Policy Levers: Taxes & Subsidies

EC 201: Principles of Microeconomics

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Winter 2020

Prologue

Housekeeping

Midterm 1: Grades posted.

- You should have received an email with your score, an approximate grade, and an attachment with your answer choices.

Optional Short Essays

- One percentage point of extra credit per essay (up to four total).
- All or nothing grading.
- Open-ended instructions in the syllabus.
- Please edit before submitting.

Podcasts: Plan ahead!

- The next few podcasts are relatively long (over an hour).

Taxes

Benjamin Franklin:

> In this world nothing can be said to be certain, except death and taxes.

Policy Levers

Why do governments levy taxes and provide subsidies?

Taxes

1. Raise revenue for public goods.
2. Discourage "bad" behaviors.
3. Redistribute income or wealth.

Subsidies

1. Provide economic stimulus.
2. Encourage "good" behaviors.
3. Redistribute income or wealth.

Examples Abound

1. Per-unit taxes
    - Sin taxes on tobacco, cannabis, and alcohol.
    - Excise taxes on lodging, gasoline, and other goods.
    - UK's window tax (1696-1851).
2. *Ad valorem* taxes
    - Sales taxes.
    - Payroll and income taxes.
    - Property taxes.
3. Lump-sum taxes
    - License registration fees.
    - UO's incidental fee.

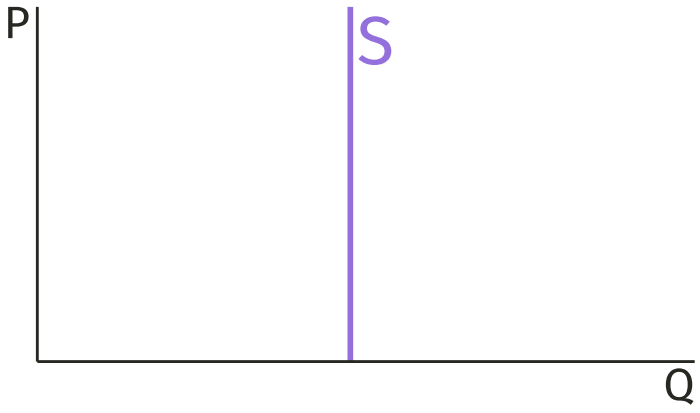
Price Elasticity of Supply

Definition

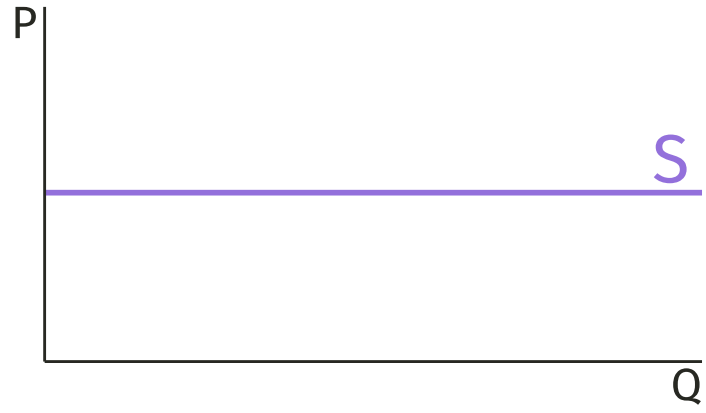
> A measure of the responsiveness of quantity supplied to changes in price:

$$\epsilon_s = \frac{\%\text{ change in quantity supplied}}{\%\text{ change in price}} \geq 0$$

Perfectly Inelastic: $\epsilon_s = 0$

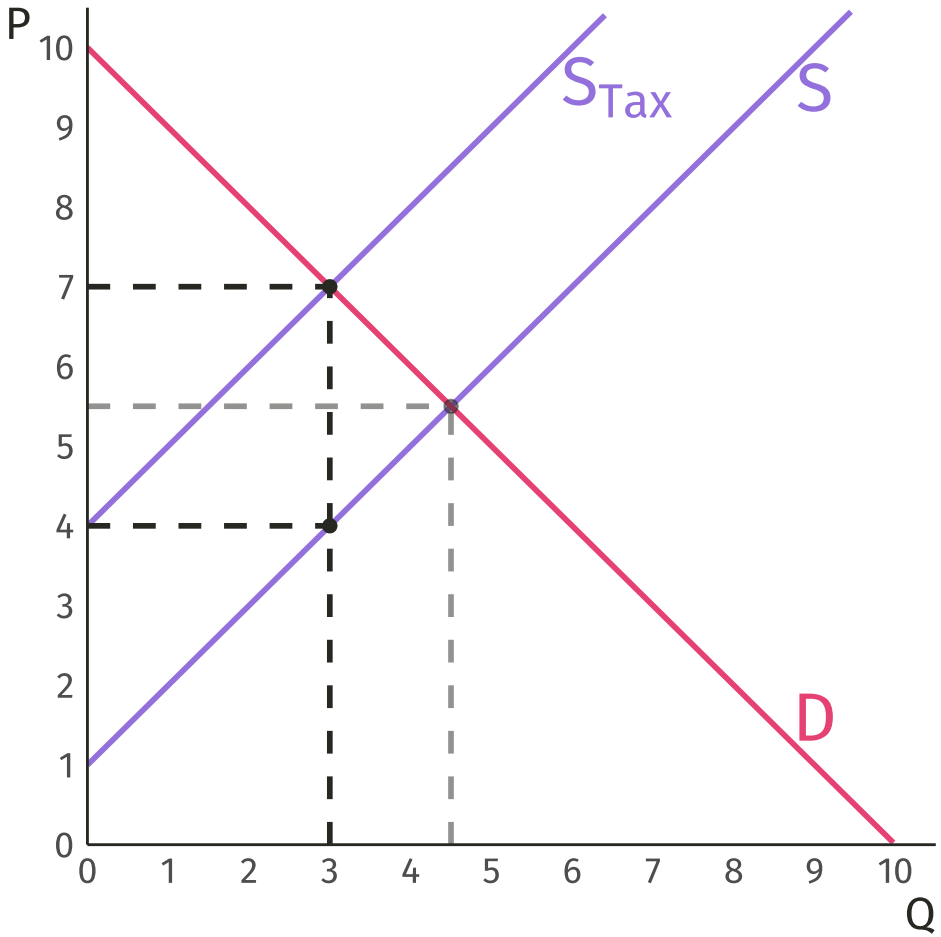


Perfectly Elastic: $\epsilon_s \to \infty$



Taxes

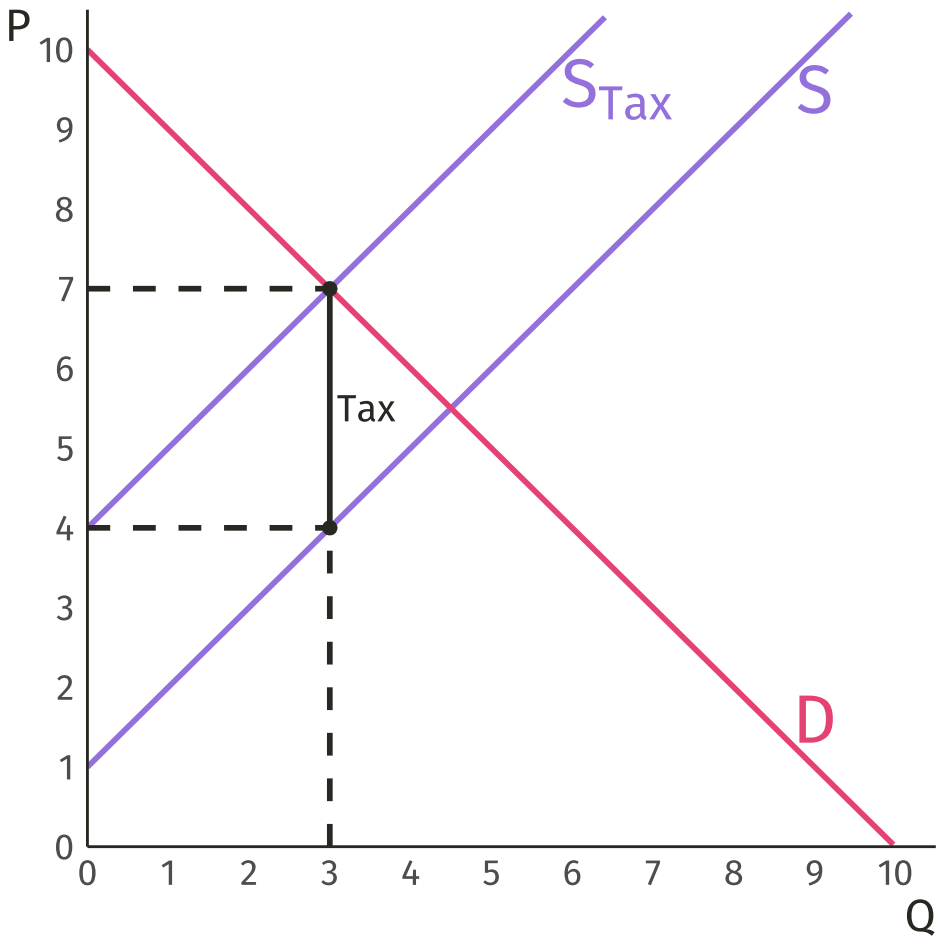
Tax on Producers



Q: How does a per-unit tax on producers affect equilibrium price and quantity?

