

Who Owns It?

Property Rights, Externalities, Public Goods,
and the Commons

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HOW TO READ THE CHARTS

■ **Drivers**, the buyers

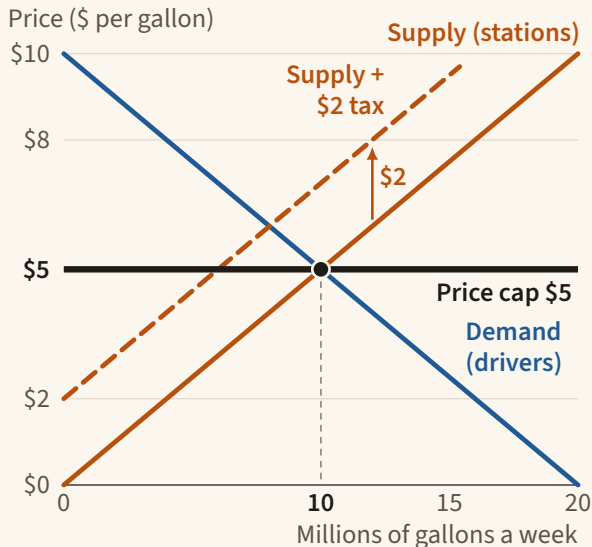
■ **Gas stations**, the sellers

□ **The state**, which collects a tax

□ **Neighbors**, who bear a harm

▨ **Deadweight loss**: trades not made, or waiting

Can a Price Cap Keep the Tax Off Drivers?

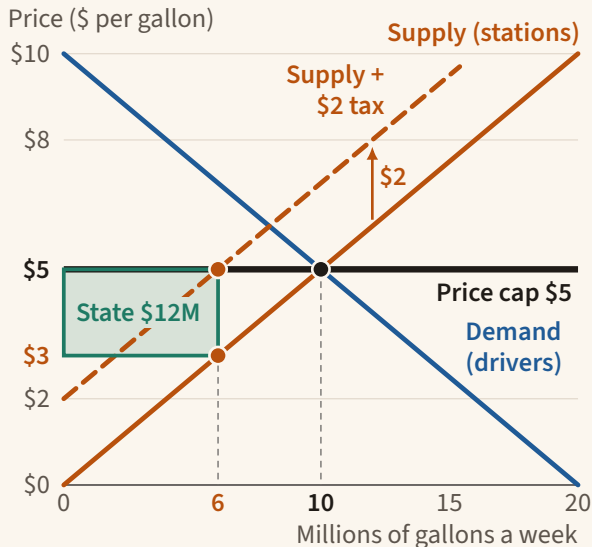


A student asked last class whether a law could stop gas stations from passing a \$2 tax on to drivers. Suppose a law caps the pump price at \$5, and stations still owe the state \$2 on every gallon they sell. Drivers want 10 million gallons at \$5.

Drivers	Stations
?	

Who bears the \$2 in cash

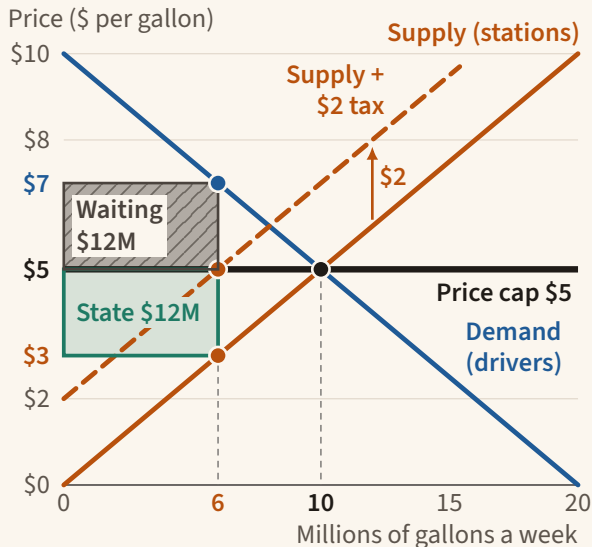
Drivers Pay \$5, but Only 6M Gallons Sell



Stations keep $\$5 - \$2 = \$3$ a gallon, so they offer only 6 million gallons. Drivers want 10 million, so 4 million are short, and the state collects $\$2 \times 6 = \12M . In cash, **stations'** net price falls by \$2 and **drivers'** price is unchanged.



Drivers Still Pay More: \$7, Not \$6



With the cap, a driver pays \$5 in cash plus the cost of waiting. If the line grows until waiting costs \$2 a gallon, the full price is \$7, not the \$6 drivers paid last class with the tax alone. The cap moves the burden from the sign into the line.

