4.4 — Taxation

ECON 410 • Public Economics • Spring 2022

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Outline

Motivation and Types of Taxation

Motivation for Taxation

- Most basic power of the State is the power to tax
- Often two types of reasons for a tax:
    1. Raise revenue for the provision of public goods and transfers
    2. Discourage or encourage certain behaviors and transactions
- Taxes thus have two effects:
    1. Generate tax revenue
    2. Distort individual incentives

Types of Taxation

Taxes on **Income**:

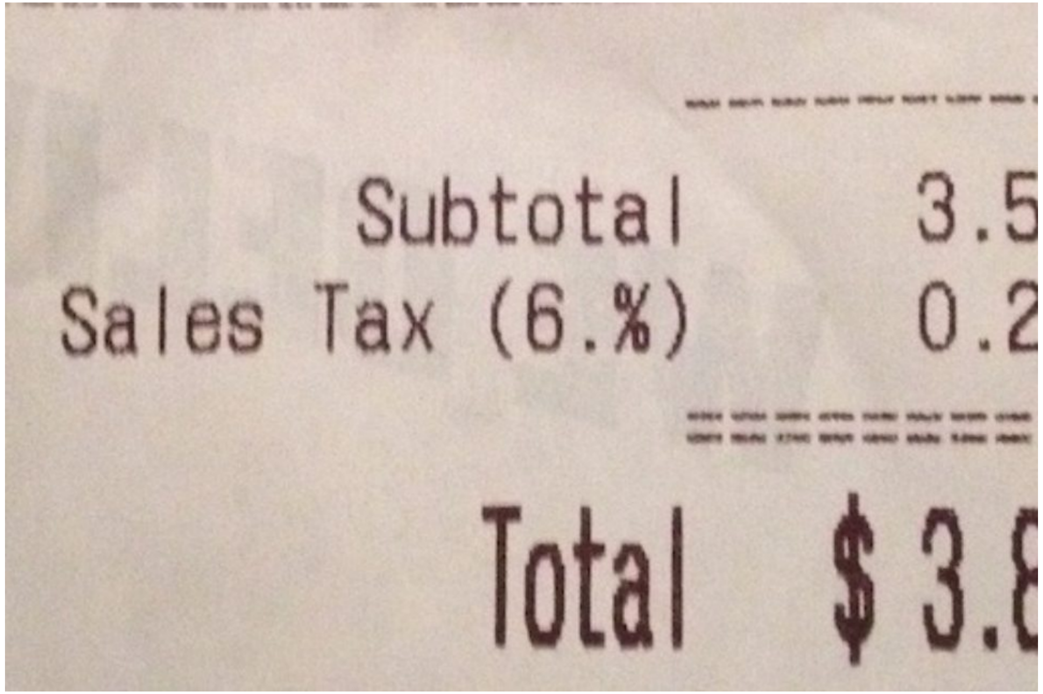
- **Individual income tax** on income (of all sorts) over a year
- **Payroll tax** on wage income earned at a job
- **Captal gains tax** on net value from selling capital assets (e.g. stocks, paintings, houses)
- **Corporate income tax** on net income of corporations

Types of Taxation

Taxes on **Wealth**

- **Wealth tax** on value of owned assets
- **Property tax** on value of real estate (land plus structures)
- **Estate tax** on value of estate (assets) left behind when one dies

Types of Taxation



Taxes on **Consumption**:

- **Sales tax** on all goods and services at point of sale
- **Excise tax** on particular goods and services
- **Tariff** tax on imports (and sometimes exports)

Types of Taxation

Incidence of Taxation

Incidence of Taxation

- Economists focus on the **incidence** of taxation: **how does a tax change behavior and affect welfare?**

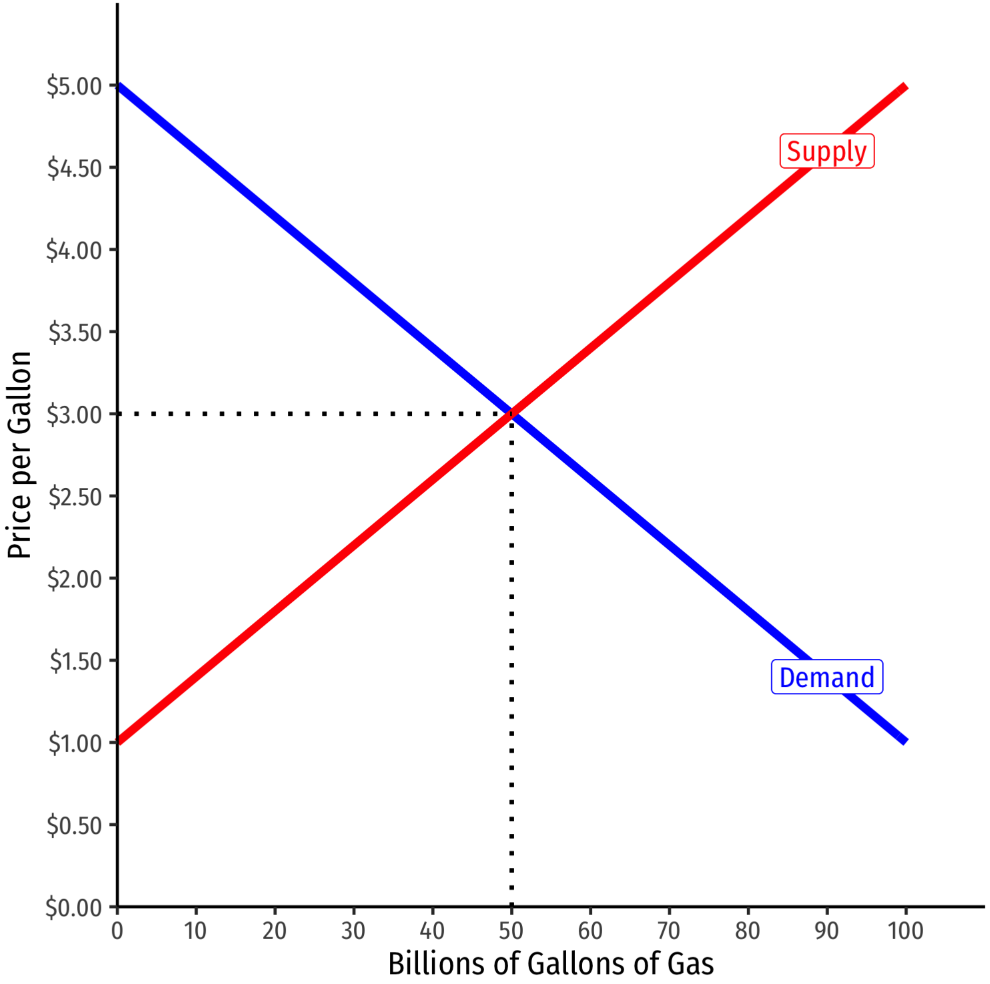
- A tax imposes a **statutory burden** on party *legally required* to pay the tax

- This does not directly translate to the **economic burden**, who actually bears the incidence of the tax

Economic vs. Statutory Incidence

- Economic and statutory burdens are not the same thing!
- Parties may be able to alter their behavior to **avoid** or **shift** it onto others
  - Businesses may pass higher prices onto consumers
  - Consumers can switch to lesser-taxed substitutes (including nothing)
  - People may move their wealth into lesser-taxed assets or jurisdictions

Example: An Excise Tax on Gasoline



- Gasoline market in equilibrium
  - $q_d = q_s =$ 50 billion gallons
  - p $=$ \$3.00/gallon

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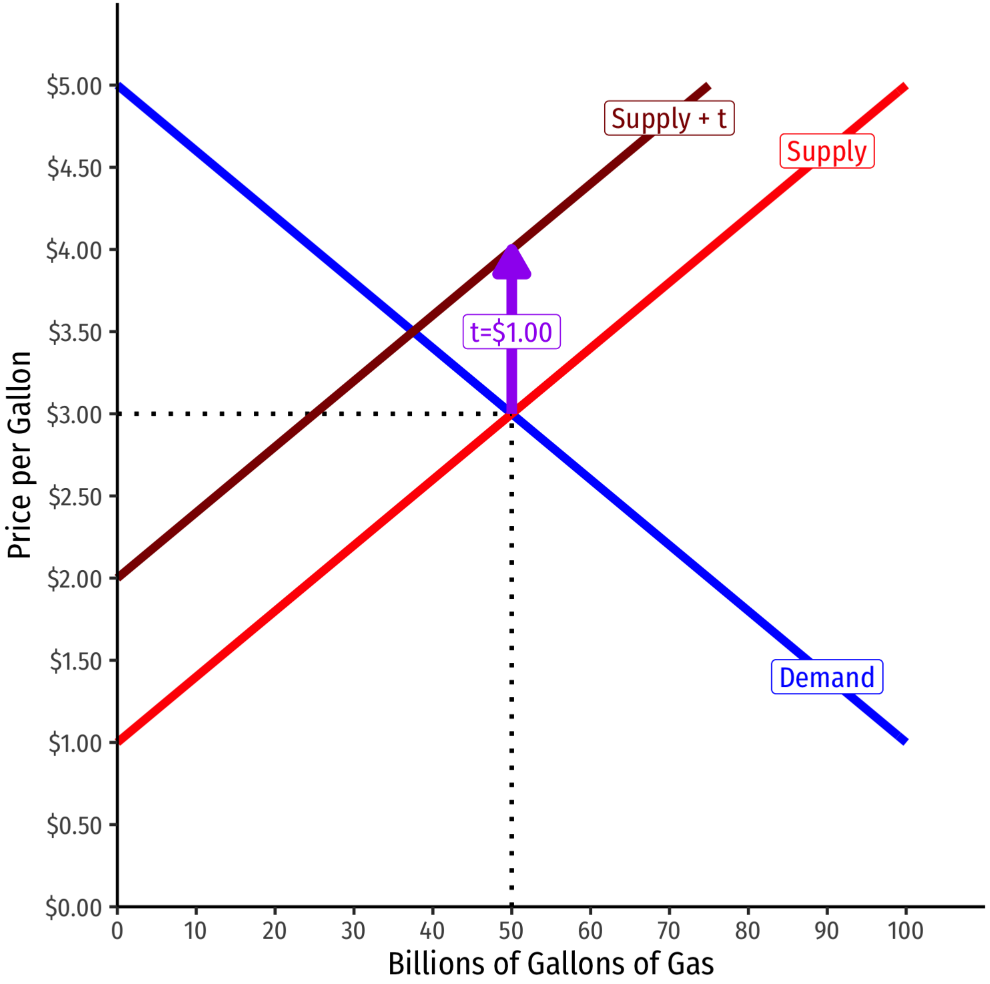

- Gasoline market in equilibrium
  - $q_d = q_s =$ 50 billion gallons
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- Suppose the government levies a $1.00 tax on **suppliers**
  - **Supply** shifts **up** by $1.00

