

The Burden of Taxation

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You decide what price to charge.

→ Lower price means consumers purchase more units.

→ Higher price means consumers purchase fewer units.

The Burden of Taxation

Goal: Make the most profit possible.

Profit = Revenue – Cost



Episode 1: Free Market

Choose the price you will charge for your product.

Every unit you sell costs you \$1 to produce.

$$\text{Profit} = \text{Price} \times \text{Units Sold} - \$1 \times \text{Units Sold}$$

Price per Unit	Quantity Sold
\$1	10
\$2	9
\$3	8
\$4	7
\$5	6
\$6	5
\$7	4
\$8	3
\$9	2
\$10	1

Episode 1: Free Market

Price per Unit	Quantity Sold	Total Revenue	Total Cost	Profit
\$1	10	\$10	\$10	\$0
\$2	9	\$18	\$9	\$9
\$3	8	\$24	\$8	\$16
\$4	7	\$28	\$7	\$21
\$5	6	\$30	\$6	\$24
\$6	5	\$30	\$5	\$25
\$7	4	\$28	\$4	\$24
\$8	3	\$24	\$3	\$21
\$9	2	\$18	\$2	\$16
\$10	1	\$10	\$1	\$9

Episode 2: Tax the Consumers

In this episode, consumers will pay a \$2 per unit tax.

You choose a price.

The consumers pay that price per unit to you plus they pay another \$2 per unit to the government.

Episode 2: Tax the Consumers

Choose the price you will charge for your product.

The consumer pays your price plus another \$2 to the government.

Every unit you sell costs you \$1 to produce.

Profit = Price x Units Sold – \$1 x Units Sold

Price per Unit	Quantity Sold
\$1	10
\$2	9
\$3	8
\$4	7
\$5	6
\$6	5
\$7	4
\$8	3
\$9	2
\$10	1

Episode 2: Tax the Consumers

Price per Unit	Quantity Sold	Total Revenue	Total Cost	Profit
\$1	8	\$8	\$8	\$0
\$2	7	\$14	\$7	\$7
\$3	6	\$18	\$6	\$12
\$4	5	\$20	\$5	\$15
\$5	4	\$20	\$4	\$16
\$6	3	\$18	\$3	\$15
\$7	2	\$14	\$2	\$12
\$8	1	\$8	\$1	\$7
\$9				
\$10				

Episode 3: Tax the Businesses

In this episode, you will pay a \$2 per unit tax for every unit you sell.

The price consumers pay is the price you charge.

Episode 3: Tax the Businesses

Choose the price you will charge for your product.

Every unit you sell costs you \$1 to produce.

In addition, you pay the government \$2 for each unit you produce.

Profit = Price x Units Sold – \$3 x Units Sold

Price per Unit	Quantity Sold
\$1	10
\$2	9
\$3	8
\$4	7
\$5	6
\$6	5
\$7	4
\$8	3
\$9	2
\$10	1

Episode 3: Tax the Businesses




Price per Unit	Quantity Sold	Total Revenue	Total Cost	Profit
\$1	10	\$10	\$30	(\$20)
\$2	9	\$18	\$27	(\$9)
\$3	8	\$24	\$24	\$0
\$4	7	\$28	\$21	\$7
\$5	6	\$30	\$18	\$12
\$6	5	\$30	\$15	\$15
\$7	4	\$28	\$12	\$16
\$8	3	\$24	\$9	\$15
\$9	2	\$18	\$6	\$12
\$10	1	\$10	\$3	\$7

Results

	No Tax	Tax Consumers \$2	Tax Firms \$2
Retail Price	\$6		
Price Consumer Pays	\$6		
Price Firm Receives	\$6		
Units Sold	5		
Tax Revenue	\$0		

In episode 3, the government taxed the firms \$2.
Won't firms just pass the tax on to consumers?

Results

	No Tax	Tax Consumers \$2	Tax Firms \$2
Retail Price	\$6		\$7
Price Consumer Pays	\$6		\$7
Price Firm Receives	\$6		\$5 (\$7 - \$2)
Units Sold	5		
Tax Revenue	\$0		

End result: Firms pay \$1 of the tax, and consumers pay \$1 of the tax.

Results

	No Tax	Tax Consumers \$2	Tax Firms \$2
Retail Price	\$6		\$7
Price Consumer Pays	\$6		\$7
Price Firm Receives	\$6		\$5
Units Sold	5		
Tax Revenue	\$0		

In episode 2, the government taxed the consumers \$2.
Won't consumers be forced to pay the full \$2 tax?

Results

	No Tax	Tax Consumers \$2	Tax Firms \$2
Retail Price	\$6	\$5 Retail price down \$1	\$7
Price Consumer Pays	\$6	\$7 (\$5+\$2) Consumers pay \$1 more	\$7
Price Firm Receives	\$6	\$5 Firms receive \$1 less	\$5
Units Sold	5		
Tax Revenue	\$0		

End result: Firms pay \$1 of the tax, and consumers pay \$1 of the tax.

Results

	No Tax	Tax Consumers \$2	Tax Firms \$2
Retail Price	\$6	\$5	\$7
Price Consumer Pays	\$6	\$7	\$7
Price Firm Receives	\$6	\$5	\$5
Units Sold	5		
Tax Revenue	\$0		

Lesson #1: The government can't control who pays a tax. It can only control from whom the tax is collected.