Drivers wait

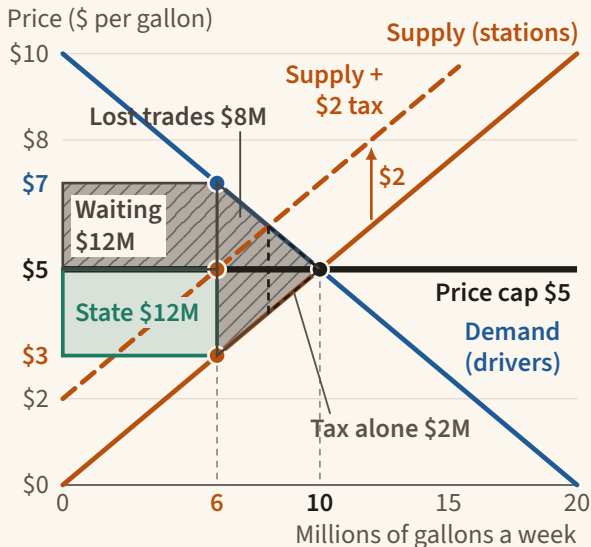
\$2

Stations pay

\$2

\$4 a gallon: \$2 tax + \$2 waiting

The Cap Turns a \$2M Loss Into \$20M



Suppose waiting costs \$2 a gallon and makes nothing, and the tax is only a transfer. Then the line wastes \$12M of time and the 4 million gallons that no longer trade lose \$8M: \$20M of deadweight loss, against \$2M for the tax alone. The \$5 on the sign is visible; the \$2 in the line is not.

Drivers wait

\$2

Stations pay

\$2

\$4 a gallon: \$2 tax + \$2 waiting

Smog Is a Cost No One Can Charge For

THE RIGHT

A right is control over a resource plus terms clear enough to sell it. Clear, enforceable rights allow exchange where transfer is permitted.

THE RESULT

The social cost of an action is the sum of every private cost it imposes. The actor feels less than that, so he does too much.

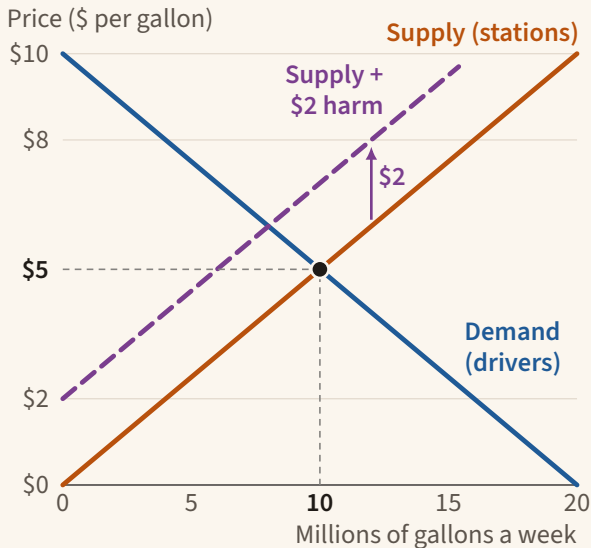
THE SPILLOVER

Suppose residents cannot enforce a claim against the smog from a gas station. No one can charge it, so the smog is an externality: an effect on others with no agreed payment.

NOT AN EXTERNALITY

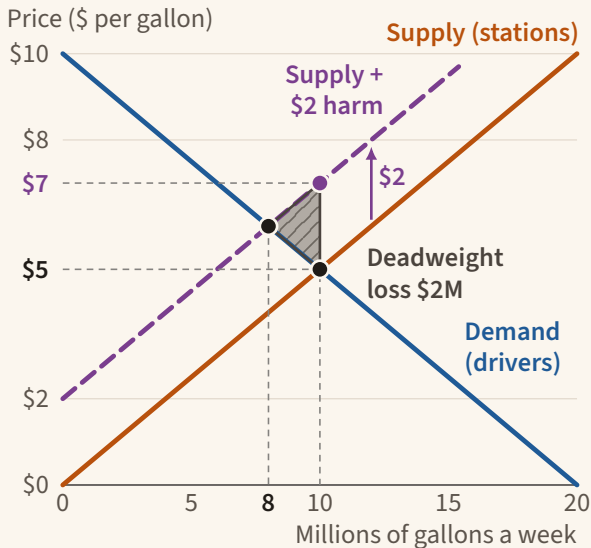
A rival who wins your customers is not this problem: it changes prices, which buyers and sellers can respond to.