Tax	**$0.00**	**$3.00**
Q_{Market}	4.5	3
$P_{Consumer}$	$5.50	$7.00
$P_{Producer}$	$5.50	$4.00

Tax on Producers



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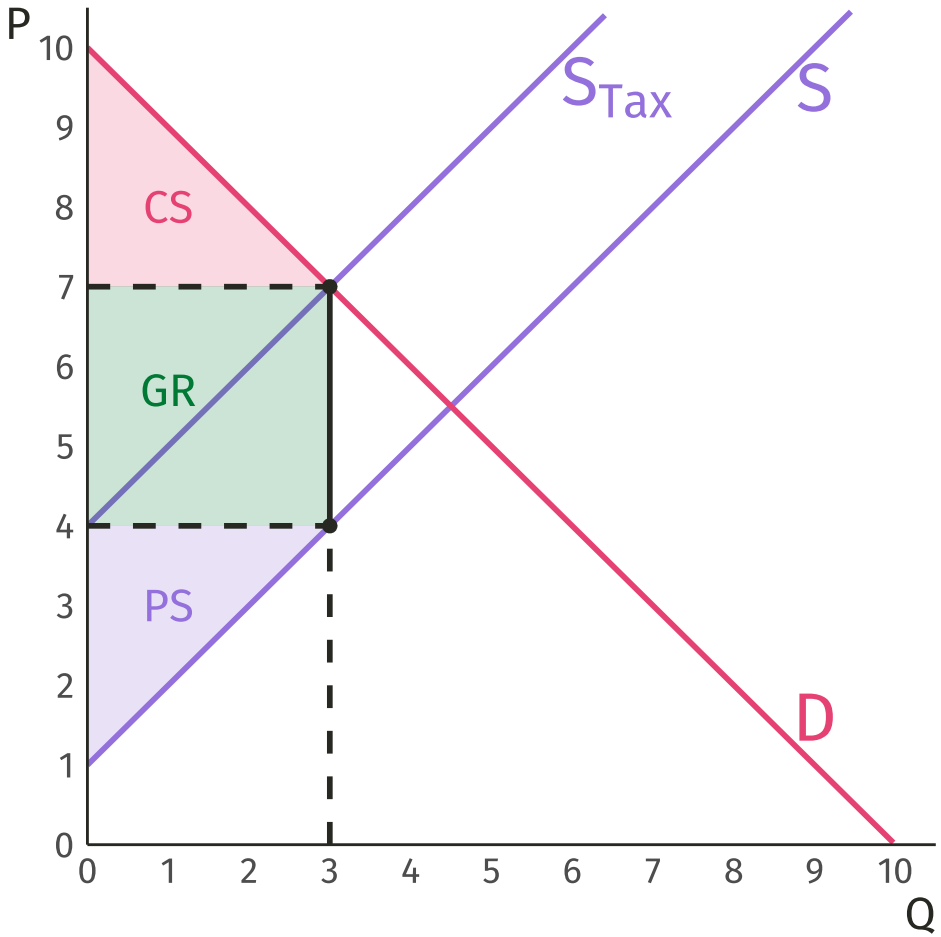
Price wedge!

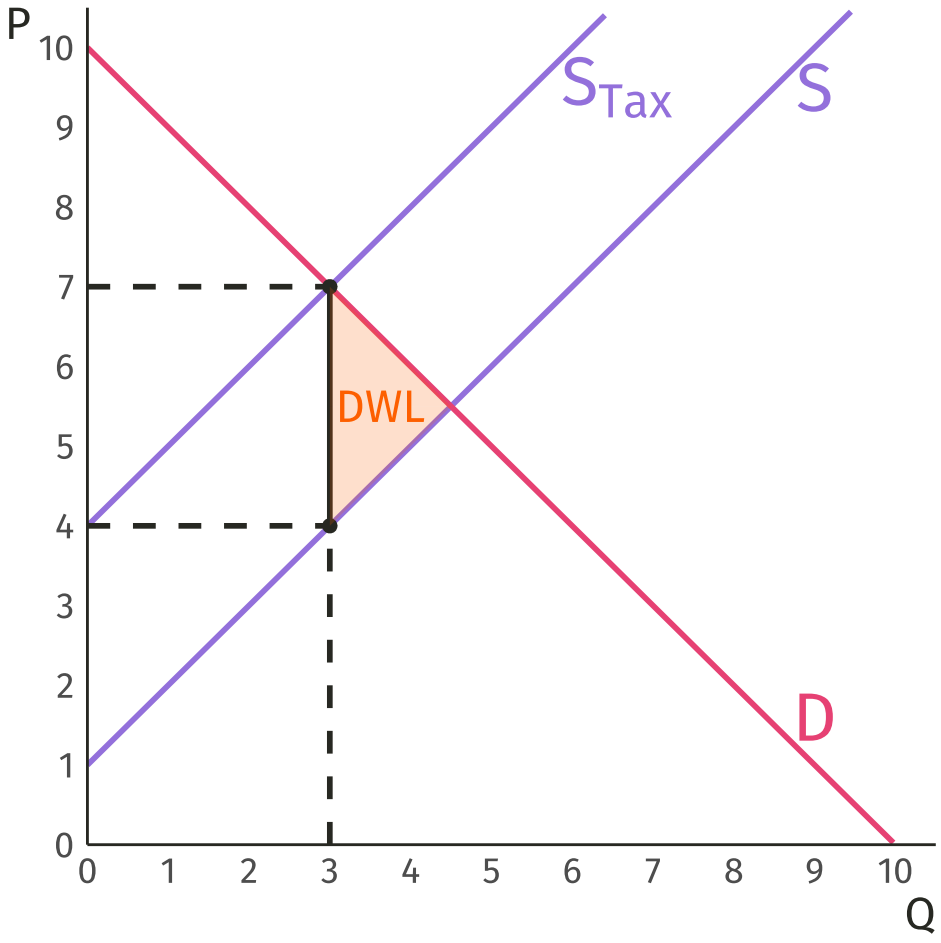
Tax on Producers



Q: How does a per-unit tax on producers affect total surplus in an efficient market?

Tax	**$0.00**	**$3.00**
CS	$10.125	$4.50
PS	$10.125	$4.50
GR	$0.00	$9.00
TS	$20.25	$18.00

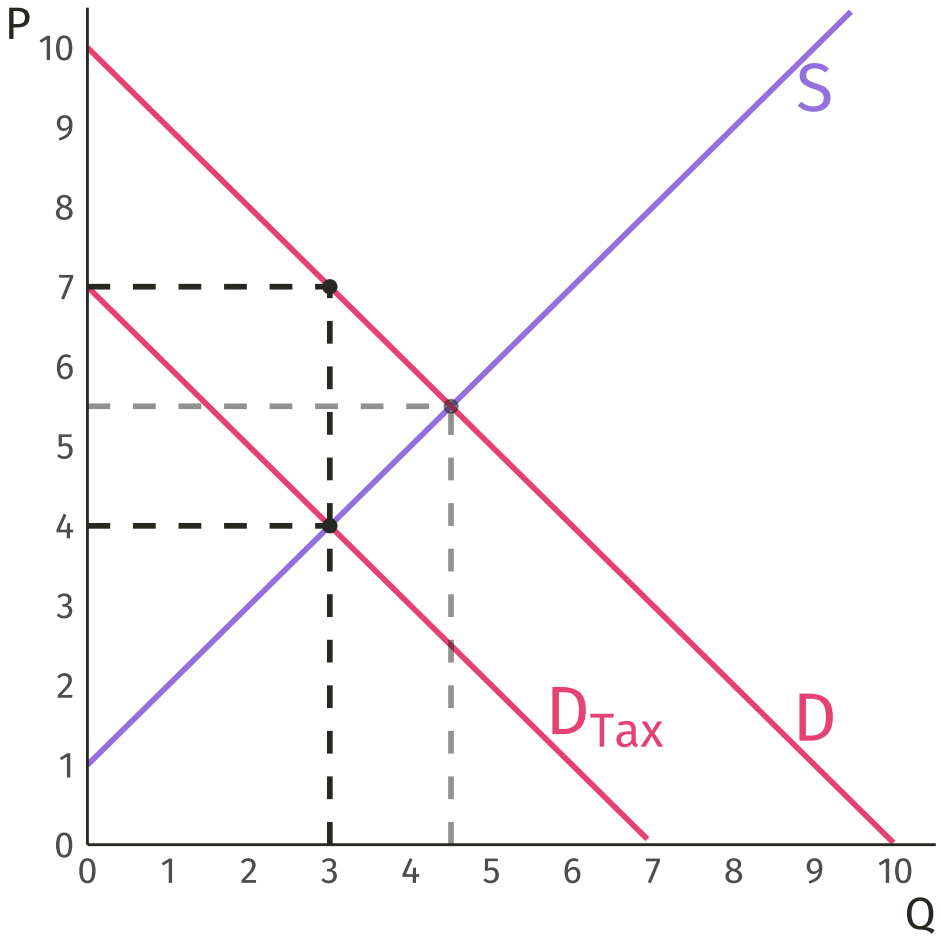
Deadweight Loss



Definition

> The decrease in total surplus caused by market distortions.