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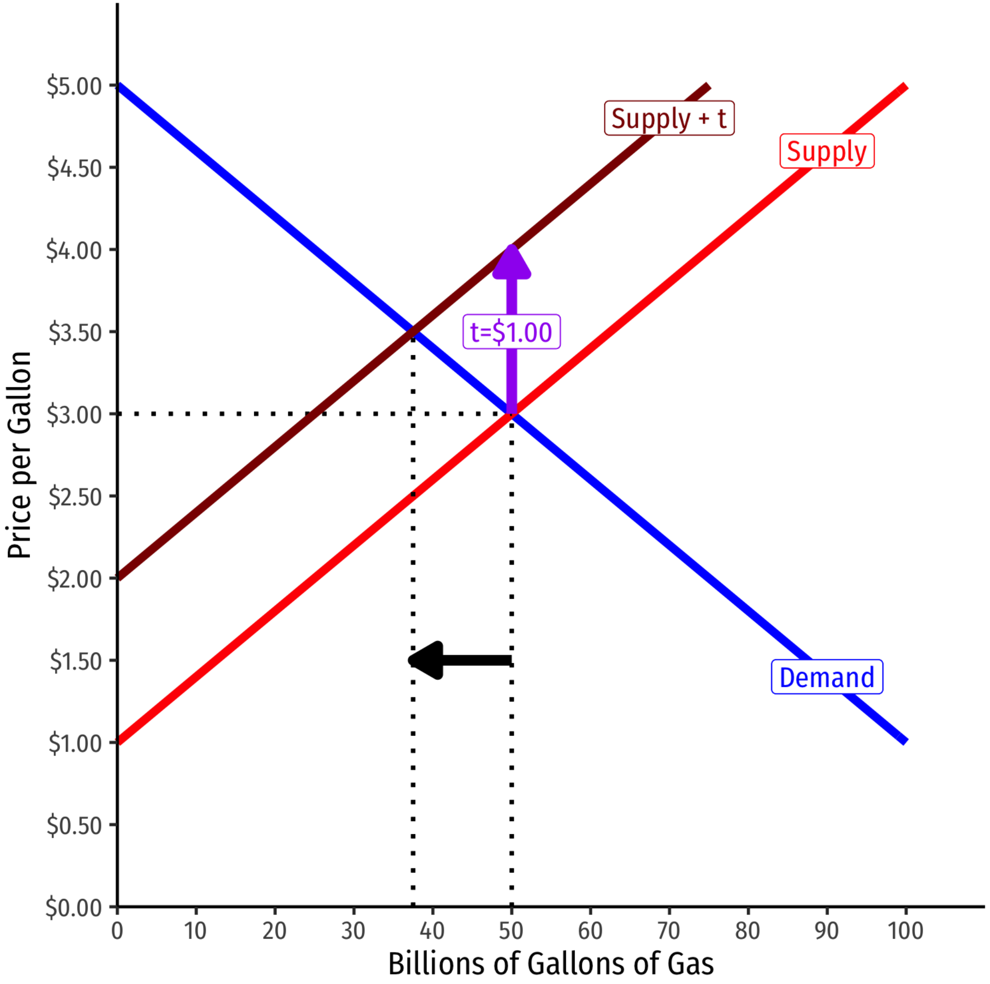
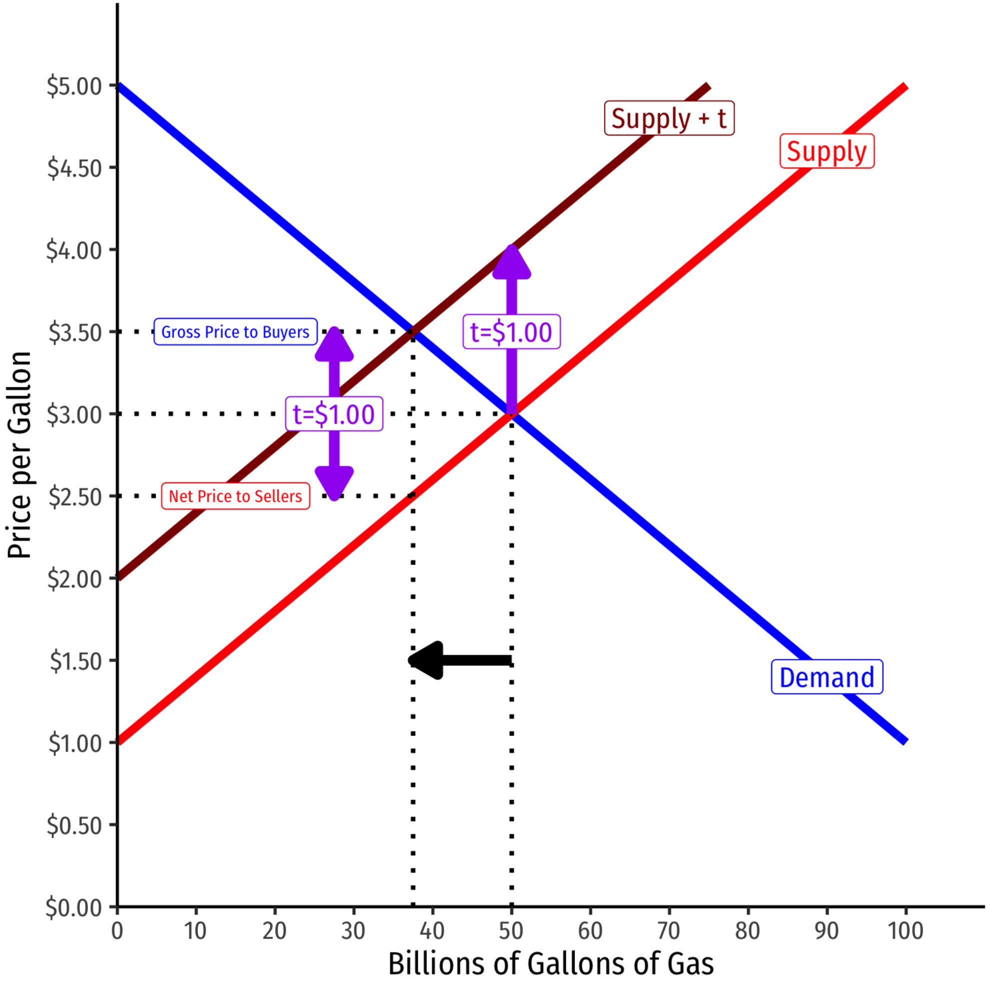


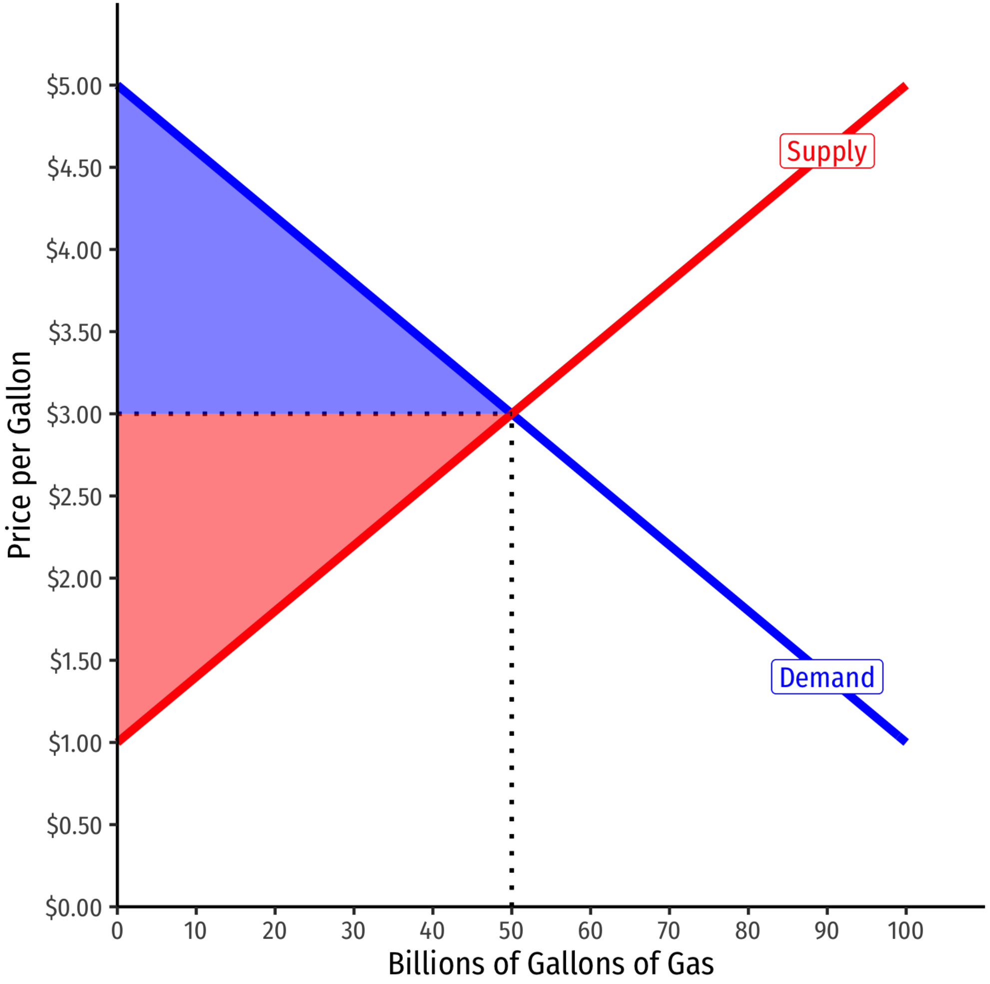
- Gasoline market in equilibrium
  - $q_d = q_s =$ 50 billion gallons
  - p = $3.00/gallon
- Suppose the government levies a $1.00 tax on **suppliers**
  - **Supply** shifts **up** by $1.00
- Q_t decreases to 37.5

Example: An Excise Tax on Gasoline



- **Two** relevant prices now:
- $3.50: Gross price buyers pay (with tax)
- $2.50: Net price sellers receive (after tax)
- Difference between the two is the $1.00 tax!

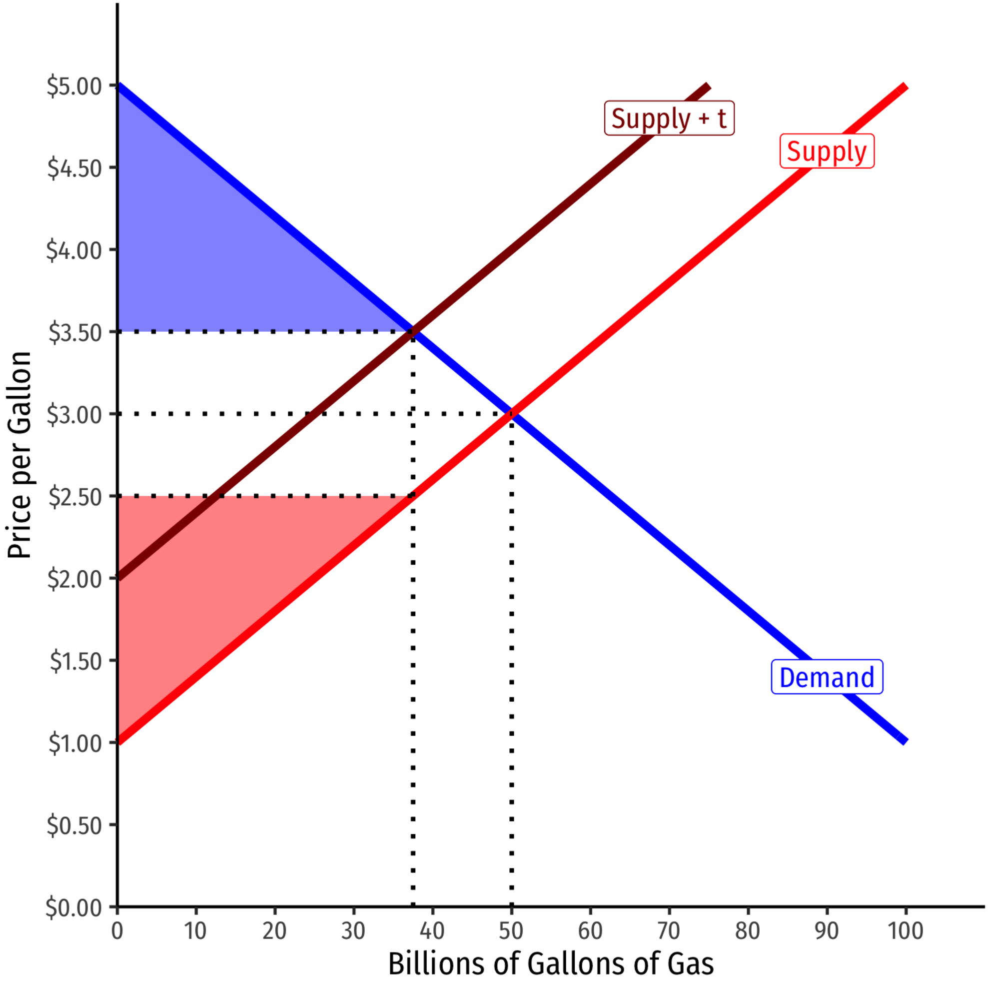
Example: Efficiency & Welfare Effects



- Now we examine the **efficiency** and **welfare effects** of the tax with some **comparative statics**

- Start with the pre-tax market equilibrium
  - Consumer surplus
  - Producer surplus

Example: Efficiency & Welfare Effects



- Post-tax market equilibrium:
- Consumer surplus decreases
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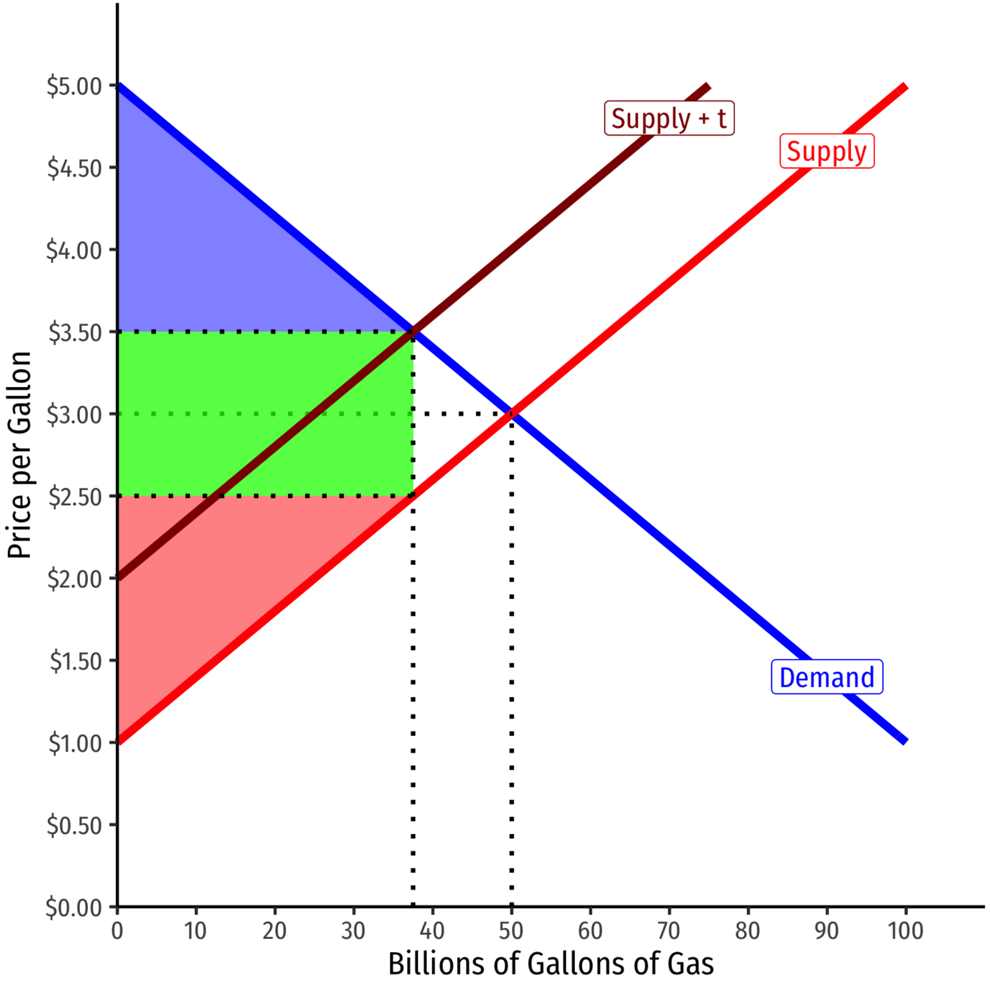

