Taxes, Subsidies & Tax Incidence

AP Microeconomics | Unit 2 | the tax wedge, revenue, deadweight loss, and who really pays

Running example. Demand: $P = 6 - \frac{Q}{10}$. Supply: $P = \frac{Q}{10}$. Before the tax: price \$3, quantity 30. The government imposes a \$2 per-unit tax on sellers.

1. A tax drives a wedge

The tax raises sellers' cost by \$2 a unit, so supply shifts *up* by exactly \$2.

New quantity	20
Price buyers pay	\$4
Price sellers keep	\$4 − \$2 = \$2

The tax wedge

A per-unit tax puts a gap, equal to the tax, between the price buyers pay and the price sellers keep. The quantity is where that gap fits between the demand and supply curves.

2. Tax revenue and deadweight loss

$$\text{tax revenue} = \text{tax} \times Q_{\text{after tax}} = \$2 \times 20 = \$40 \qquad DWL = \tfrac{1}{2} \times \$2 \times (30 - 20) = \$10$$

Revenue is a rectangle (the wedge times the *new* quantity). Deadweight loss is the triangle between the new and the old quantity: the units no longer traded.

3. Who really pays: tax incidence

Buyers	\$3 → \$4	bear \$1 of the \$2
Sellers	\$3 → \$2	bear \$1 of the \$2

The outcome is the same whether the law taxes sellers or buyers. Who writes the check does not decide who bears the tax.

Incidence follows elasticity

The **more inelastic** side of the market bears **more** of the tax: the side less able to walk away.

With a steep, inelastic demand curve ($P = 12 - 0.3Q$) and the same \$2 tax: quantity 25, buyers pay \$4.50 (bear \$1.50), sellers keep \$2.50 (bear \$0.50).

4. A subsidy is a tax in reverse

A \$2 per-unit subsidy to sellers shifts supply *down* by \$2.

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New quantity	40 (more than 30)
Price buyers pay	\$2
Price sellers receive	\$2 + \$2 = \$4
Cost to the government	\$2 × 40 = \$80
Deadweight loss (overproduction)	$\frac{1}{2}$ × \$2 × (40 − 30) = \$10

5. Regressive taxes, and who pays in the extremes

Share of income. A tax on bread: \$600 from a \$20,000 income (3%) and \$1,000 from a \$100,000 income (1%). The richer household pays more dollars but a smaller share: a *regressive* tax. A share rising with income is progressive; a constant share is proportional. Judge by tax ÷ income, not by the dollars.

Extremes. With perfectly elastic supply the buyers' price rises by the full tax and sellers' net price does not change; with perfectly inelastic supply sellers pay it all. It does not matter which side legally remits the tax: the prices and quantity are the same; only the wedge and the elasticities matter.

Where students lose points

1. Saying whoever the law taxes is the one who pays.
2. Tax revenue with the old quantity: use the quantity after the tax.
3. Forgetting that sellers keep the buyers' price *minus* the tax.
4. Incidence backwards: the more inelastic side bears more.
5. Saying a subsidy has no deadweight loss: it causes overproduction.

Now practise it

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