Tax on Consumers



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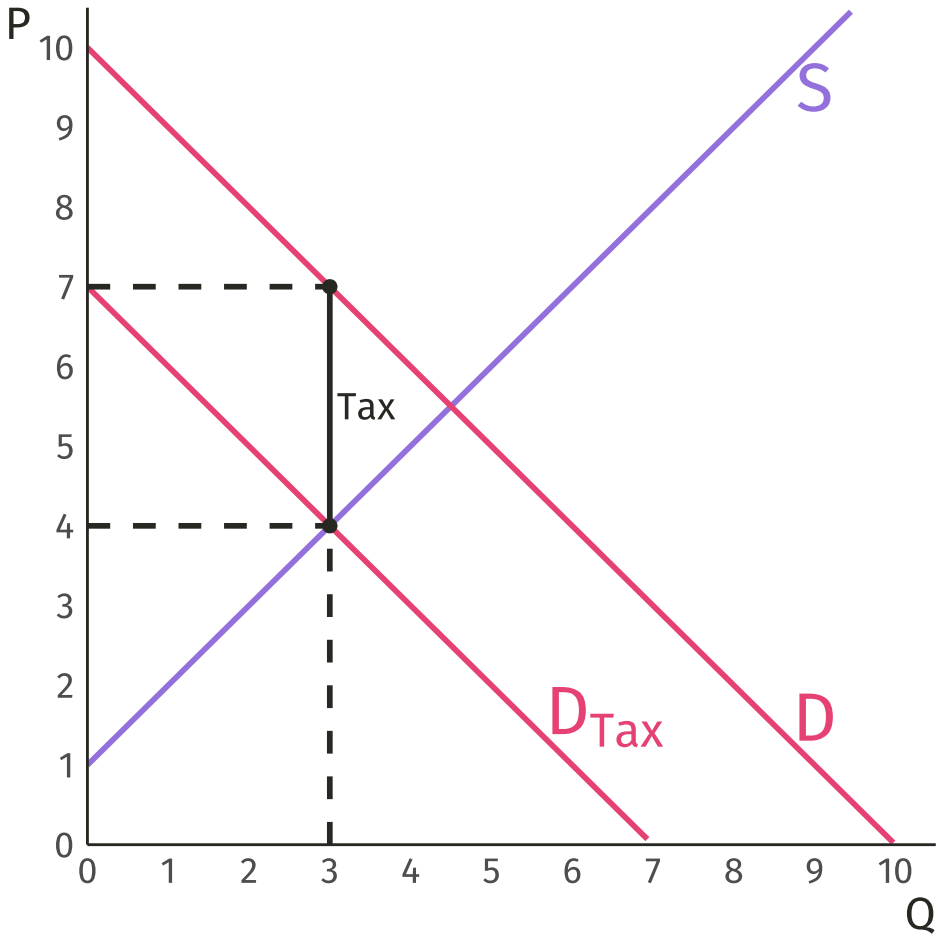

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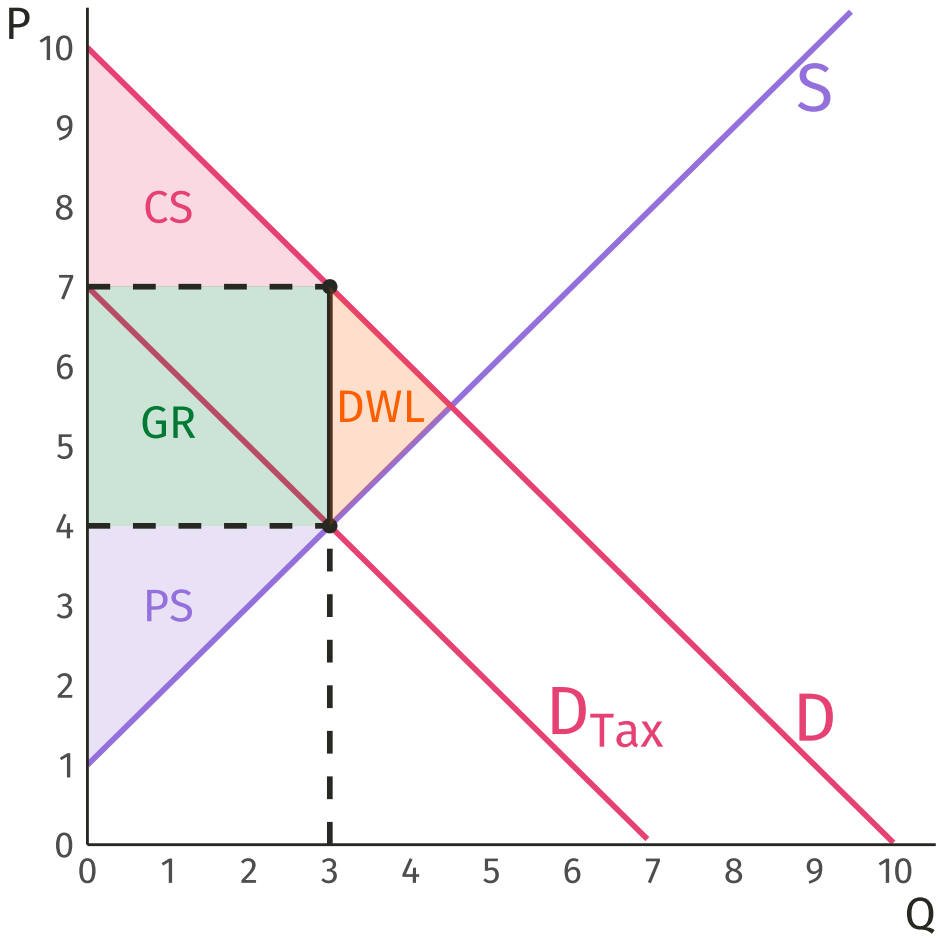
Price wedge!

Tax on Consumers



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TS	$20.25	$18.00
DWL	$0.00	$2.25

Tax Incidence

Statutory Incidence

> The group of individuals who must remit a particular tax to the government.

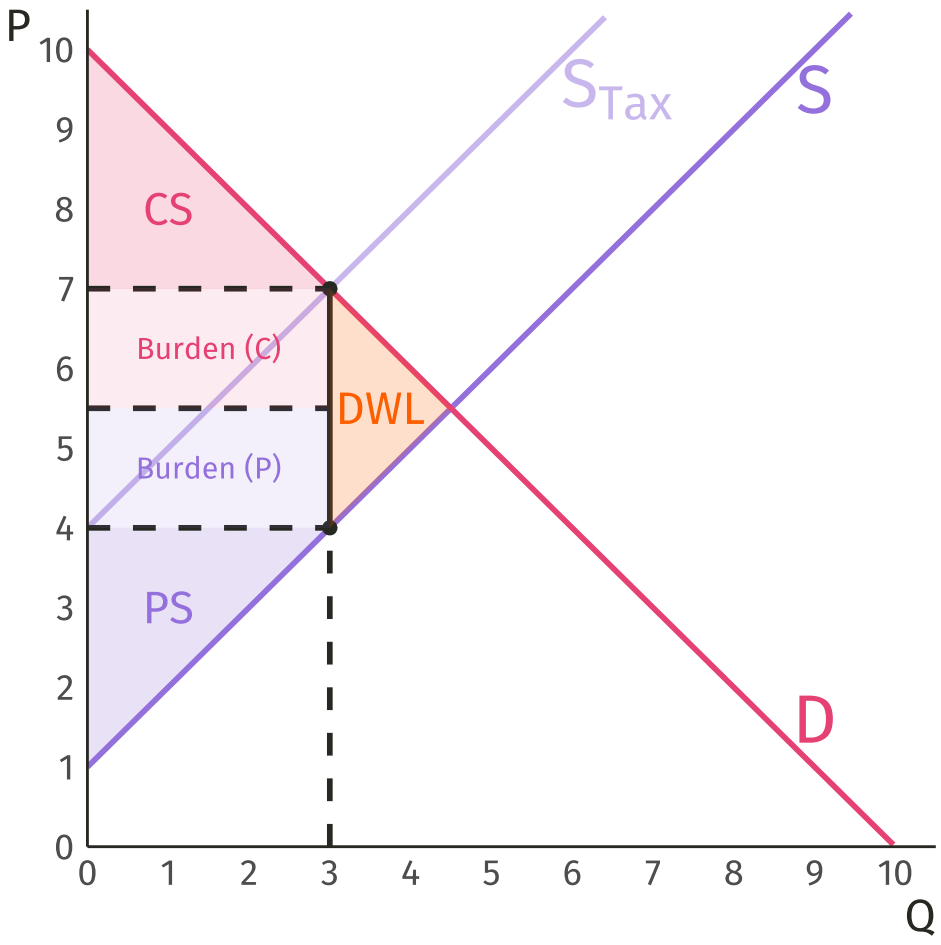
- Who pays the tax?

Tax Incidence

> The distribution of the burden of a particular tax among consumers and producers.

- Who really pays the tax?