- Post-tax market equilibrium:
- Consumer surplus decreases
  - Buyers pay higher price for fewer gallons
- Producer surplus decreases
  - Sellers receive lower price for fewer gallons
- Tax revenue to government
  - $R_G = t \times q_t$
  - Transfers from consumers and producers to government

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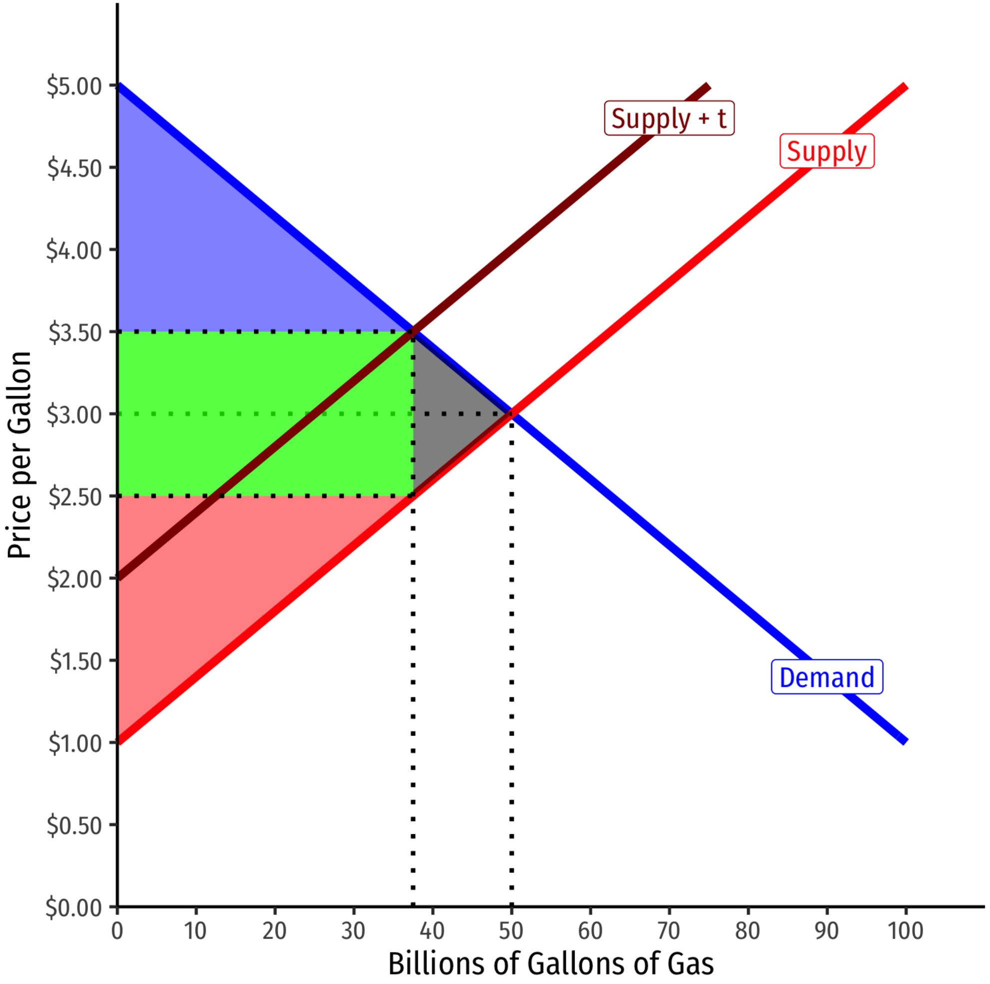
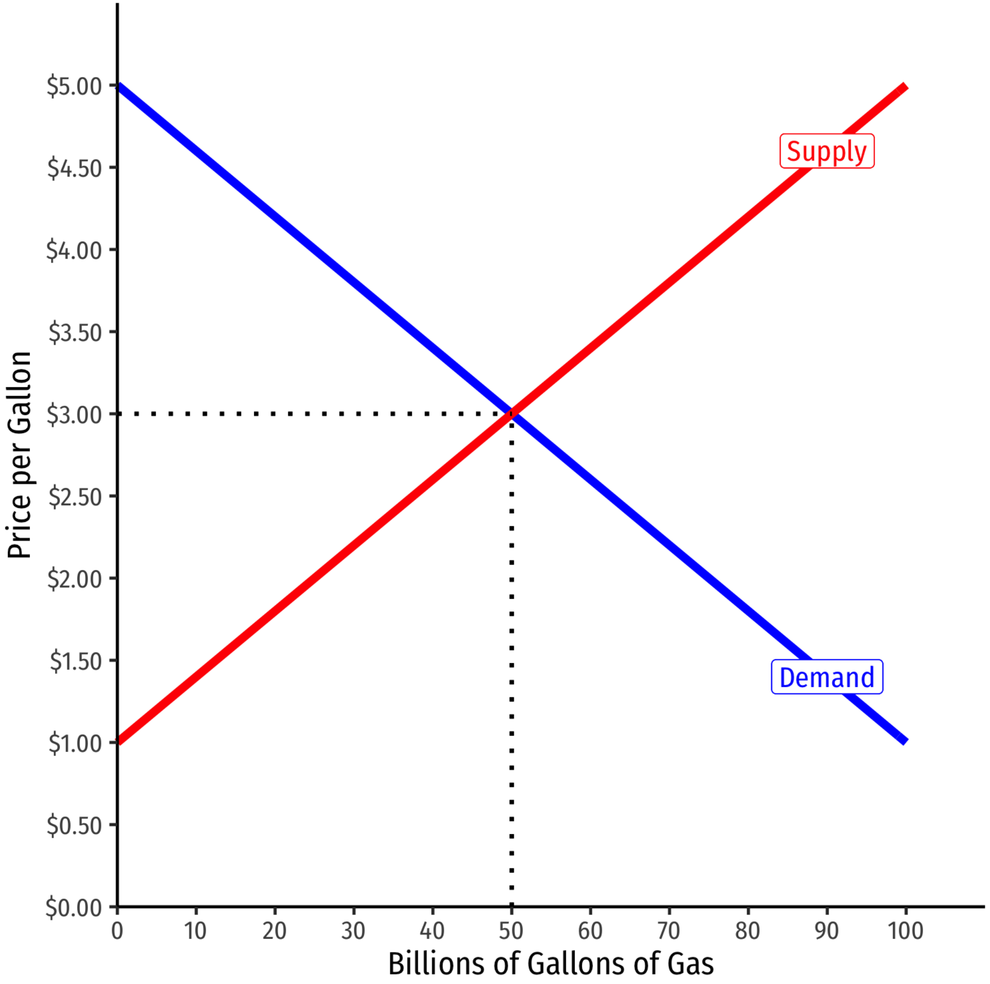


- Post-tax market equilibrium:
- **Deadweight Loss (DWL)**
  - Surplus that existed pre-tax that is now wasted
  - Gains from exchange between willing buyers and sellers that is now made impossible
- **This is the true social cost of a tax**
  - Tax revenues are just a transfer, changes the **distribution** of surplus, but it still exists (going to *someone*)
  - DWL *destroys* pre-existing surplus

Example: An Excise Tax on Gasoline



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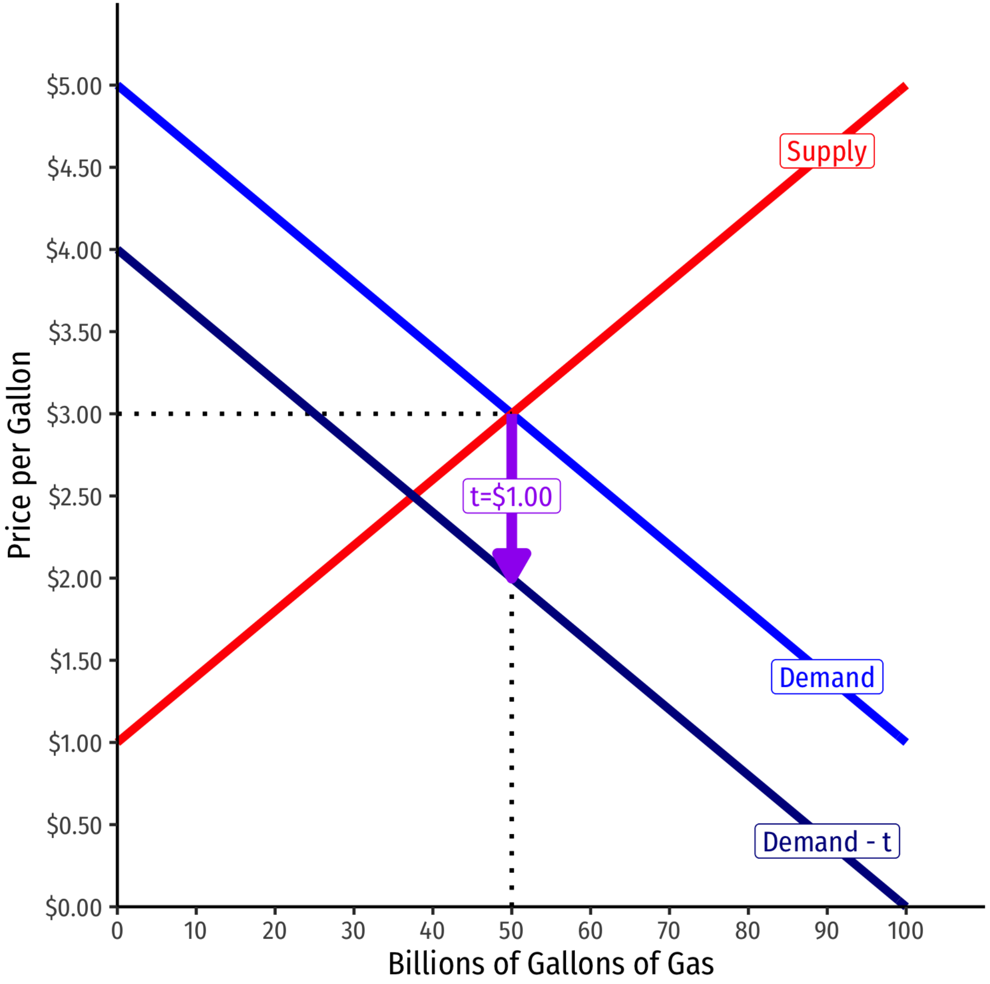

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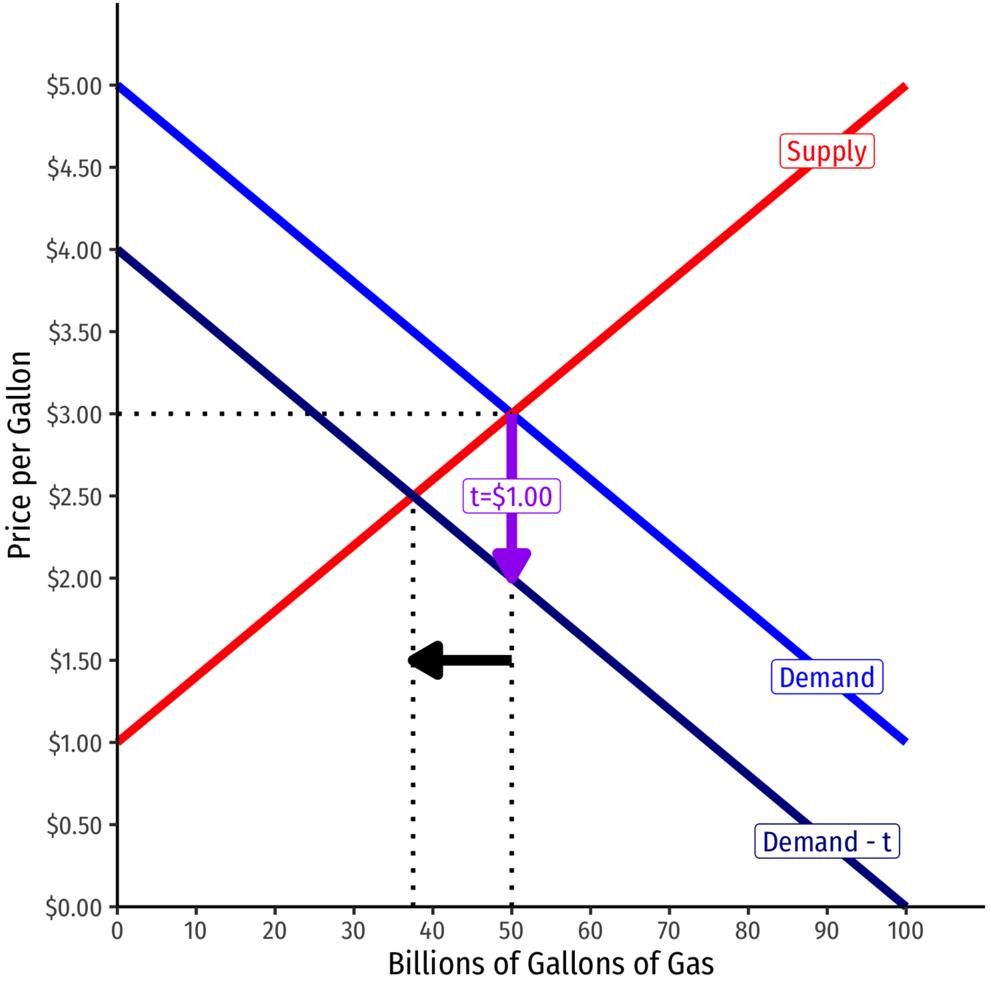