A Price That Leaves Out the Harm



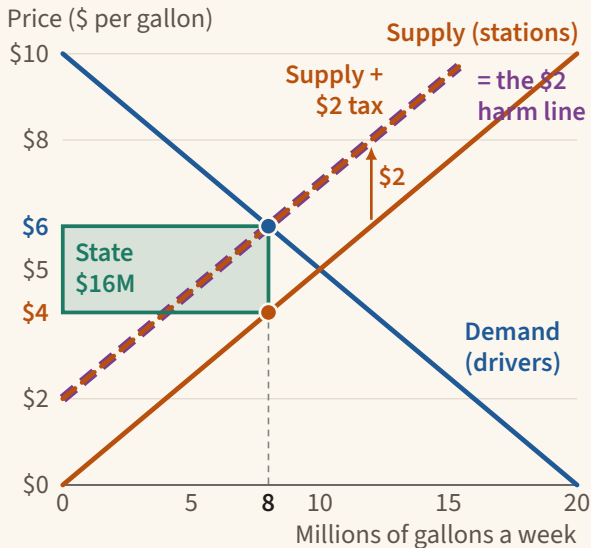
Now remove the cap and the tax. Suppose each gallon burned puts \$2 of smog cost on residents who are not in this market. Stations count only their own cost, so the market still trades 10 million gallons at \$5. The dashed line is what a gallon costs everyone: the stations' cost plus the \$2.

The Last 2M Gallons Are Not Worth Their Cost



This time the loss is trades that happen: gallons worth \$5 that cost \$7. At 10 million gallons the last gallon is worth \$5 to a driver but costs \$7 in all. Every gallon from 8 to 10 million costs more than it is worth, and together they waste \$2M.

A \$2 Tax Prices In the Harm



Last class this wedge blocked trades worth having. With a \$2 harm, it blocks trades not worth their cost. Drivers pay \$6, stations keep \$4, and 8 million gallons trade. The state collects \$16M, and the neighbors still bear \$16M of smog from the gallons sold. What if they owned the right to clean air?

Who Gets the View?

Suppose a builder would earn \$200,000 from a new floor that blocks the view of the tenants next door, who value that view at \$120,000. Suppose rights are clear and bargaining is cheap.

\$200,000

the builder's gain from building

\$120,000

the tenants' value of the view

THE TENANTS HOLD THE RIGHT

Does the floor get built?
Who pays whom?

THE BUILDER HOLDS THE RIGHT

Does the floor get built?
Who pays whom?

The Same Floor Gets Built Either Way

Suppose a builder would earn \$200,000 from a new floor that blocks the view of the tenants next door, who value that view at \$120,000. Suppose rights are clear and bargaining is cheap.

\$200,000

the builder's gain from building

\$120,000

the tenants' value of the view

THE TENANTS HOLD THE RIGHT

The builder must buy the view. Say they settle at \$160,000. The floor is built; the tenants get \$160,000.

THE BUILDER HOLDS THE RIGHT

The tenants would pay at most \$120,000, less than the floor's \$200,000, so no payment tempts him. The floor is built; the tenants get \$0.

Same floor, different wealth. Organizing thousands of neighbors can cost more than agreement gains. Tradable permits are one possible response.

A Market for the Right to Emit

In 1993 Southern California's air district adopted RECLAIM for factories that emit nitrogen and sulfur oxides.

- 1 The regulator caps the total number of credits and enforces it.
- 2 Each factory must hold credits for every unit it emits.
- 3 Factories trade credits until no one gains from another trade.

Same Allowance, Different Values

Suppose a paint maker and a refiner each hold 20 of the 40 units, an arbitrary split, and both use their full allowances. The going price of a right is \$2.20.

Cap: 40 units (same before and after)

Paint maker

20 units

ONE MORE UNIT IS WORTH

20 units **\$2.87**

Refiner

20 units

ONE MORE UNIT IS WORTH

20 units **\$1.10**

Trade Moves Rights to the Higher Value

The paint maker buys 10 units and the refiner sells 10. Total emissions are still 40, and one more unit is now worth the price of a right to both firms.