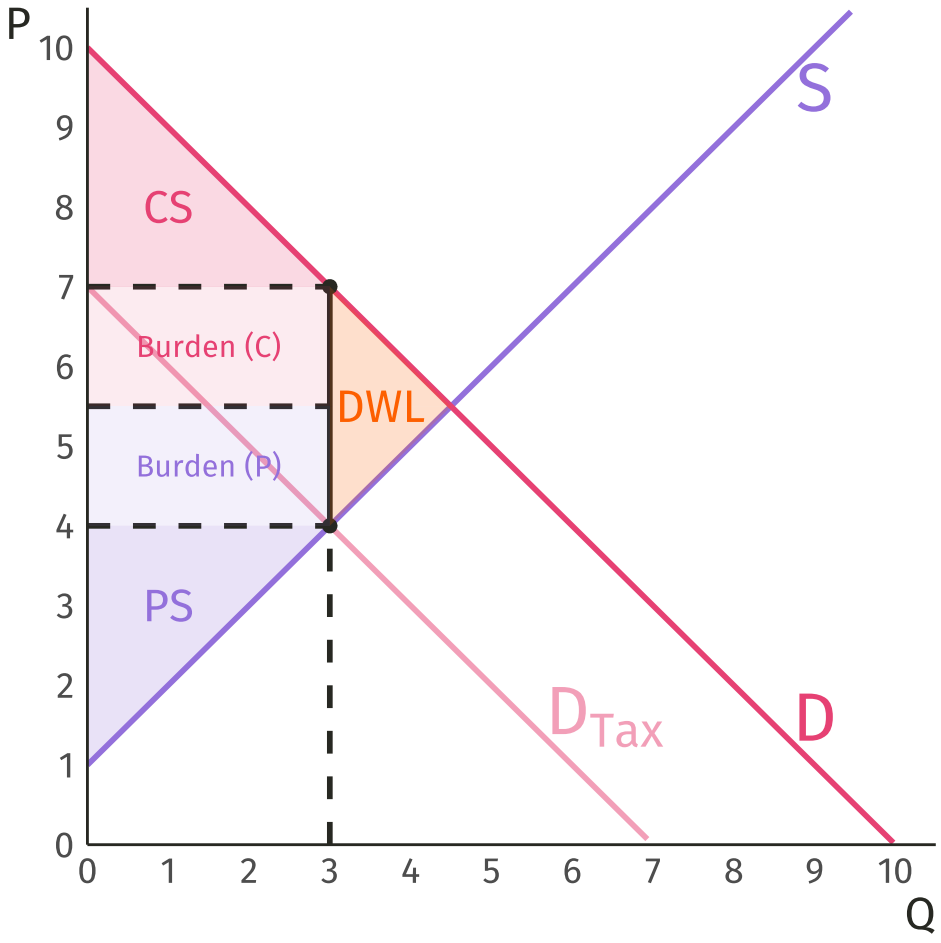
Tax Incidence



Q: Who bears the burden of a tax on producers?

Tax	**$3.00**
Consumer Burden	$4.50
Producer Burden	$4.50
GR	$9.00

Tax Incidence



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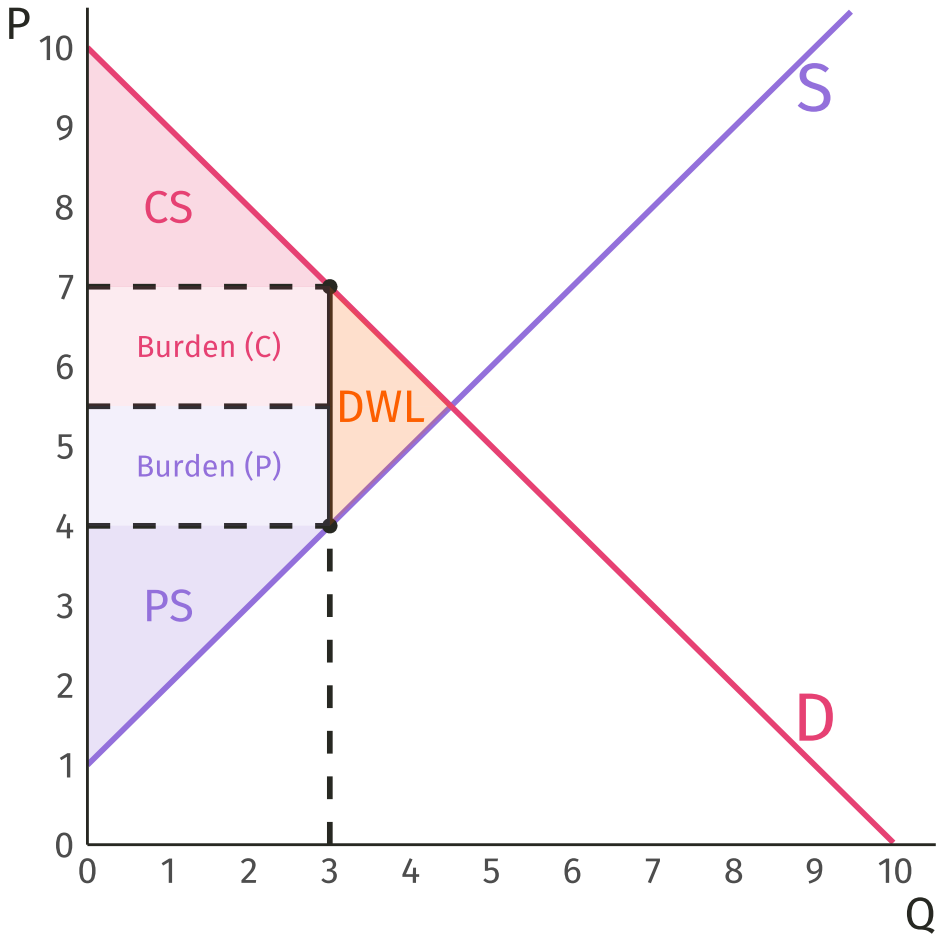
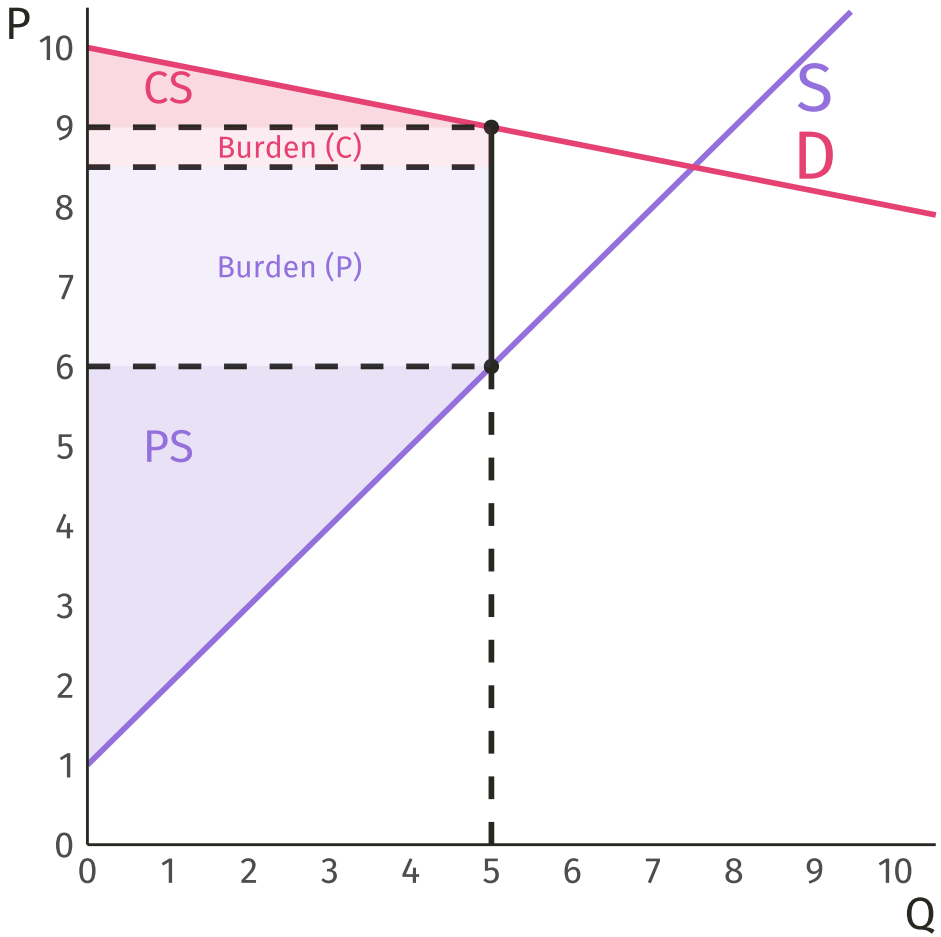


Tax incidence **does not** depend on whether the government levies the tax on producers or consumers!

