **never made**
- ⇒ digital goods priced to **cover the fixed cost**, by what buyers will pay, not by the cost of a copy
- Practice: $40 m, 8 m players → `40 ÷ 8 = $5` each · price $0 → revenue `$0` · 16 m players → **break-even price** (revenue just pays the costs) `40 ÷ 16 = $2.50` → more players, lower price still pays

4 Versioning

two prices, one film

- **Price discrimination** (Micro 7) = different buyers, different prices, **same thing**
- **Versioning** = different **versions** of one product at different prices → each group pays near its value
- Tide: 10 m **fans** ≤ $15 · 30 m **casual** ≤ $5 · `$15 → 150` · `$5 → 200` · two versions (no ads $15, ads $5) `150 + 150 = 300` ($ m)
- Fans skip the ad version: worth `$4` to them < $5 · at one price of $5 fans keep `10 × $10 = $100 m`
- Practice game: 4 m fans ≤ $30 · 12 m casual ≤ $10 · `120` · `160` · two versions `120 + 120 = 240` · basic worth $8 to fans



5 Real world

big costs, free copies

- **Avatar: The Way of Water** (2022) · reported cost **$350 m or more** (Disney did not publish it)
- **Spotify**, end 2024: **675 m** monthly users, **263 m** paid subscriptions (family plan = 1) · **425 m** on the free plan with ads → a free user costs ≈ $0, sees ads or upgrades · **Netflix**: ≈ **302 m** paying memberships (results, Oct–Dec 2024)
- **Carl Shapiro & Hal Varian** · American economists · Information Rules (**1998**) → price by what each group will pay, sell versions
- Sort: `VERSION` student discount · plan with ads · HD or 4K picture · family plan `DIFFERENT PRODUCT` a film and a song · two films
- Practice **student price**: 2 m adults ≤ $10 · 3 m students ≤ $5 / month · one price best `$25 m` · two prices `20 + 15 = $35 m` · student card stops adults · chain: copy ≈ $0 → any price > $0 pays → student plan → more revenue

6 So what?

question 3 of 10

- **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?** → ≈ $0 ⇒ cost per user keeps falling · price follows value · biggest = cheapest
- Noa (user) → $5 or $15 for the same film · Kai (baker, musician) → his songs cost nothing to copy too → Lesson 7 (who owns a song?) · Walrasia: lessons = fixed cost, one more student ≈ $0

Watch out: average cost ≠ marginal cost (falls toward $0 ≠ is $0) · price = MC is a rule for crowded markets, not for a $0 copy · a lower student price is not a loss when the copy is free · versioning = same film, different groups; two films = different products