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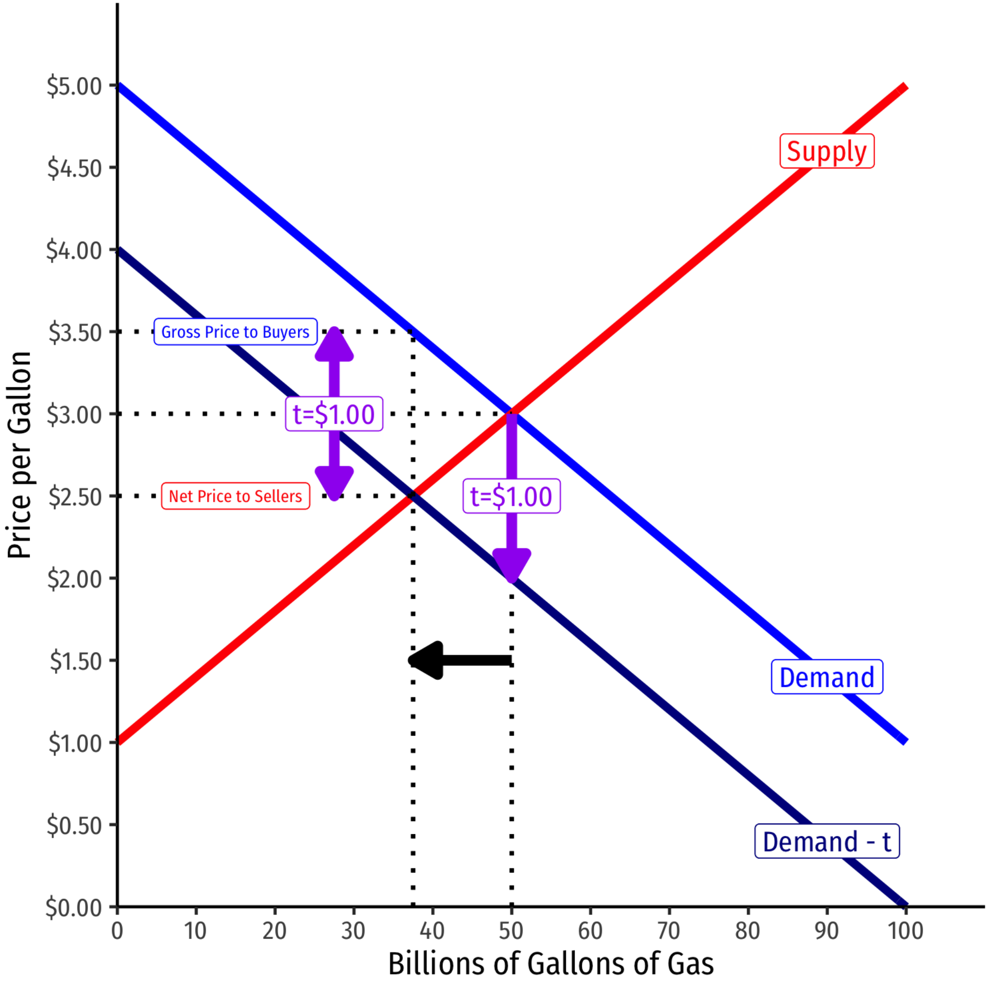

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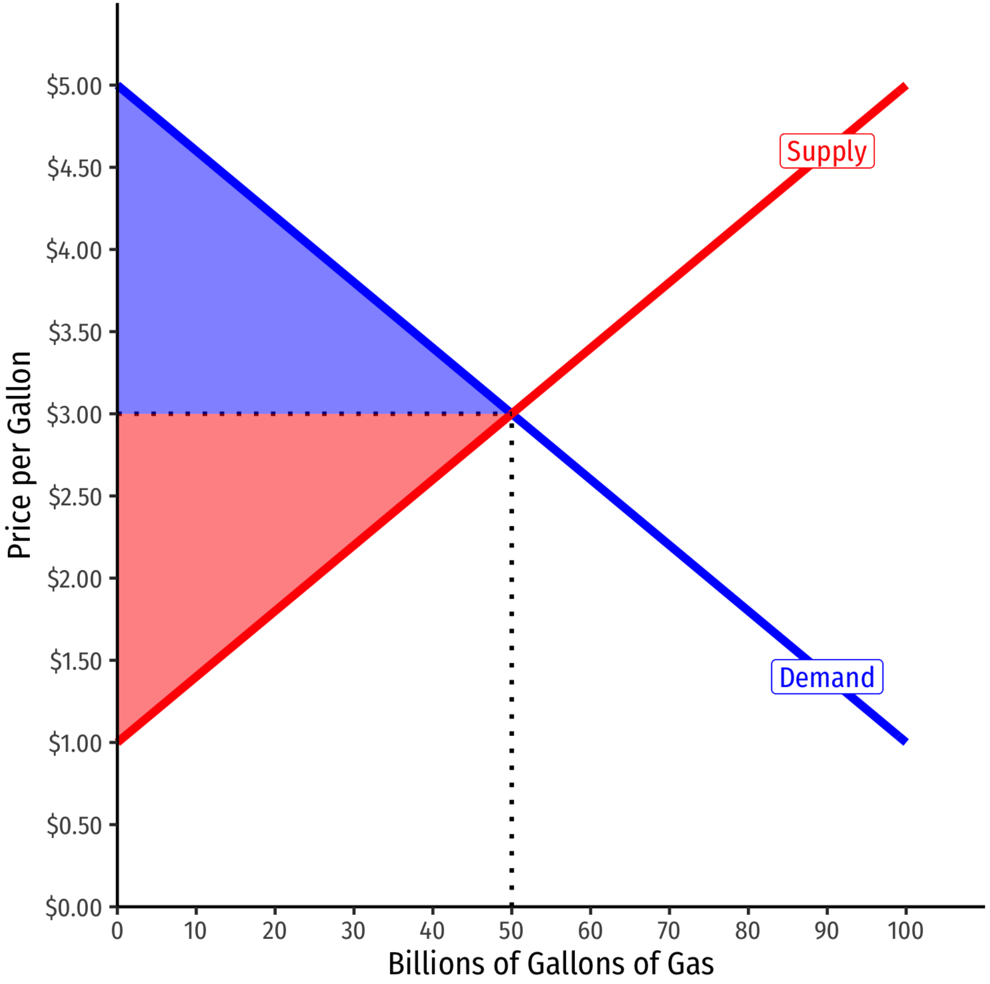

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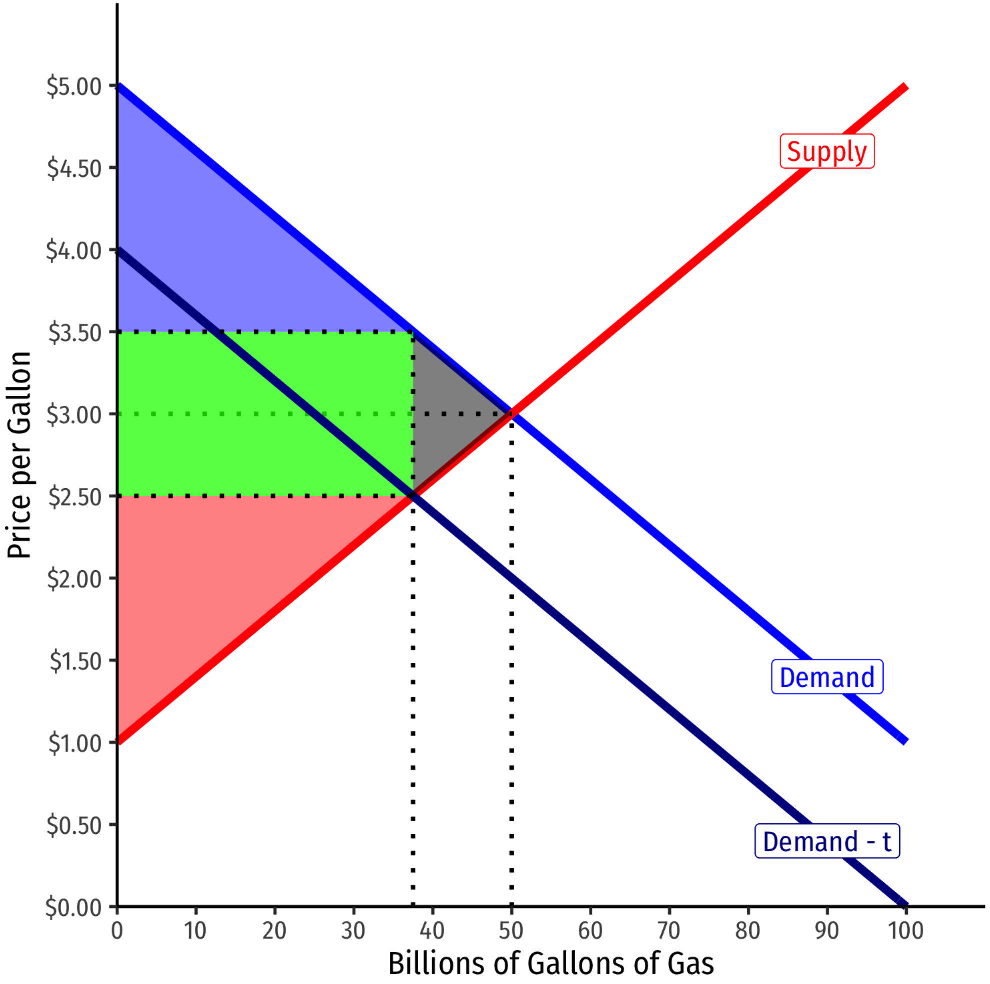
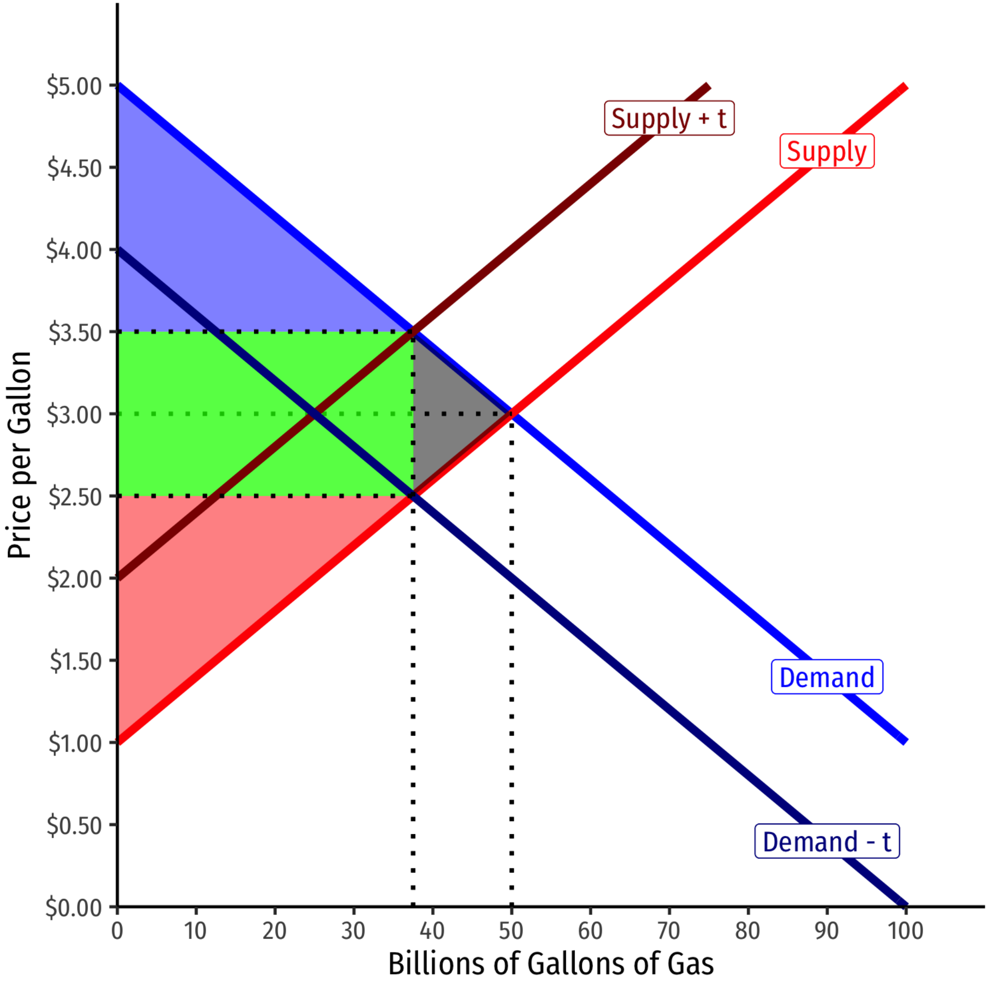


- **Exact same** post-tax market equilibrium:
- **Consumer surplus** decreases
- **Producer surplus** decreases
- **Tax revenue** to government
- Surplus lost to **Deadweight loss**

Example: Efficiency & Welfare Effects



- The **statutory burden is irrelevant!**
- Placing the tax on **Suppliers** or on **Demanders** resulted in the same **economic incidence** of the tax!