Cap: 40 units (same before and after)

Paint maker

30 units

ONE MORE UNIT IS WORTH

20 units \$2.87

25 units \$2.53

30 units \$2.20

Refiner

10 units

ONE MORE UNIT IS WORTH

20 units \$1.10

15 units \$1.65

10 units \$2.20

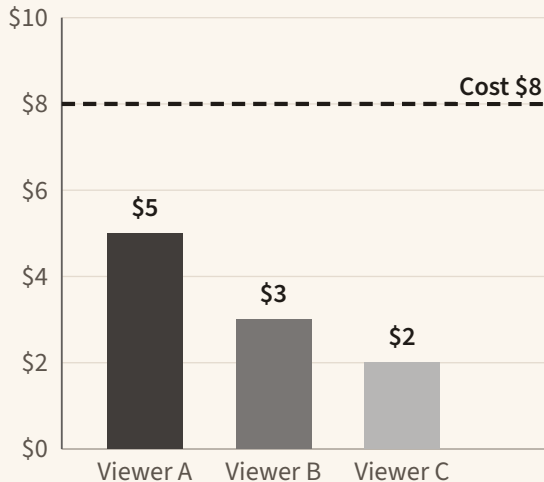
Two Tests: Rivalry and Excludability

		Can non-payers be kept out?	
		Yes, easily	Only at high cost
Rival	Private good	An apple you buy	Common-pool resource Open-ocean fish: catches leave fewer for others; exclusion is costly.
	Club good	An uncongested swimming club	Pure public good A fireworks show that everyone nearby can watch.
Nonrival			

Rival means one person's use leaves less for others. Nonrivalry concerns using the good, not making it: a fireworks show still takes scarce resources to put on.

Is an \$8 Program Worth Making?

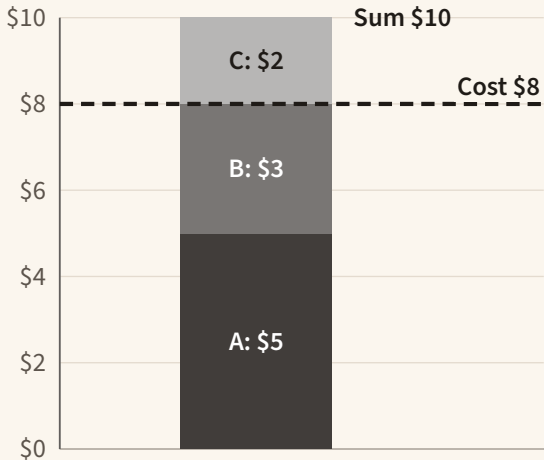
Value of one more (\$)



Suppose three viewers would pay \$5, \$3, and \$2 for one more episode of a program broadcast over the air, and making it costs \$8. No one can be kept from watching.

Add Everyone's Value: \$10 Beats \$8

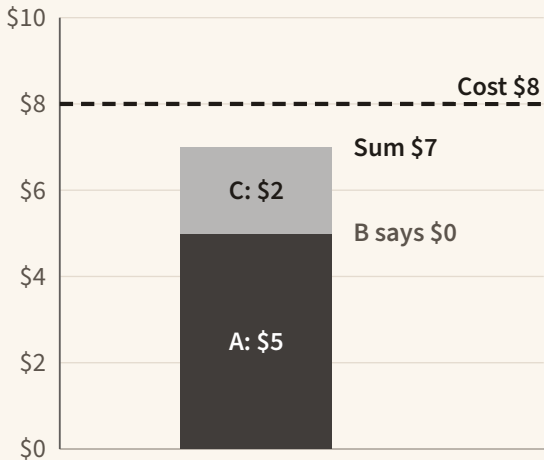
Value of one more (\$)



Everyone uses the same episode, so we add each person's value at that quantity: $\$5 + \$3 + \$2 = \10 , which beats the \$8 cost. No one's own value reaches \$8, but the sum does.

One Free Rider Sinks the Program

Value of one more (\$)



Suppose the program is made only if contributions cover its \$8 cost. Viewer B hopes the others will pay and says the episode is worth \$0. The pledges add to $\$5 + \$0 + \$2 = \7 , less than \$8, so nothing is made and B's free ride fails. Each viewer is tempted to hold back, yet together they value the episode at \$10: the free-rider problem.

Why the Lake Gets Fished Too Hard

- 1 Anyone may fish; no effective rule reserves the catch.
- 2 Each fisher keeps the fish he catches, while much of the cost of a smaller stock falls on the other fishers.
- 3 So everyone fishes sooner and harder, with more boats and hours than the extra catch is worth.

WHO OWNS IT?

Whoever holds the effective right decides who bears the cost. An owner, a regulator, or the users together can each reward restraint, at a different cost. Ostrom found that user groups sometimes manage forests, fisheries, and pastures well.

BEFORE YOU GO

Tell me what
worked and what
didn't.

One minute, anonymous.