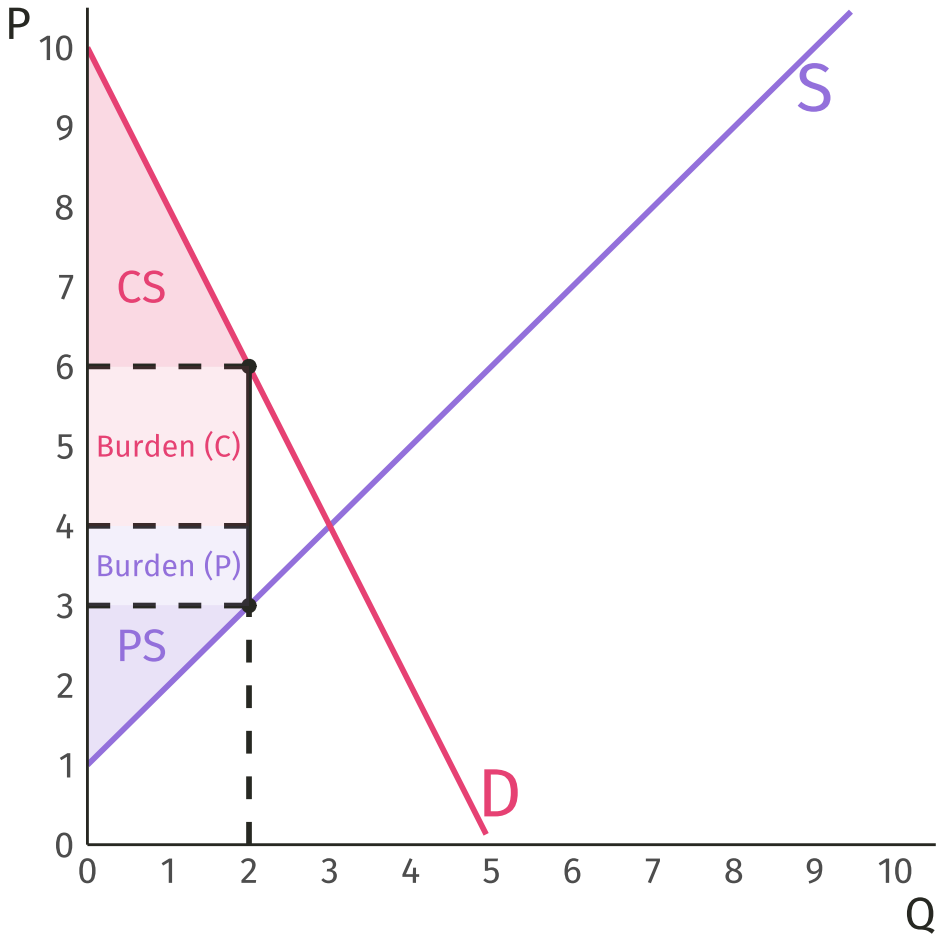
Tax Incidence



Q: If statutory incidence does not determine tax incidence, what does?

Tax	**$3.00**
Consumer Burden	$2.50
Producer Burden	$12.50
GR	$15.00

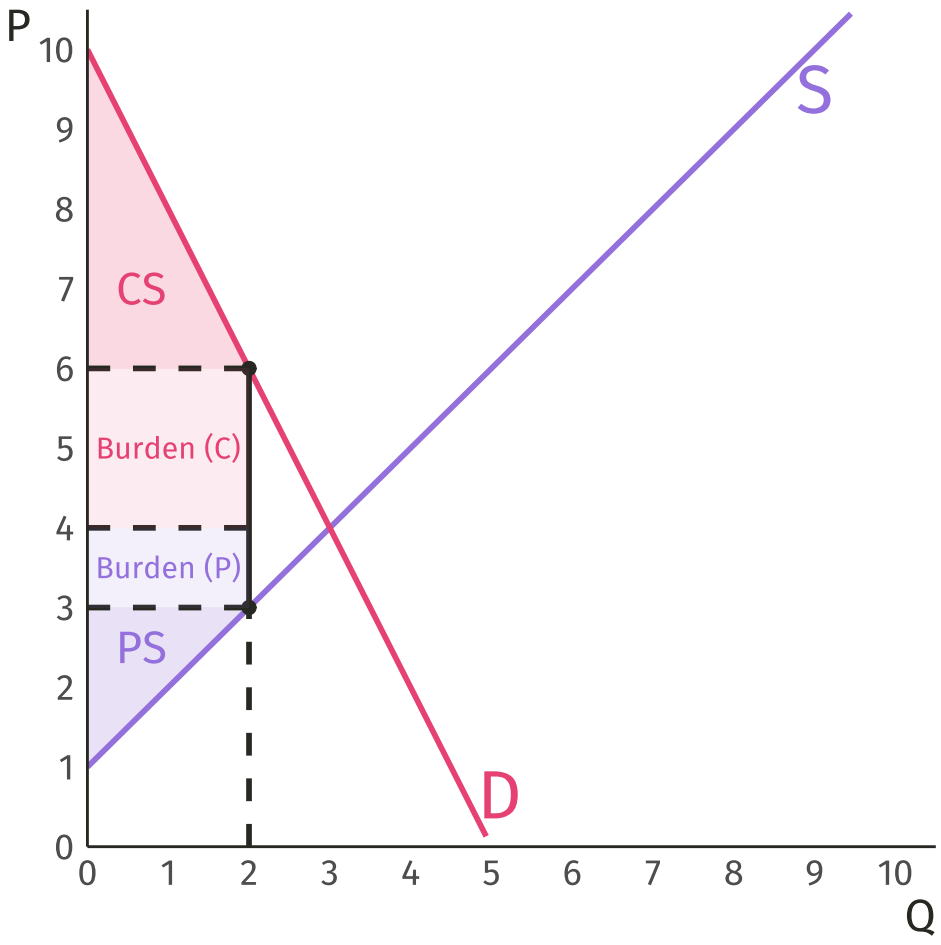
Tax Incidence



Q: If statutory incidence does not determine tax incidence, what does?

Tax	**$3.00**
Consumer Burden	$4.00
Producer Burden	$2.00
GR	$6.00

Tax Incidence

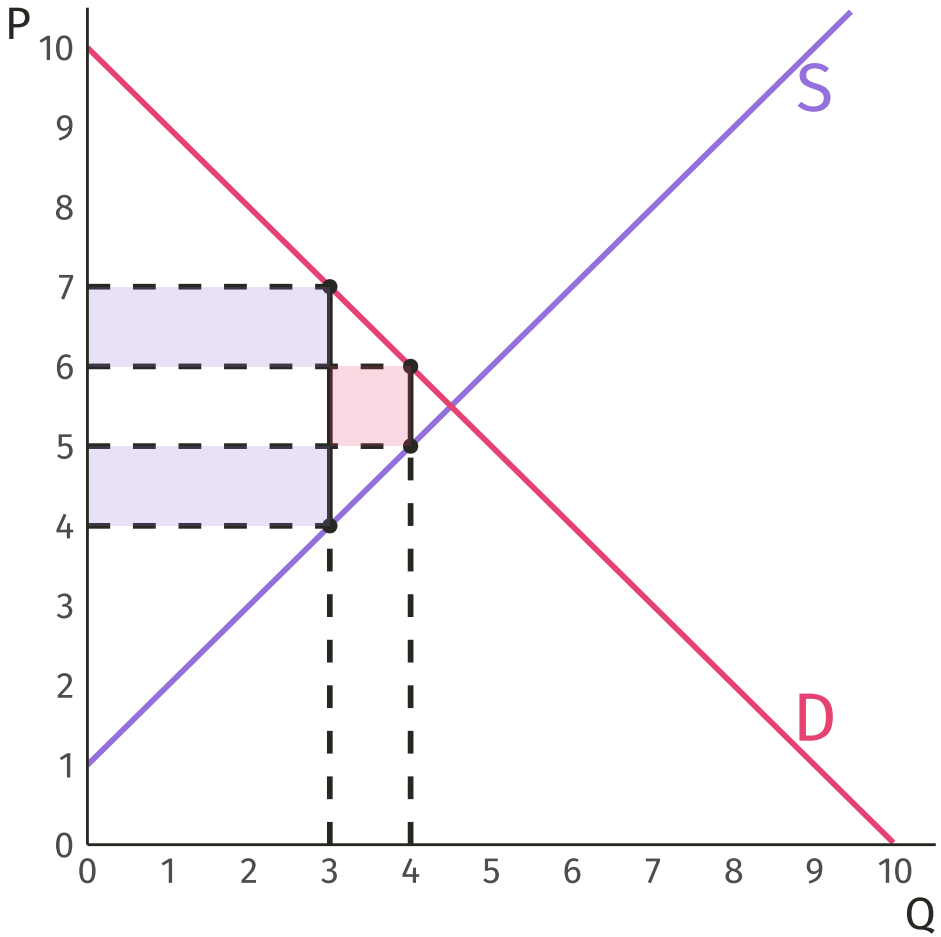


Q: If statutory incidence does not determine tax incidence, what does?

A: The relative price elasticities of demand and supply!

$\longrightarrow$ Inelastic side of the market bears more of the burden.