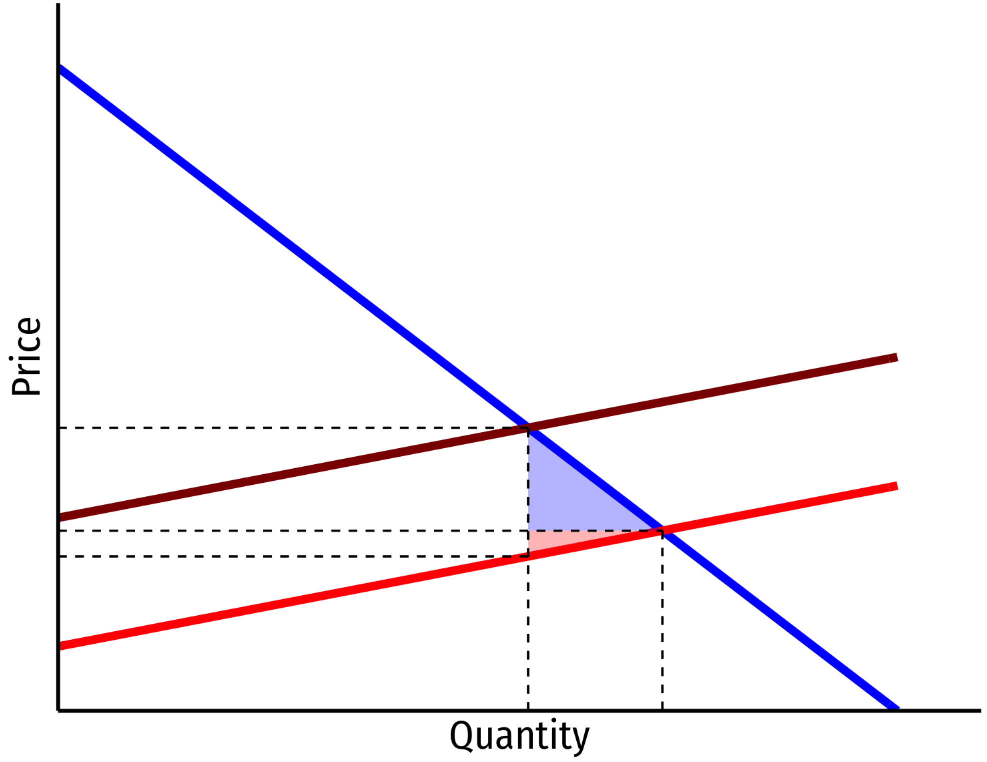
Statutory Burden vs. Economic Incidence

- The **statutory burden is irrelevant!**
- Individuals may *shift* burden onto others until the same equilibrium is reached
- **Relative price elasticities** actually determine the distribution of the **economic incidence** between consumers & producers

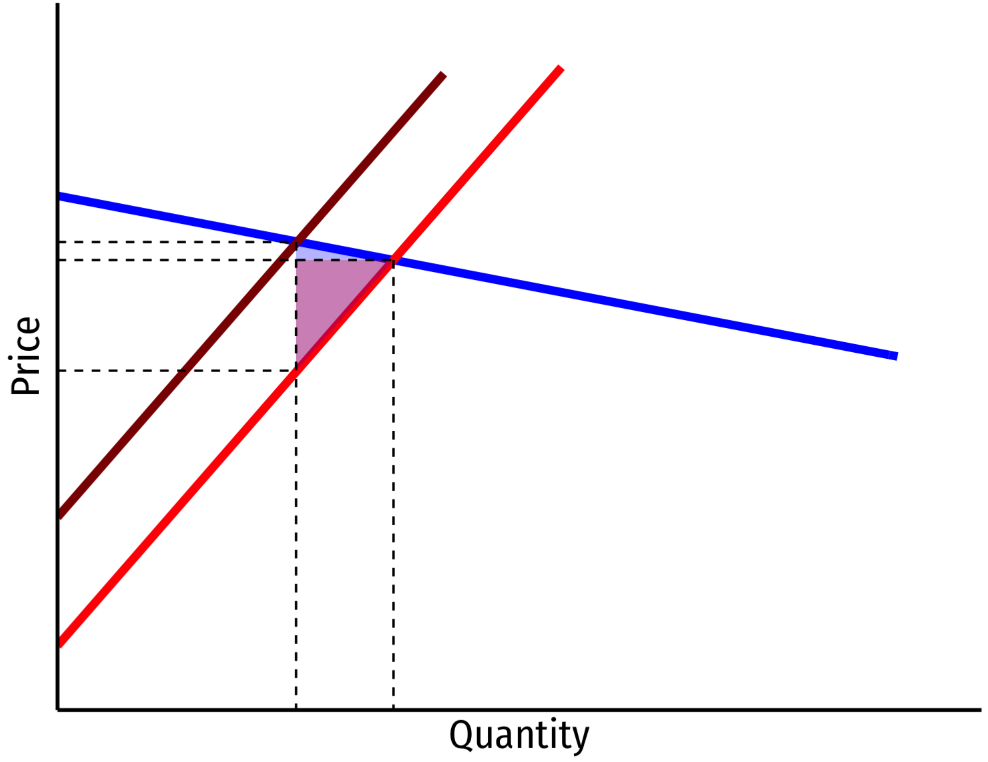
Relative Price Elasticities and Economic Incidence

Surpluses ***lost to DWL*** from an identical tax on suppliers with:

Supply more elastic than Demand



Demand more elastic than Supply



Relative Price Elasticities and Economic Incidence

- **Group with a relatively lower elasticity bears more tax burden**
- Elasticity $\implies$ responsiveness in buying/selling behavior to price change
  - Elasticity $\implies$ the ability to **avoid** the tax by changing behavior
- **Relatively *more* elastic group shifts some burden onto relatively *less* elastic group**

Estimating Pass-Through

- Portion of tax burden borne by consumers, known as the **"pass-through"** rate, is a function of the elasticities:

$$\rho = \frac{\epsilon_S}{|\epsilon_D| + \epsilon_S}$$

- Remainder is borne by producers

$$(1 - \rho) = \frac{\epsilon_D}{|\epsilon_D| + \epsilon_S}$$

Estimating Pass-Through

Example 1: Let

- $\epsilon_s = 0.5$
- $\epsilon_d = -1.0$

$$\rho = \frac{0.5}{|-1| + 0.5} = 0.333$$

Consumers, (a higher elasticity than producers) bear 33% of the tax burden, while producers bear 67%.

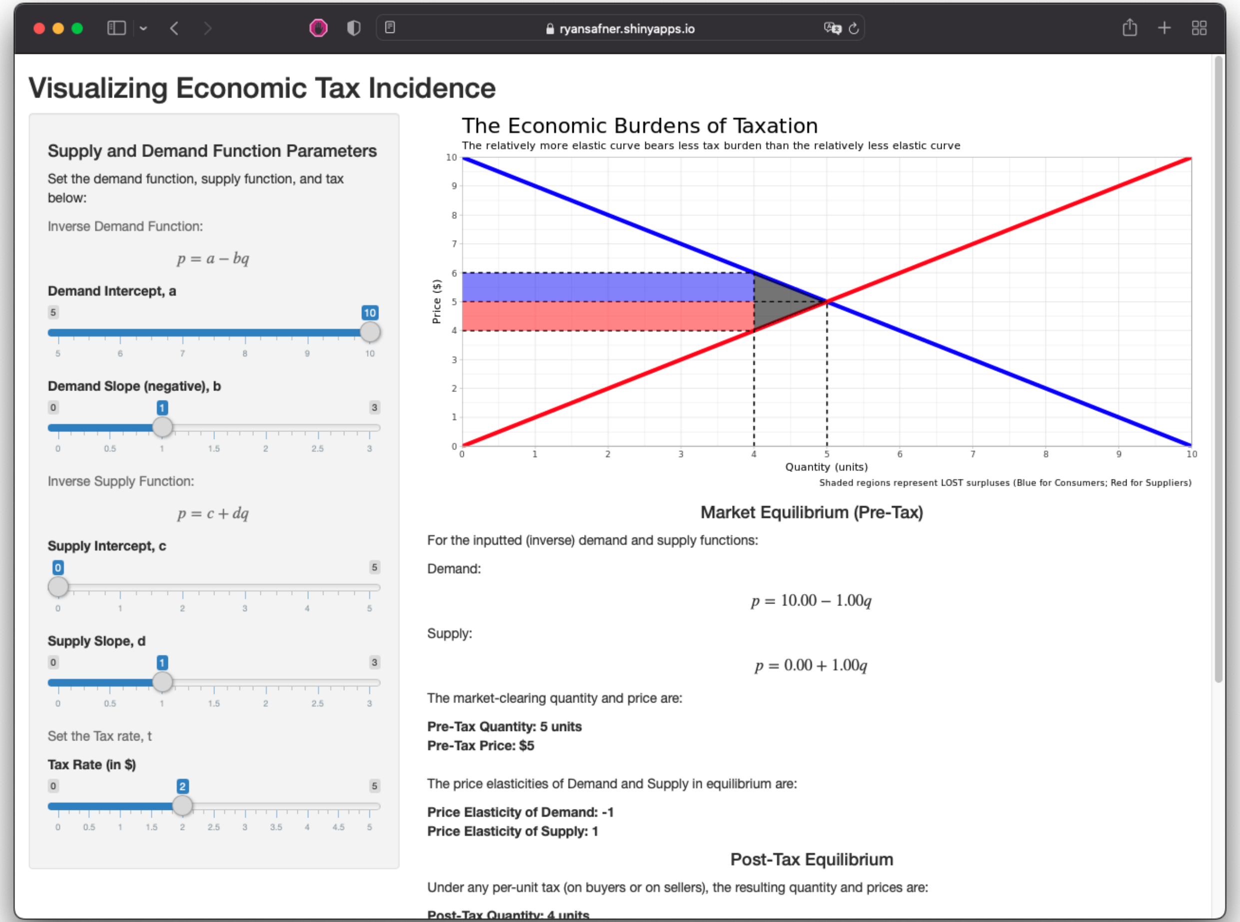
Example 2: Let

- $\epsilon_s = 1$
- $\epsilon_d = -0.5$

$$\rho = \frac{1}{|-1| + 0.5} = 0.667$$

Consumers, (a lower elasticity than producers) bear 67% of the tax burden, while producers bear 33%.

Visualizing Incidence



Some Principles of Tax Fairness

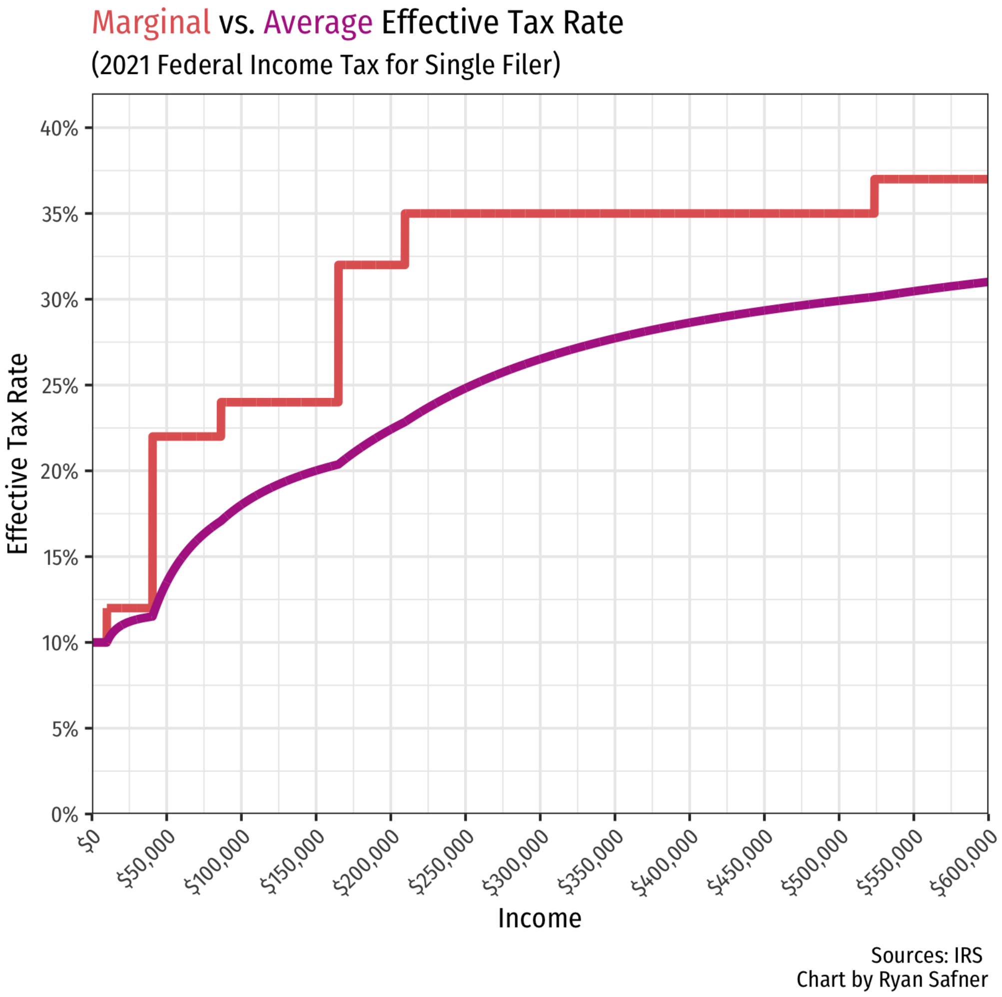
Tax Fairness Principles

- **Benefits principle**: those who benefit from public spending should bear the burden of the cost
- **Ability-to-pay principle**: those with a greater ability to pay should pay more taxes (and vice versa)
- Ideal **"Lindahl Tax"**: each person pays their max WTP for public goods
    - Obviously implausible, not incentive-compatible

Types of Taxes

- **Progressive tax**: (effective) tax rates increase with taxable activity
    - Income tax: Higher-income groups pay higher tax rates
- **Regressive tax**: (effective) tax rates decrease with taxable activity
    - Sales tax: Lower-income groups pay more in taxes (consume more, invest less, compared to wealthy)
    - Payroll tax: caps out at a maximum
- **Flat tax**: tax rates are the same for everyone

