



Who really pays the soda tax?

A tax of 20¢ a liter: how it moves supply, who bears it, what the state collects, and what Mexico saw.

1

Problem · tool

excise tax

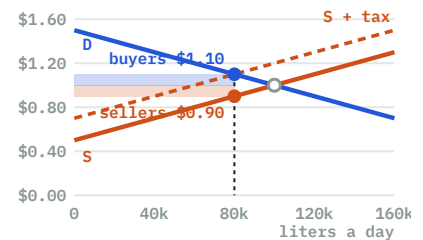
- **Problem** → too much sugar ⇒ weight gain, tooth decay (WHO: < 10% of daily calories) → part of the cost paid by all (**external cost**)
- **Tool** → **excise tax** = fixed amount per unit · 20¢ a liter · paid to the state by the **shops** · nobody sets the price
- Start: supply $P = 0.5 + 0.005Q$ · equilibrium **\$1.00, 100,000** liters a day

2

Tax moves supply

up by the tax

- Shop needs **+20¢** per liter to sell ⇒ supply curve **up** by 20¢ (dashed)
- New crossing with demand → buyers pay **\$1.10** (+10¢) · sellers keep **\$0.90** (−10¢) · sold **80,000**
- Buyers' price − sellers' price = **tax** ($1.10 - 0.90 = 0.20$) → tax is **split**



3

Who bears it

incidence · elasticity

- **Tax incidence** → who really bears a tax · the side that finds it **harder to walk away** pays more = **less elastic** side
- **STEEP DEMAND** (few substitutes) ⇒ buyers pay more · **FLAT DEMAND** (easy switch) ⇒ sellers pay more
- Who hands the money to the state ≠ who bears the tax → shop or buyer at the till: **same split**
- Practice: salt, medicine, commute gas → buyers · one cola brand, holiday flights, fancy coffee → sellers

flat	5¢	15¢	70k
middle	10¢	10¢	80k
steep	15¢	5¢	90k
	buyers	sellers	liters sold

4

Tax revenue

tax × liters left

- **revenue** = tax × liters sold after the tax · not × 100,000 (the tax cut sales)
- Middle, 20¢ → $20¢ \times 80,000 = \$16,000$ · Middle, 10¢ → $10¢ \times 90,000 = \$9,000$
- Steep, 20¢ → $20¢ \times 90,000 = \$18,000$ = buyers 15¢ × 90,000 **\$13,500** + sellers 5¢ × 90,000 **\$4,500**
- Tax on a good people keep buying ⇒ **more money, less change** in behavior · doubling the tax ≠ doubling revenue

5

Why tax it

Pigouvian · subsidy

- **Pigouvian tax** (Arthur Pigou, English, 1920) → tax = **external cost** per unit ⇒ price counts the hidden cost · 20¢ harm ⇒ 20¢ tax
- **Subsidy** = mirror → supply **down** · price ↓ · sales ↑ · 20¢ on water: buyers **\$0.90** · sellers get **\$1.10** · **120,000** liters · state pays **\$24,000**

6

Evidence

Mexico 2014

- 1 Jan 2014 · **1 peso** a liter (≈ a tenth of the price) · price ≈ **+1.08 pesos** (+11%) ⇒ **pass-through ≈ 100%** → buyers bore nearly all
- Purchases of taxed drinks **−6%** (2014) · **−12%** (Dec 2014) · poorest households **−9%** · untaxed drinks (water) **+4%**
- **elasticity** = % quantity ÷ % price ≈ $6 \div 10 = 0.6 < 1$ ⇒ **inelastic** · (Colchero et al., BMJ 2016)

7

Trade-off

policy card

- **Regressive** tax → bigger **share of income** from small incomes · same 20¢ for all · but poorest cut back most (−9% vs −6%)
- **FOR** hidden health cost in the price, people did buy less · **AGAINST** weighs most on small incomes, chooses for adults
- Policy card: problem **sugar harm** → tool **20¢ tax** → model **buyers +10¢, sellers −10¢** → evidence **Mexico −6%** → trade-off **health vs small incomes**