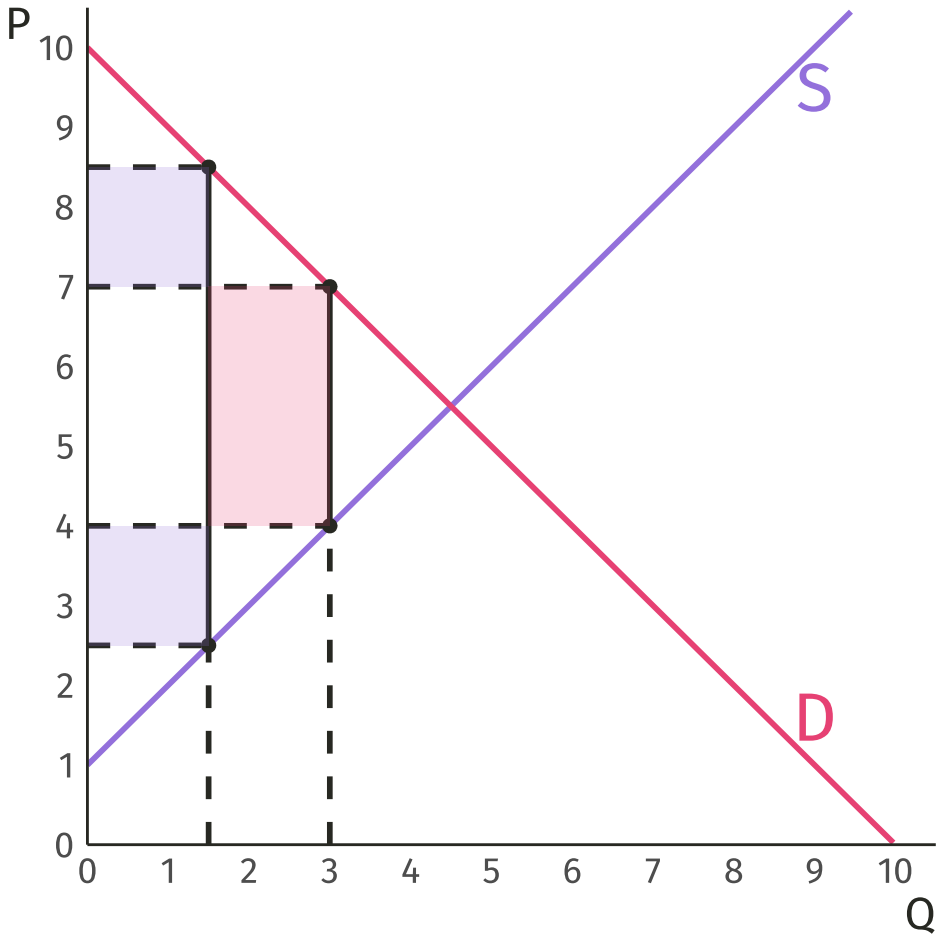
Tax Rates and Revenue



Q: Does an increase in the tax rate always lead to an increase in tax revenue?

Example 1: The increase in the tax rate (tax revenue gained) outweighs the decrease in market quantity (tax revenue lost).

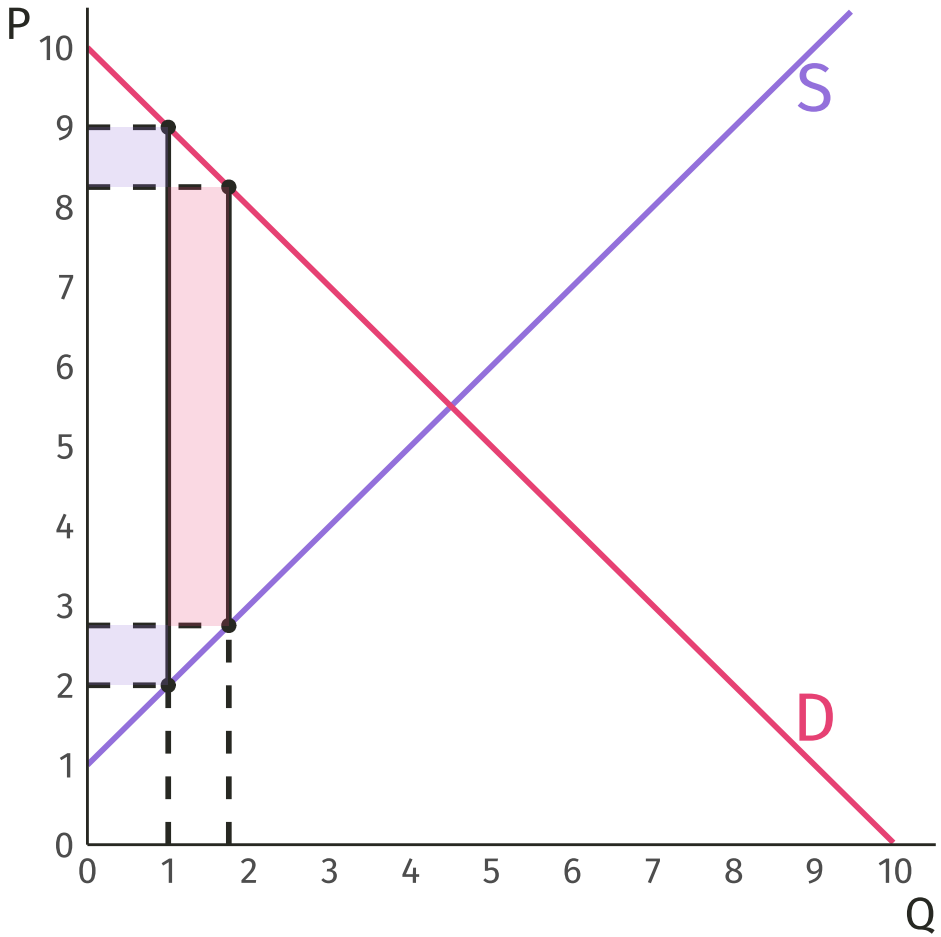
Tax Rates and Revenue



Q: Does an increase in the tax rate always lead to an increase in tax revenue?

Example 2: Tax revenue gained = tax revenue lost.

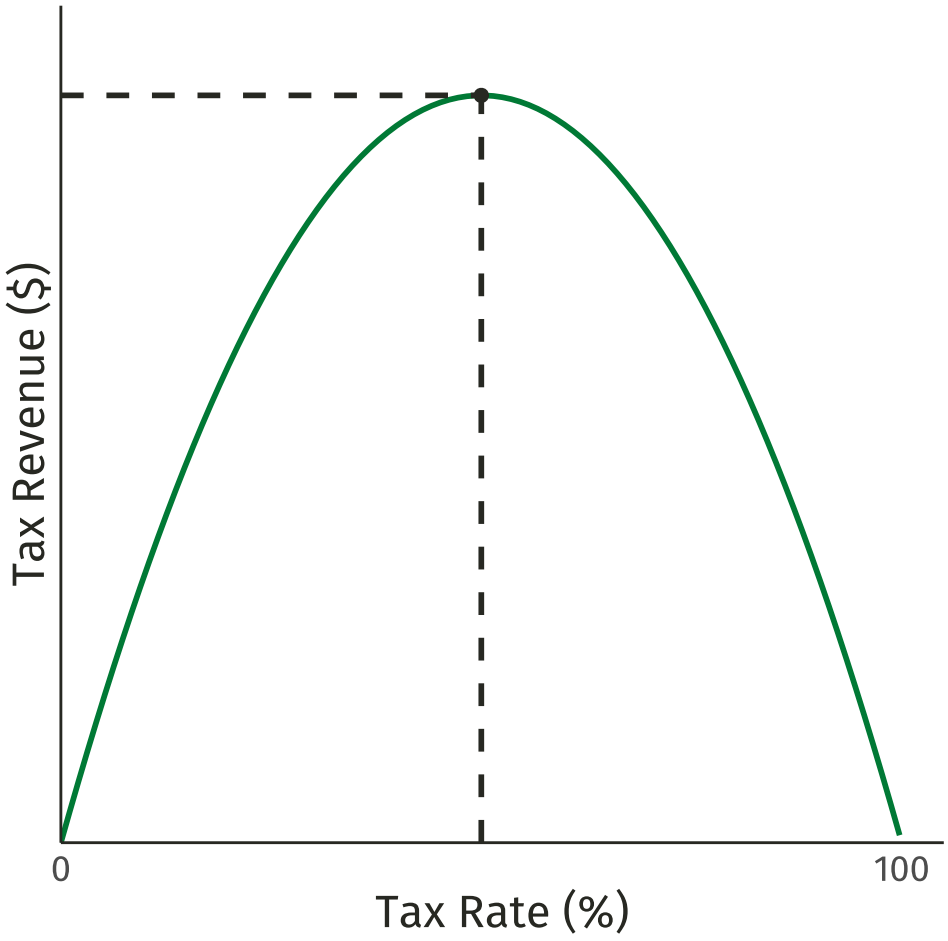
Tax Rates and Revenue



Q: Does an increase in the tax rate always lead to an increase in tax revenue?

Example 3: The decrease in market quantity (tax revenue lost) outweighs the increase in the tax rate (tax revenue gained).