Marginal vs. Average Tax Rates



- For many taxes, especially individual income tax, key difference between:
- **Marginal tax rate**: tax rate on last (marginal) dollar of taxable income
    - individual income tax has increasing marginal tax rates (progressive)
- **Average tax rate**: ratio of total taxes paid to total taxable income:

$$\frac{\text{Taxes Paid}}{\text{Taxable Income Earned}}$$

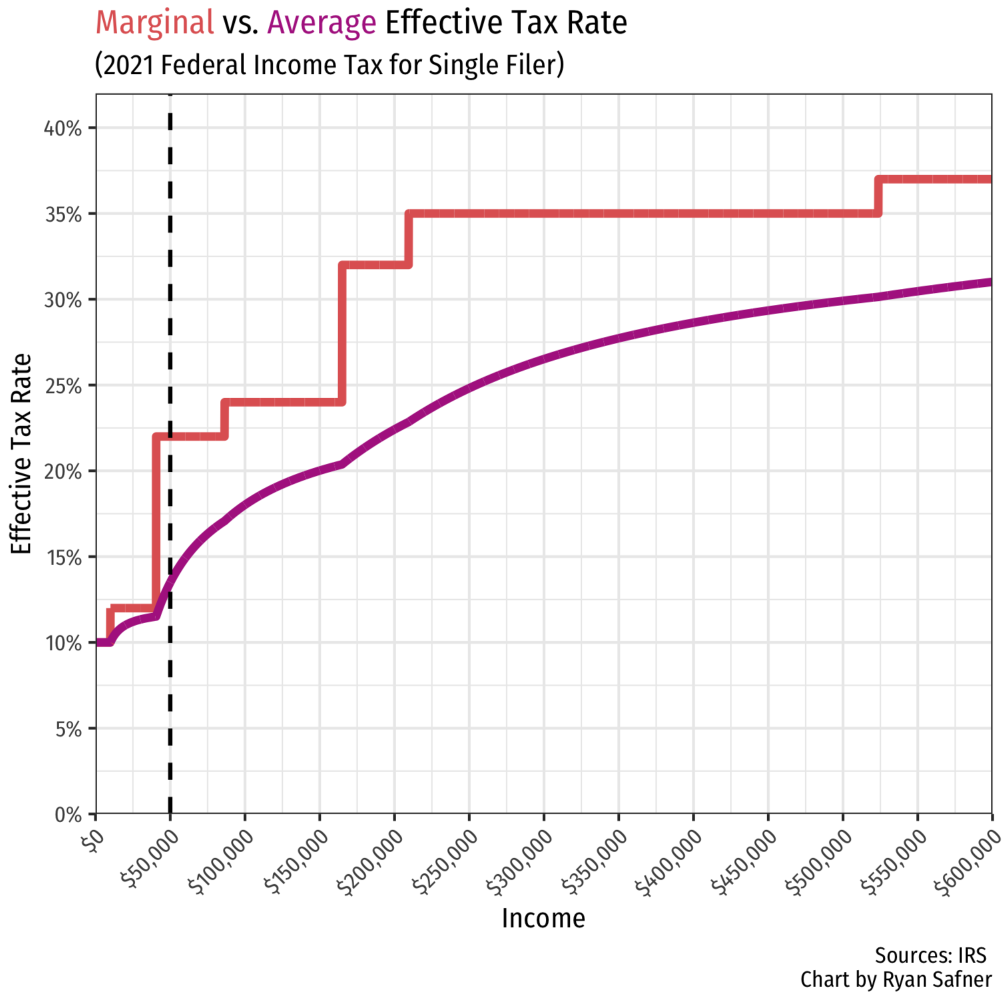
Individual Income Tax: Marginal Tax Rates

2021 Federal Income Tax Brackets and Rates for Single Filers, Married Couples Filing Jointly, and Heads of Households

Tax Rate	For Single Filers, Taxable Income	For Married Individuals Filing Joint Returns, Taxable Income	For Heads of Households, Taxable Income
10%	Up to $9,950	Up to $19,900	Up to $14,200
12%	$9,951 to $40,525	$19,901 to $81,050	$14,201 to $54,200
22%	$40,526 to $86,375	$81,051 to $172,750	$54,201 to $86,350
24%	$86,376 to $164,925	$172,751 to $329,850	$86,351 to $164,900
32%	$164,926 to $209,425	$329,851 to $418,850	$164,901 to $209,400
35%	$209,426 to $523,600	$418,851 to $628,300	$209,401 to $523,600
37%	Over $523,600	Over $628,300	Over $523,600

Source: Internal Revenue Service

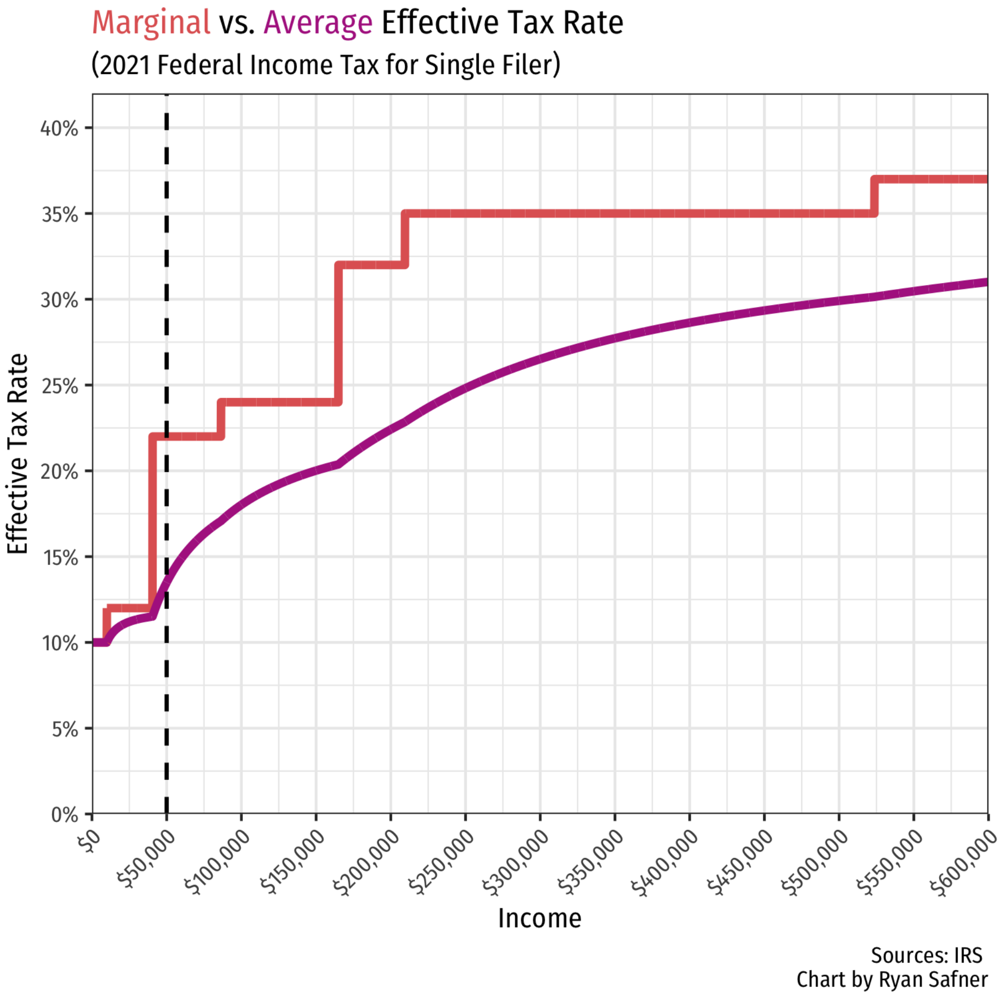
Marginal vs. Average Tax Rates (Example)



Example: Suppose your (taxable) income is $50,000

- First $9,950 is taxed at 10% ($995)
- From $9951—$40,525 is taxed at 12% ($3,469)
- From $40,526 to $50,000 is taxed at **22%** ($2,084)
- **Total tax bill: $6,548**

Marginal vs. Average Tax Rates (Example)



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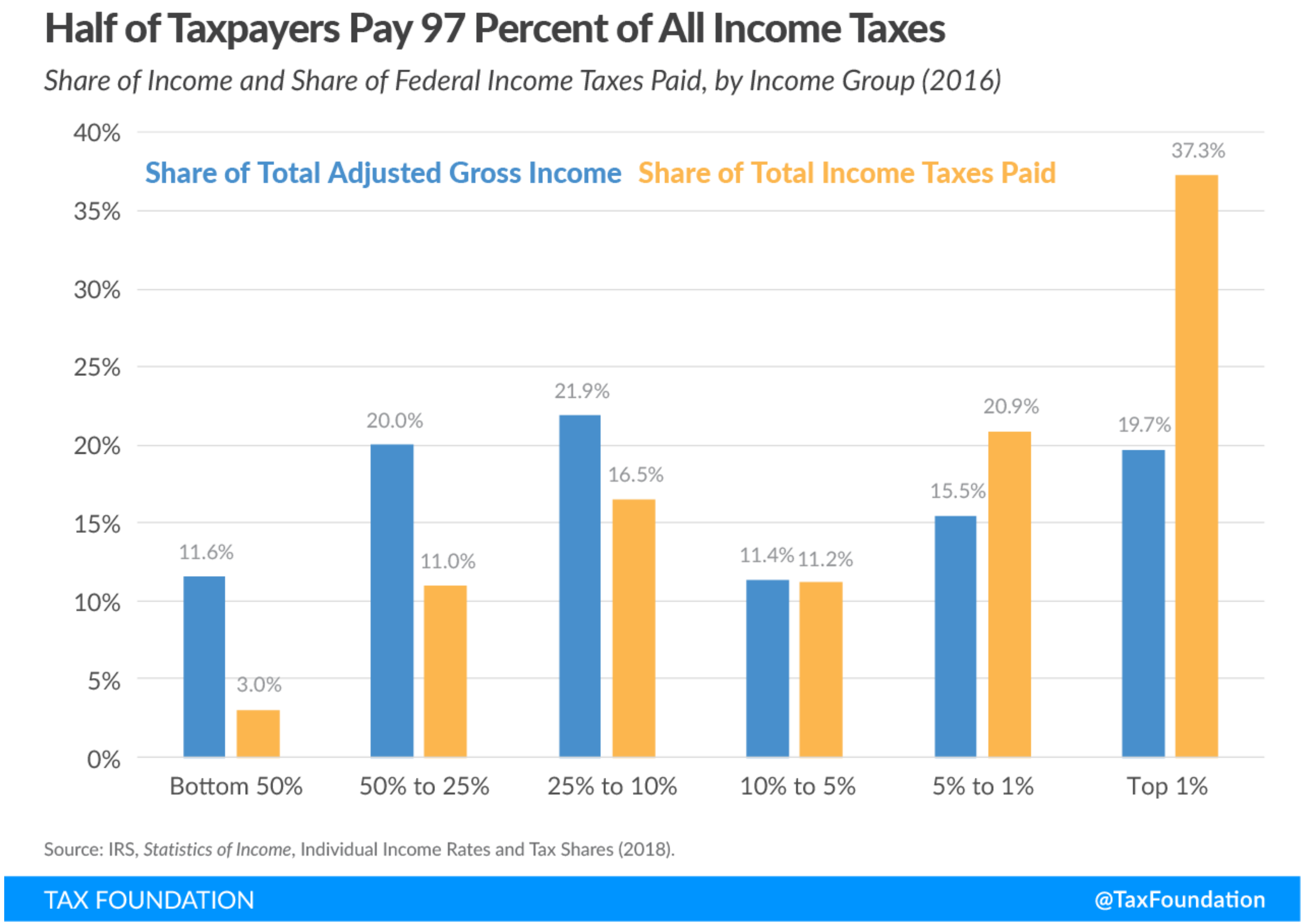
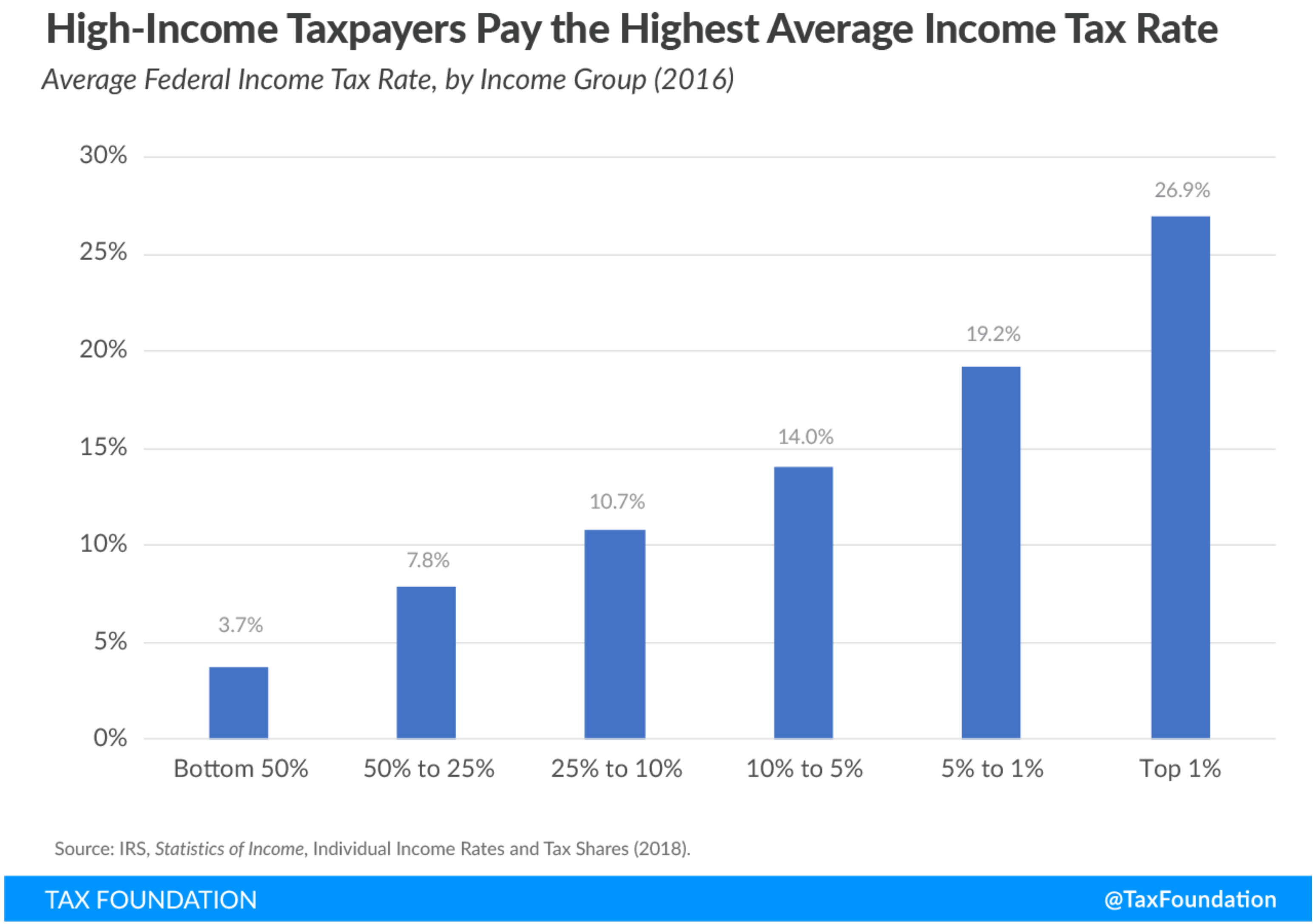
- **Average (effective) tax rate** $6548/$50,000 = 13%

- **Marginal tax rate**: 22%

Individual Income Tax: Distribution



Individual Income Tax: Average Tax Rate



Taxes Distort Incentives

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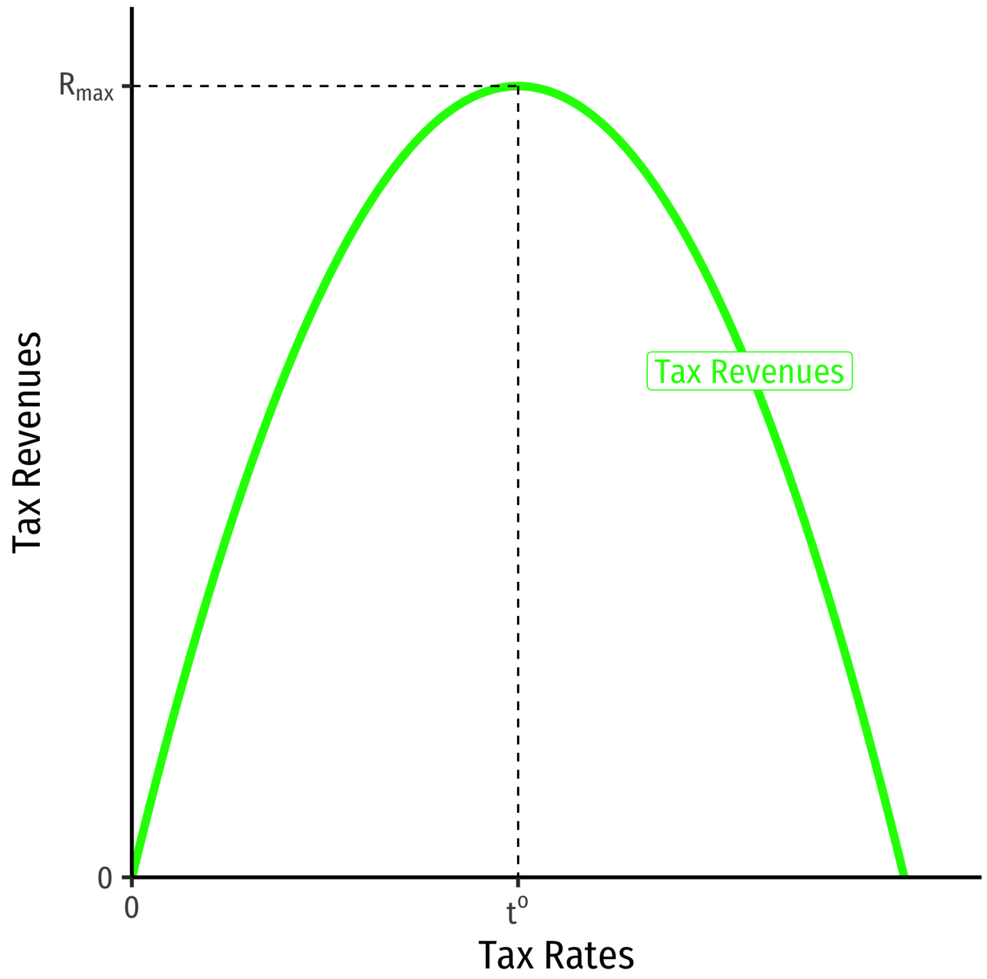


Taxes have two effects:

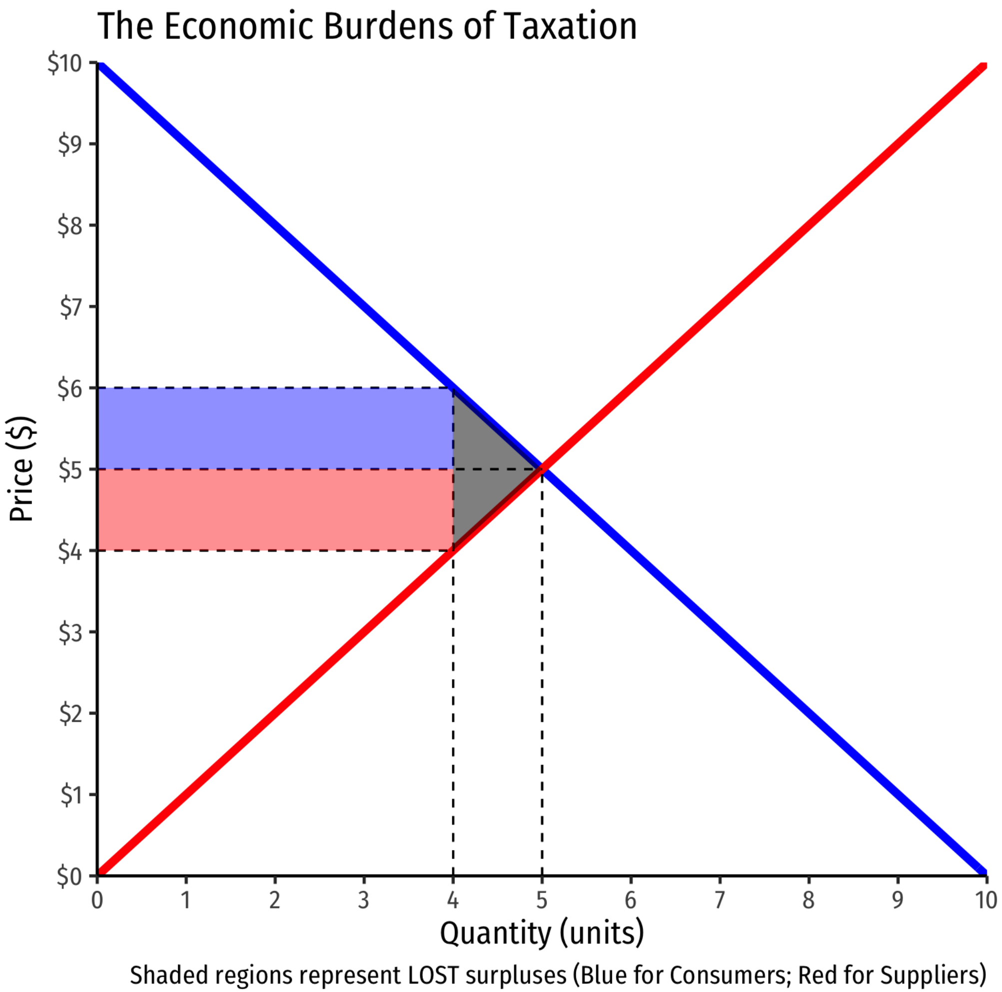
1. Raise revenue for State

2. Discourage individuals from taxed activity

   - reduce activity
   - find untaxed substitutes (legal or illegal)
   - engage in hoarding, tax avoidance

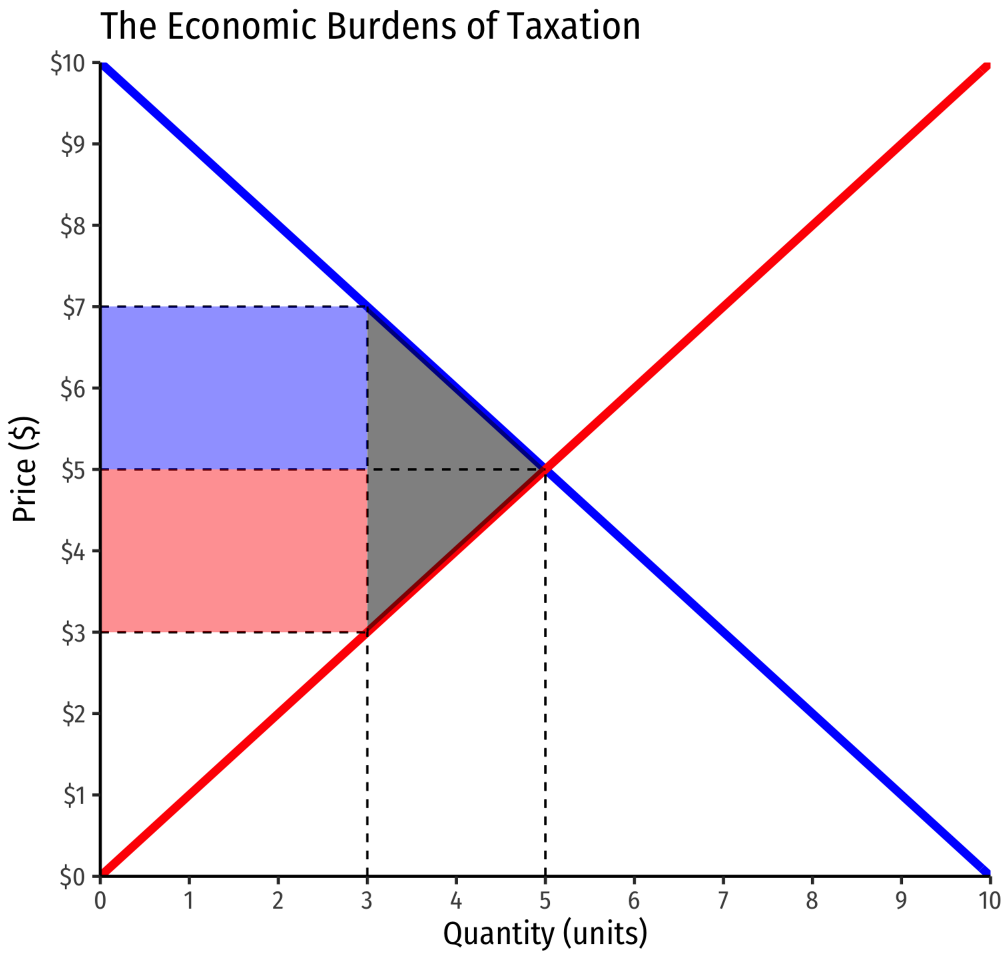
- Optimal tradeoff between two effects for revenue-maximizing government

Taxes Distort Incentives



- Tax of t:
  - $G_1 = 8$
  - $DWL_1 = 1$

Taxes Distort Incentives



Shaded regions represent LOST surpluses (Blue for Consumers; Red for Suppliers)

- Tax of t:
  - $G_1 = 8$
  - $DWL_1 = 1$
- Tax of $2t$:
  - $G_2 = 12$
  - $DWL_1 = 4$
- Higher tax rates *increase the rate of loss* of surplus
  - $\Delta G = 1.5x$ increase
  - $\Delta DWL = 4x$ increase
- In fact, $\Delta DWL = (\Delta t)^2$

Using The Tax System for Political Goals

Using The Tax System for Political Goals

- Businesses can deduct interest payments on their **debt** from corporate taxes, but not on **dividend** payments to shareholders $\Longrightarrow$ corporations use more debt than equity

- **R&D tax credit**: businesses can reinvest corporate profits into research and development to avoid corporate income taxes

- 401(k)s benefits are not taxed $\Longrightarrow$ people invest more in 401(k)s for retirement

- Homeowners can deduct **mortgage interest** payments from their taxes, but renters cannot deduct anything $\Longrightarrow$ more homeownership than renting

Messing With the Tax Code: Good Politics

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NEWS IN BRIEF

Boehner Opens Another Heap Of Letters From Constituents Asking To Give Corporations More Tax Breaks

4/22/15 9:29AM • SEE MORE: NEWS IN BRIEF

WASHINGTON—Pouring out an overflowing sack of mail onto his desk, House Speaker John Boehner (R-OH) reportedly hunkered down Wednesday for yet another long night of opening letters from constituents asking him to give large corporations more tax breaks. “I’ve received a whole stack of letters asking me to grant Fortune 500 companies hundreds of millions of dollars in tax write-offs, and another 10 or 15 more urging me to increase corporate subsidies to offset their tax burden—and I still have dozens of letters to go through,” said Boehner, glancing down at a pile of handwritten notes from a retired veteran in Fairfield, a single mom in Troy, and an entire fifth-grade class in Dayton, all

Messing With the Tax Code: Consequences

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Amazon will pay $0 in taxes on $11,200,000,000 in profit for 2018

Kristin Myers
Yahoo Finance February 16, 2019

While some people have received some surprise tax bills when filing their returns, corporations continue to avoid paying tax — thanks to a cocktail of tax credits, loopholes, and exemptions.

washingtonpost.com

Sections

The Washington Post
Democracy Dies in Darkness

Ryan Safner

Economic Policy

A company Trump attacked will receive state tax breaks to keep jobs in the U.S.