Tax Rates and Revenue

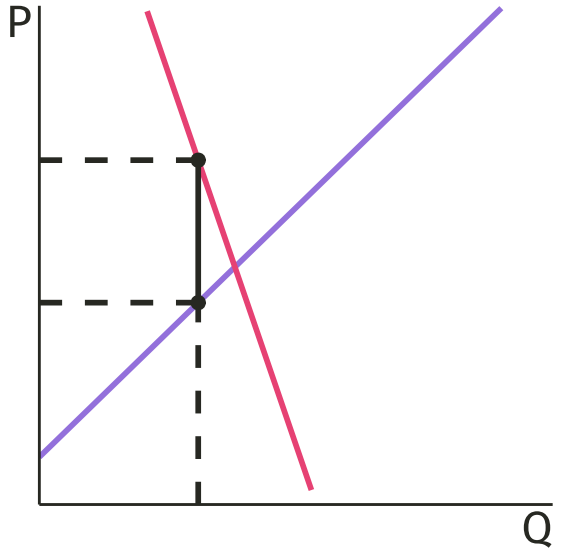


Laffer curve

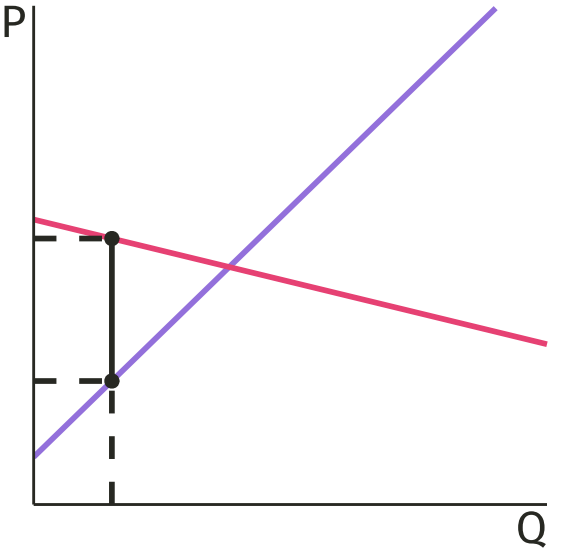
Theory suggests that there is a tax rate that maximizes tax revenue.

Q: If a government wants to raise revenue while minimizing deadweight loss, which good would it tax?

> **A.** Good with relatively inelastic demand.



> **B.** Good with relatively elastic demand.



Q: Why might a government shy away from taxing goods with relatively inelastic demand?

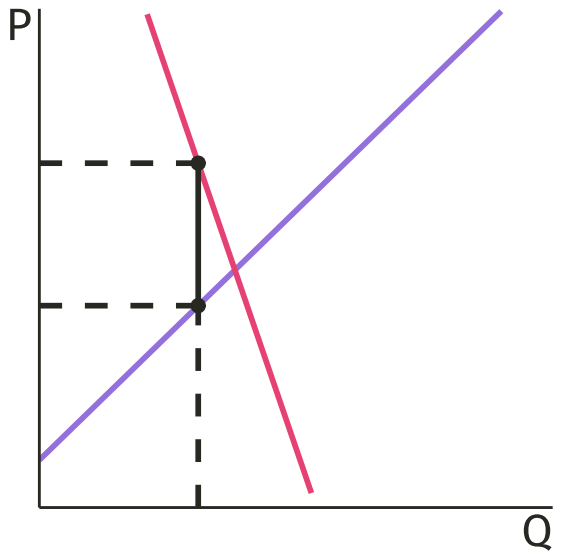
A: Inelastic goods are often necessities!

$\longrightarrow$ Taxes on necessities are unpopular with voters!

- Food and hygiene products are often exempt from state sales taxes.

Q: A government wants to discourage the consumption of goods that impose costs on others, so it imposes a tax of $5 per unit. For which good will the tax reduce consumption the most?

> **A.** Good with relatively inelastic demand.



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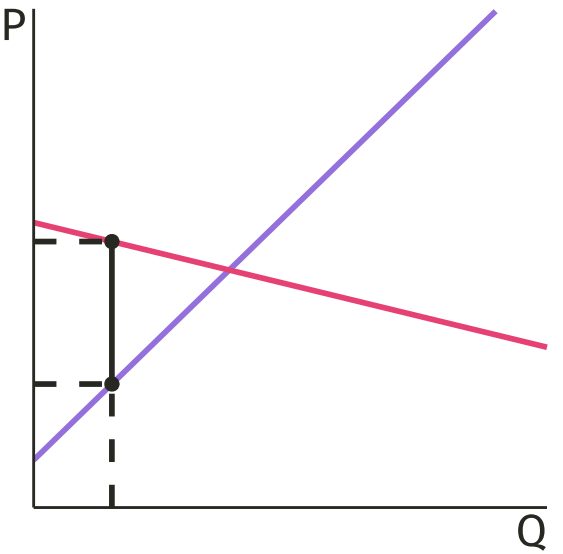


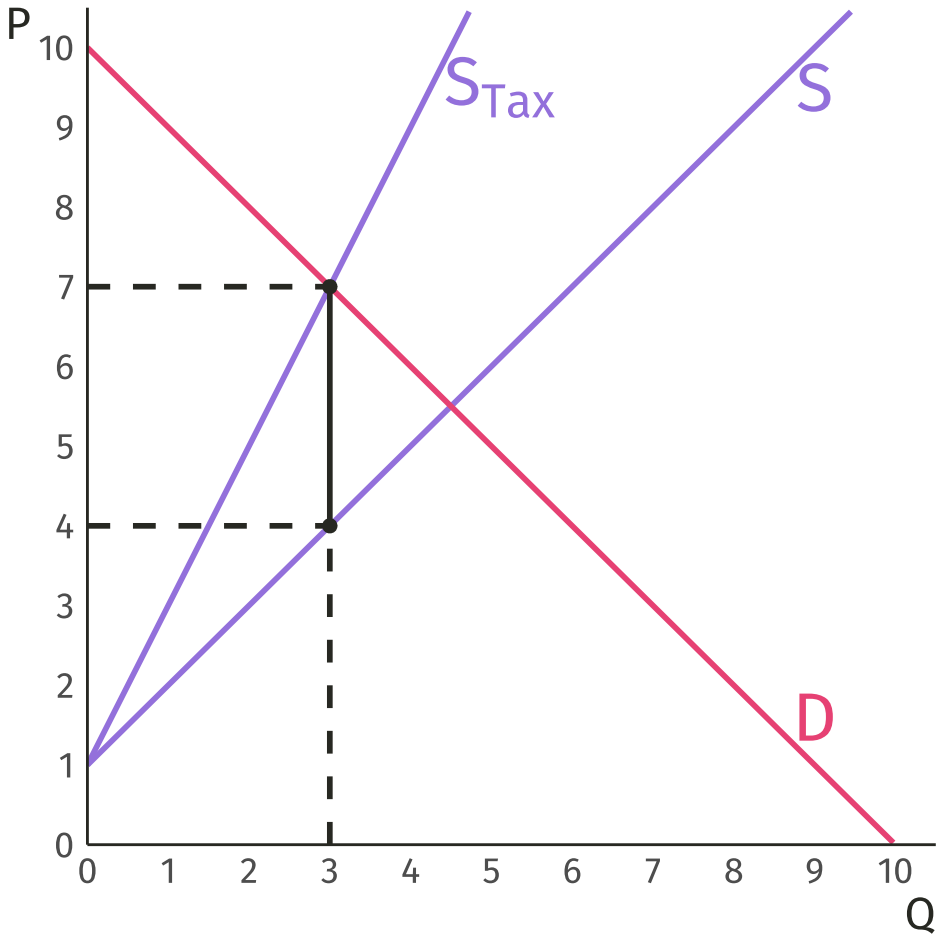
Q: How can a government increase the effectiveness[†] of taxes on "bad" behaviors?

A: Provide additional alternatives.

- Makes demand more elastic.
- *e.g.*, new modes of transportation can increase the effectiveness of a congestion tax, new green technologies can increase the effectiveness of a carbon tax, *etc.*

†: In this case, *effectiveness* = bigger reduction in bad behavior from the same tax.

Ad Valorem Taxes



A per-unit tax assesses a fixed dollar amount for each unit sold.

- *e.g.*, excise tax.

An *ad valorem* tax assesses a proportion of the price for each unit sold.

- *e.g.*, sales tax.

Lump-Sum Taxes

Whether someone pays a per-unit or *ad valorem* tax depends on on whether she makes a purchase.

- Make no purchase $\Longrightarrow$ pay no tax.

Lump-sum taxes do not depend on how much a consumer purchases or a producer sells.

- *e.g.*, You pay the same incidental fee for any course load, license registration fees do not depend on miles traveled, *etc.*

Lump-sum taxes are **non-distortionary** $\longrightarrow$ efficient.

- No deadweight loss!

The British Poll Tax

Q: In 1989, the British Parliament replaced local property taxes with a lump-sum tax. How did people react to the introduction of this "non-distortionary" tax?

A: Not fondly.

Regressive *vs.* Progressive Taxes

Regressive tax

Percentage of income paid in taxes decreases as income increases.

- Relatively more burdensome on the poor.
- *e.g.*, sales taxes and lump-sum taxes.

Progressive tax

Percentage of income paid in taxes increases as income increases.

- Relatively more burdensome on the rich.
- *e.g.*, most state and federal income taxes.

The Leaky Bucket

Equity *vs.* efficiency

Efficiency isn't always desirable. Some efficient outcomes are considered inequitable.

- Consumer surplus doesn't tell us how surplus is divided among consumers!