Add to list

Messing With the Tax Code: Consequences

Skip Tognetti 🤌
@togneter

Honestly, I’m not sure people completely understand how small distilleries, generally with VERY little capital on hand, are changing their business models in just a week. We appreciate the outpouring of love. We’re working like crazy to get what we need to make more sanitizer.

12:40 PM · Mar 25, 2020 from Seattle, WA

Read the full conversation on Twitter

542 Reply Copy link

Read 9 replies

Messing With the Tax Code: Consequences

Skip Tognetti 👌 @togneter · Mar 25, 2020

Replying to @togneter

Meanwhile, we're being required to denature the alcohol to make it not drinkable...so that it doesn't get TAXED AS AN ALCOHOLIC BEVERAGE, just in case you wanted to drink a 160-proof ethanol/glycerin/hydrogen peroxide cocktail. But denaturing agents are nearly impossible to find.

Skip Tognetti 👌
@togneter

There is literally no medical reason to denature. Taxation. That's it.

In WA, that means if I sell a liter for $10, which I'm barely covering my costs on, the tax owed between state and federal governments is EIGHT DOLLARS AND TWENTY THREE CENTS.

And yet...

12:40 PM · Mar 25, 2020 from Seattle, WA

183 Reply Copy link

Read 8 replies

Messing With the Tax Code: Consequences

learnliberty.org

The Tax Code Is Designed to Penalize Working Women

SARAH SKWIRE | MAY 22, 2016 | HISTORY

Facebook Twitter Email

***Editor's Note**: This is part two in a two part series from Sarah Skwire on women and liberty. You can read part one here.*

The Tax Code Is Designed to Penalize Working Women

Shortly after writing a check to the IRS, I got an $800 bill from my accountant for her work preparing my taxes, so I'm in a mood to be cranky about the income tax. But in addition to my traditional late spring tax-related grumpiness, I'm always a little disturbed that taxes—and the very specific ways in which the tax code is structured against working women—aren't more of a political rallying point for women in general. Here's what I mean.

The Bias Against Secondary Earners

In the introduction to his book *Taxing Women*, Edward McCaffery notes that the

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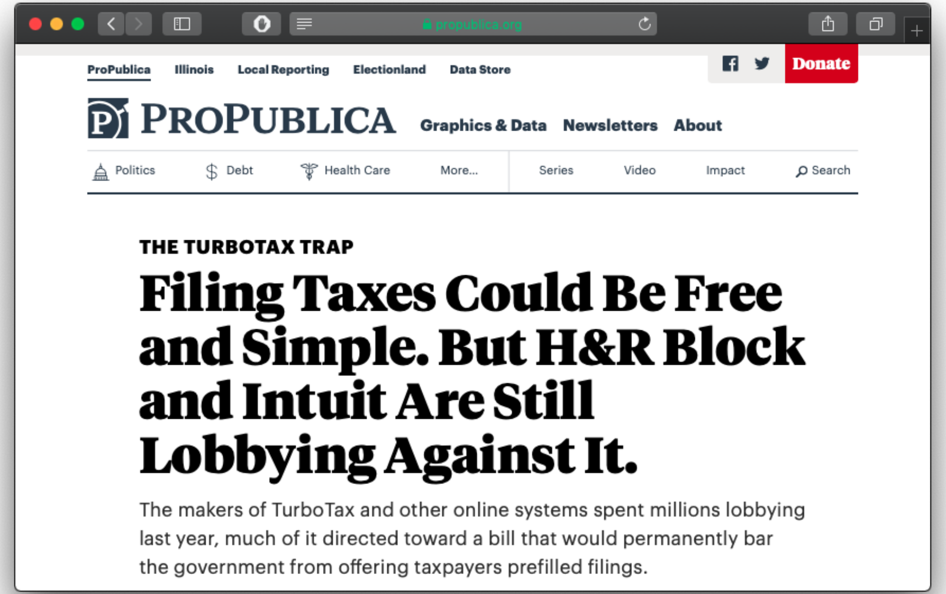
Messing With the Tax Code: Benefits Some Special Interests!



THE TURBOTAX TRAP

Filing Taxes Could Be Free and Simple. But H&R Block and Intuit Are Still Lobbying Against It.

The makers of TurboTax and other online systems spent millions lobbying last year, much of it directed toward a bill that would permanently bar the government from offering taxpayers prefilled filings.

Source: *ProPublica* (Mar 20, 2017)

Tax Avoidance and Tax Evasion

- **Tax *Evasion***: *illegal* actions of not paying taxes due (on income, wealth, property, etc)
  - alternatively, turning to black markets for un-taxed substitutes
  - concealing assets from the government, offshore, etc.

Tax Avoidance and Tax Evasion

- **Tax *Avoidance***: *legal* actions that changing behavior and wealth allocations to minimize the amount of taxes due
  - buying non-taxed substitutes
  - using tax deductions, credits, loopholes, exemptions, trusts, foundations
  - reinvesting corporate profits
  - having good accountants

Tax Avoidance

- More of the world than you imagine is **optimized for tax avoidance**

In Ukraine, an imported car is taxed heavily, so importers cut the cars in half (which are taxed lighter as ”spare parts” and then welded back together in the country))

Tax Avoidance

- More of the world than you imagine is **optimized for tax avoidance**

In the Netherlands, houses were taxed based on their canal frontage (rather than height or depth), so they were built tall and thin (to minimize canal frontage)

[99% Invisible: Vernacular Economics: How Building Codes & Taxes Shape Regional Architecture]

Tax Avoidance

- More of the world than you imagine is **optimized for tax avoidance**

In the UK, property taxes used to be based on the number of windows a building had, so many buildings still feature ”bricked up” window slots

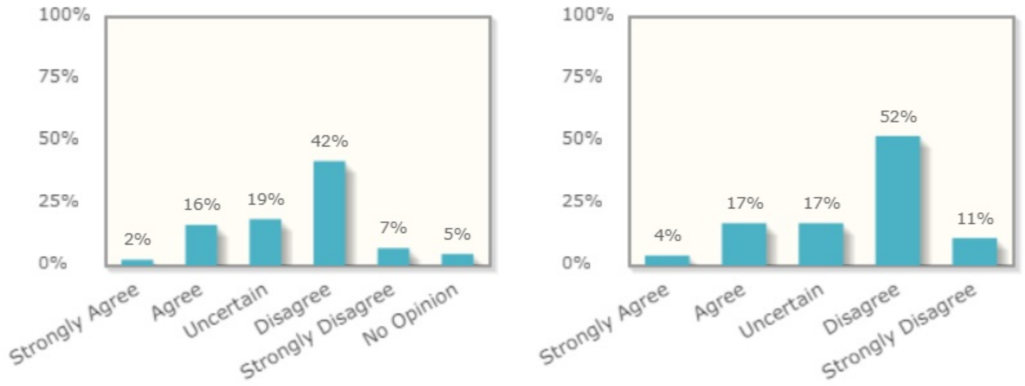
99% Invisible: Vernacular Economics: How Building Codes & Taxes Shape Regional Architecture

Raising Taxes?

Top Marginal Tax Rates

Raising the top federal marginal tax on earned personal income to 70% (and holding the rest of the current tax code, including the top bracket definition, fixed) would raise substantially more revenue (federal and state, combined) without lowering economic activity.

Responses | **Responses weighted by each expert's confidence**



Source: IGM Economic Experts Panel
www.igmchicago.org/igm-economic-experts-panel

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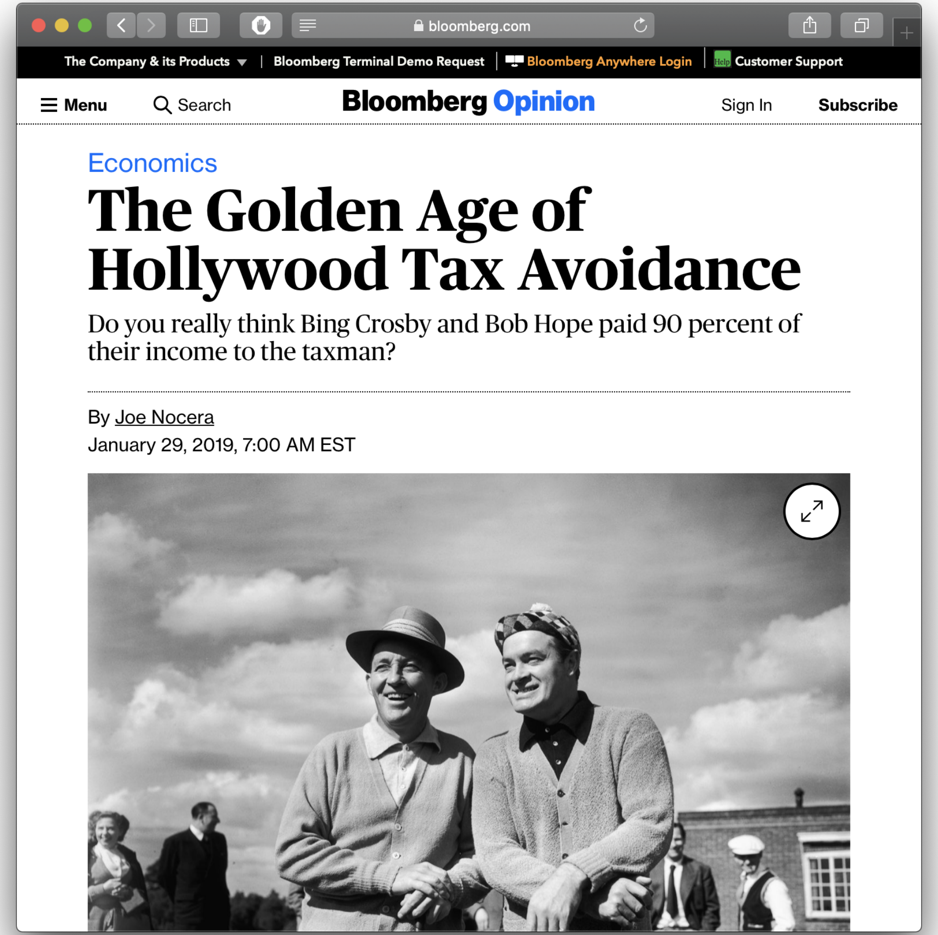

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Economics

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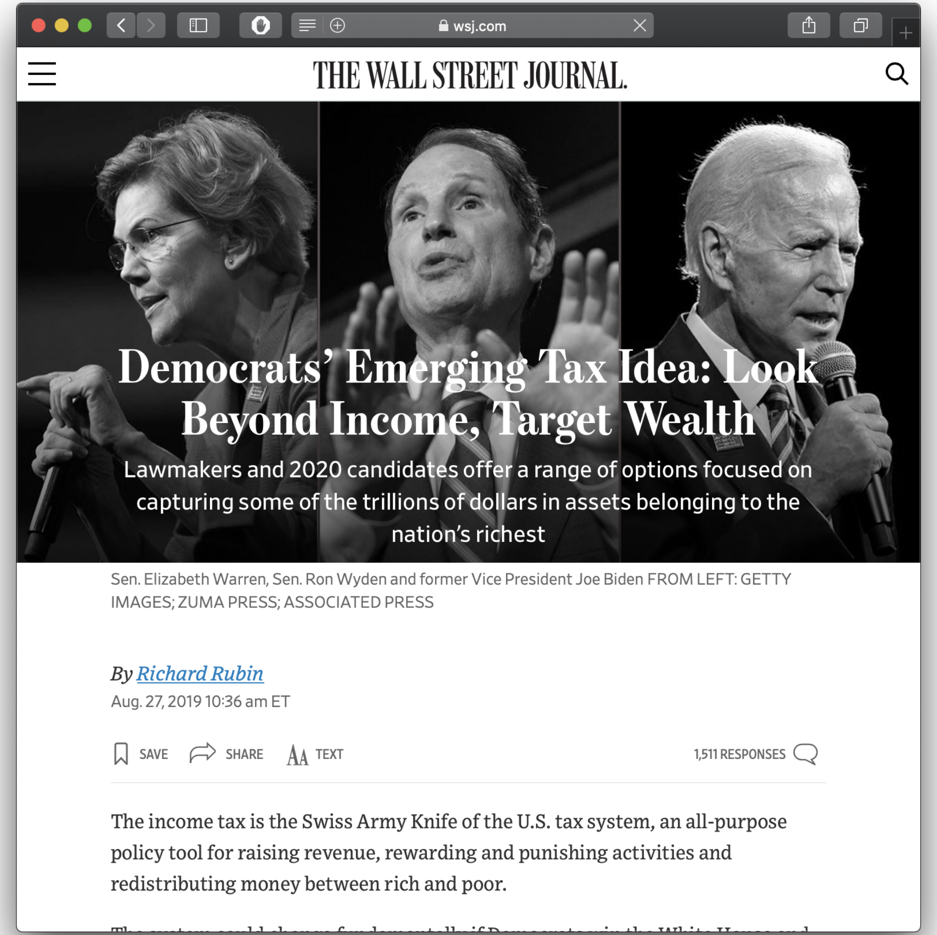
By Joe Nocera
January 29, 2019, 7:00 AM EST

Wealth Taxes?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THE WALL STREET JOURNAL.

Democrats' Emerging Tax Idea: Look Beyond Income, Target Wealth

Lawmakers and 2020 candidates offer a range of options focused on capturing some of the trillions of dollars in assets belonging to the nation's richest

Sen. Elizabeth Warren, Sen. Ron Wyden and former Vice President Joe Biden FROM LEFT: GETTY IMAGES; ZUMA PRESS; ASSOCIATED PRESS

By Richard Rubin
Aug. 27, 2019 10:36 am ET

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The income tax is the Swiss Army Knife of the U.S. tax system, an all-purpose policy tool for raising revenue, rewarding and punishing activities and redistributing money between rich and poor.