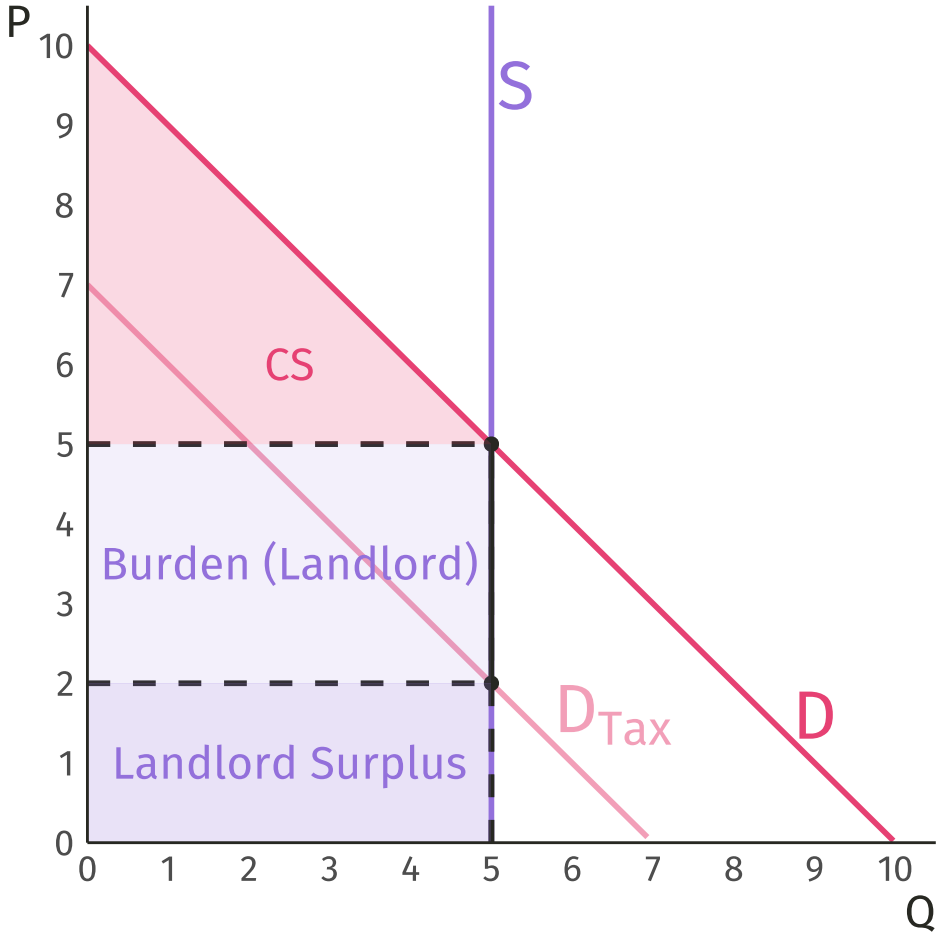
There is often a tradeoff between equity and efficiency.

- Redistribution can create deadweight loss $\longrightarrow$ less total surplus to redistribute.

Should we sacrifice efficiency for equity?

- A normative question!

The Perfect Tax?



Land Tax

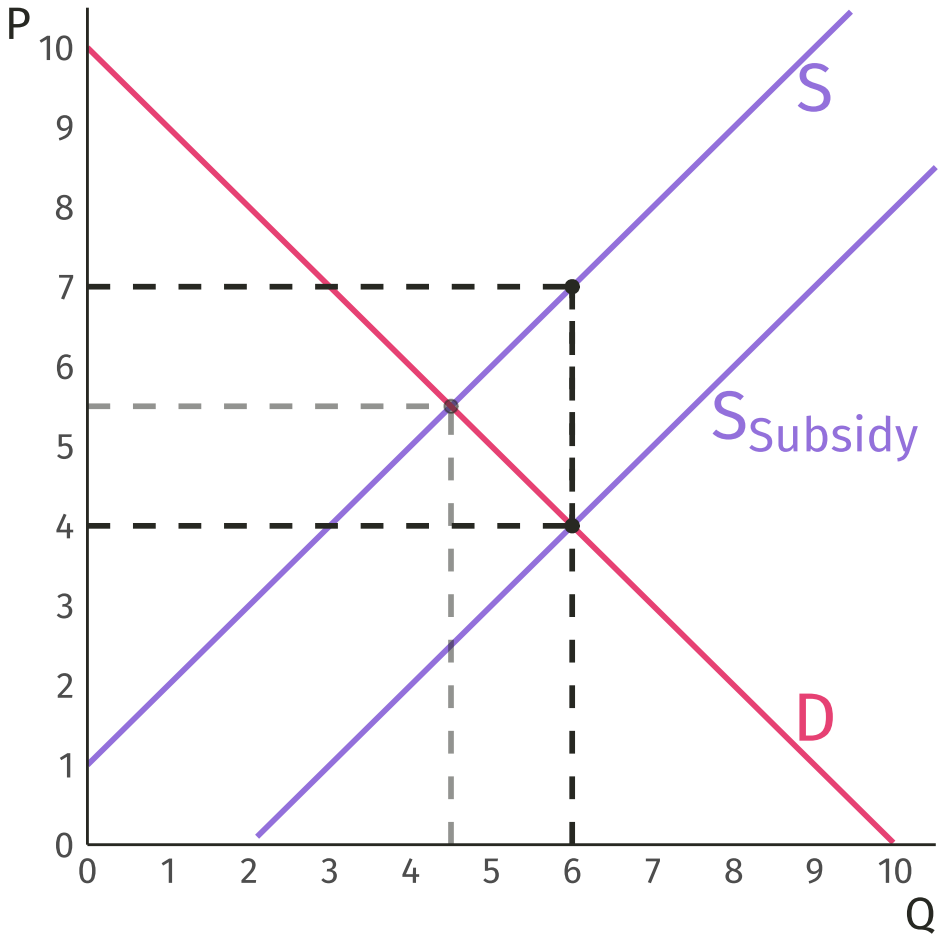
Efficient: Produces no deadweight loss.

Progressive: Landlords bear all of the burden.

Feasible? Probably not (difficult to implement).

Subsidies

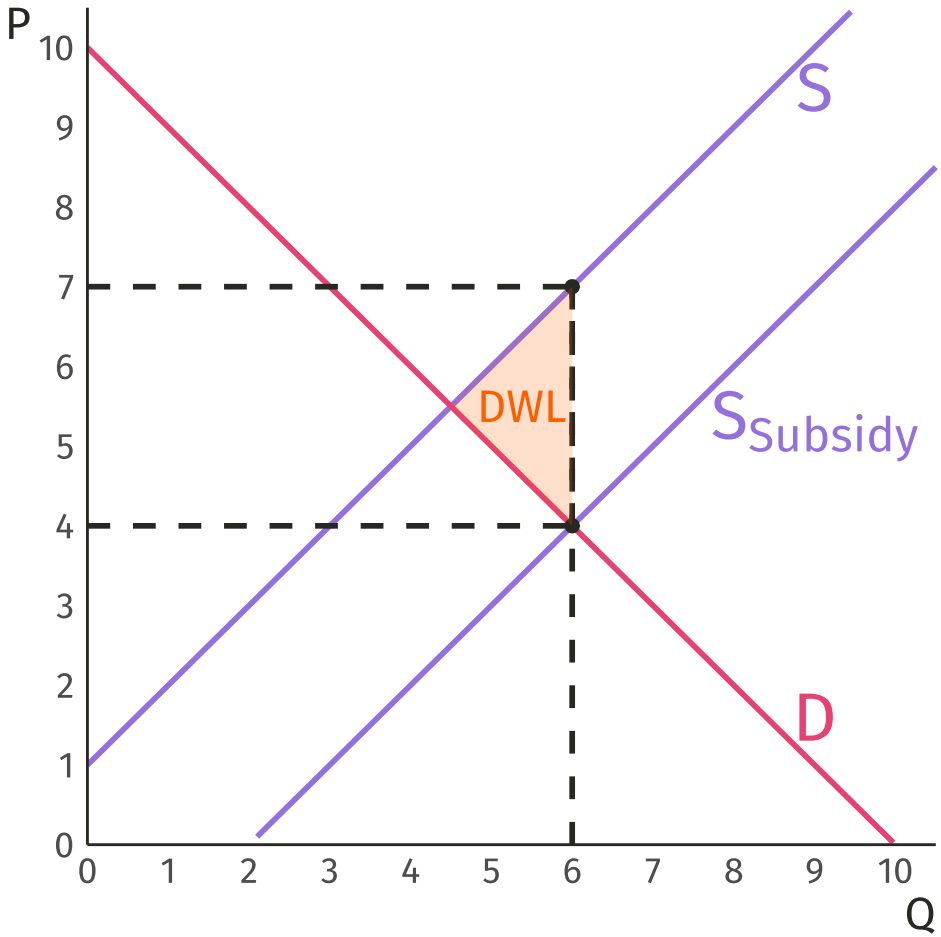
Subsidy for Producers



On your own

Q: How does a per-unit subsidy for producers affect equilibrium price and quantity?

Subsidy for Producers



On your own

Q: How does a per-unit subsidy for producers affect total surplus in an efficient market?

Big Government Cheese

Podcast Question: Why did the US government want to increase the price of milk?

> **A.** Encourage consumers to buy less milk.
>
> **B.** Encourage consumers to buy more milk.
>
> **C.** Penalize dairy farmers.
>
> **D.** Help dairy farmers.