(even when the firm is a monopoly)

Results

	No Tax	Tax Consumers \$2	Tax Firms \$2
Retail Price	\$6	\$5	\$7
Price Consumer Pays	\$6	\$7	\$7
Price Firm Receives	\$6	\$5	\$5
Units Sold	5		
Tax Revenue	\$0		

When there was no tax, consumers bought 5 units.

A \$2 per unit tax should generate $\$2 \times 5 = \10 in tax revenue.

Results

	No Tax	Tax Consumers \$2	Tax Firms \$2
Retail Price	\$6	\$5	\$7
Price Consumer Pays	\$6	\$7	\$7
Price Firm Receives	\$6	\$5	\$5
Units Sold	5	4	4
Tax Revenue	\$0	\$8	\$8

Instead of raising \$10 in tax revenue, the government only raises \$8.

Results

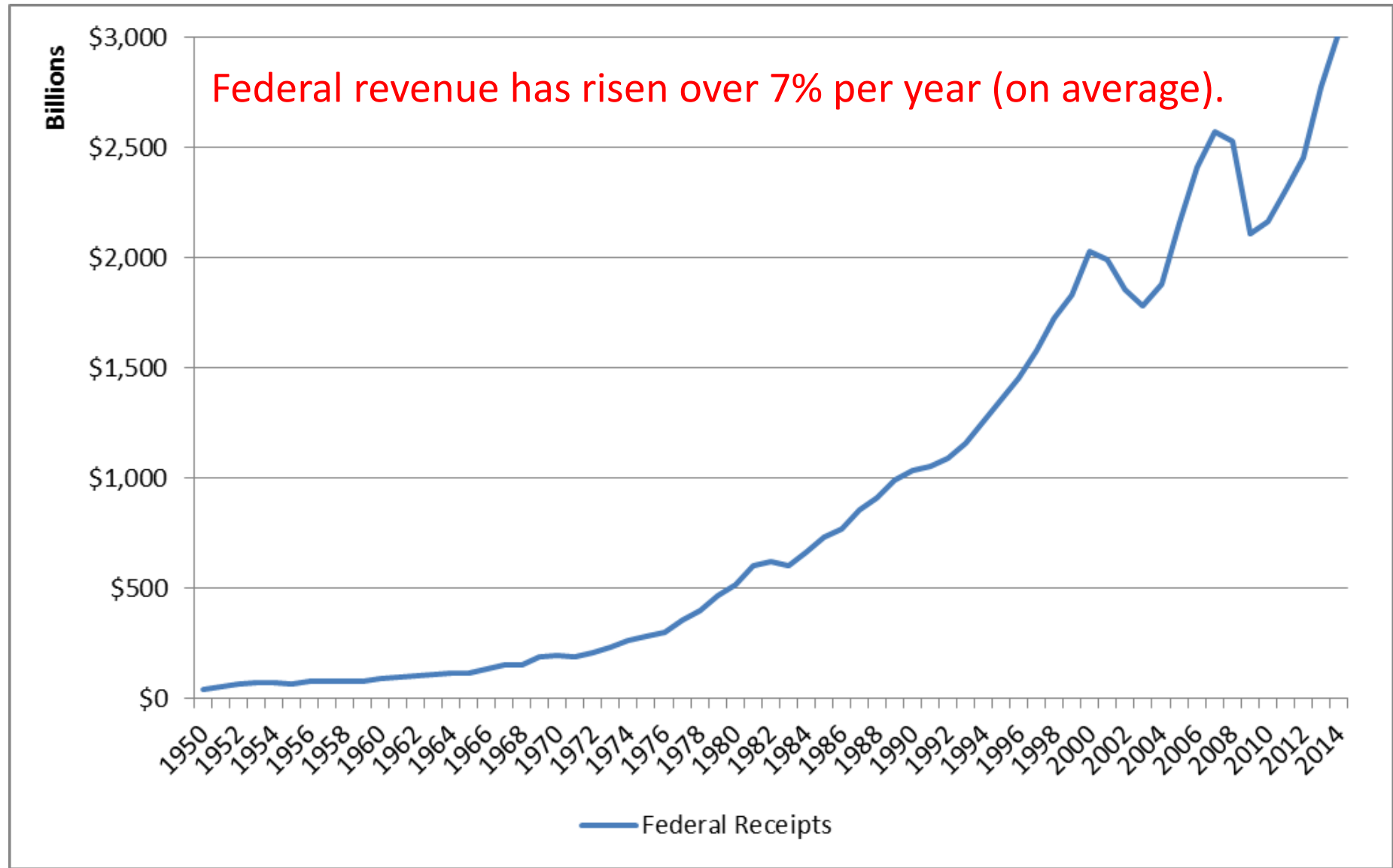
	No Tax	Tax Consumers \$2	Tax Firms \$2
Retail Price	\$6	\$5	\$7
Price Consumer Pays	\$6	\$7	\$7
Price Firm Receives	\$6	\$5	\$5
Units Sold	5	4	4
Tax Revenue	\$0	\$8	\$8

Lesson #2: The government can't raise taxes. It can only raise tax rates.

Lesson #1: The government can't control who pays a tax. It can only control from whom the tax is collected.

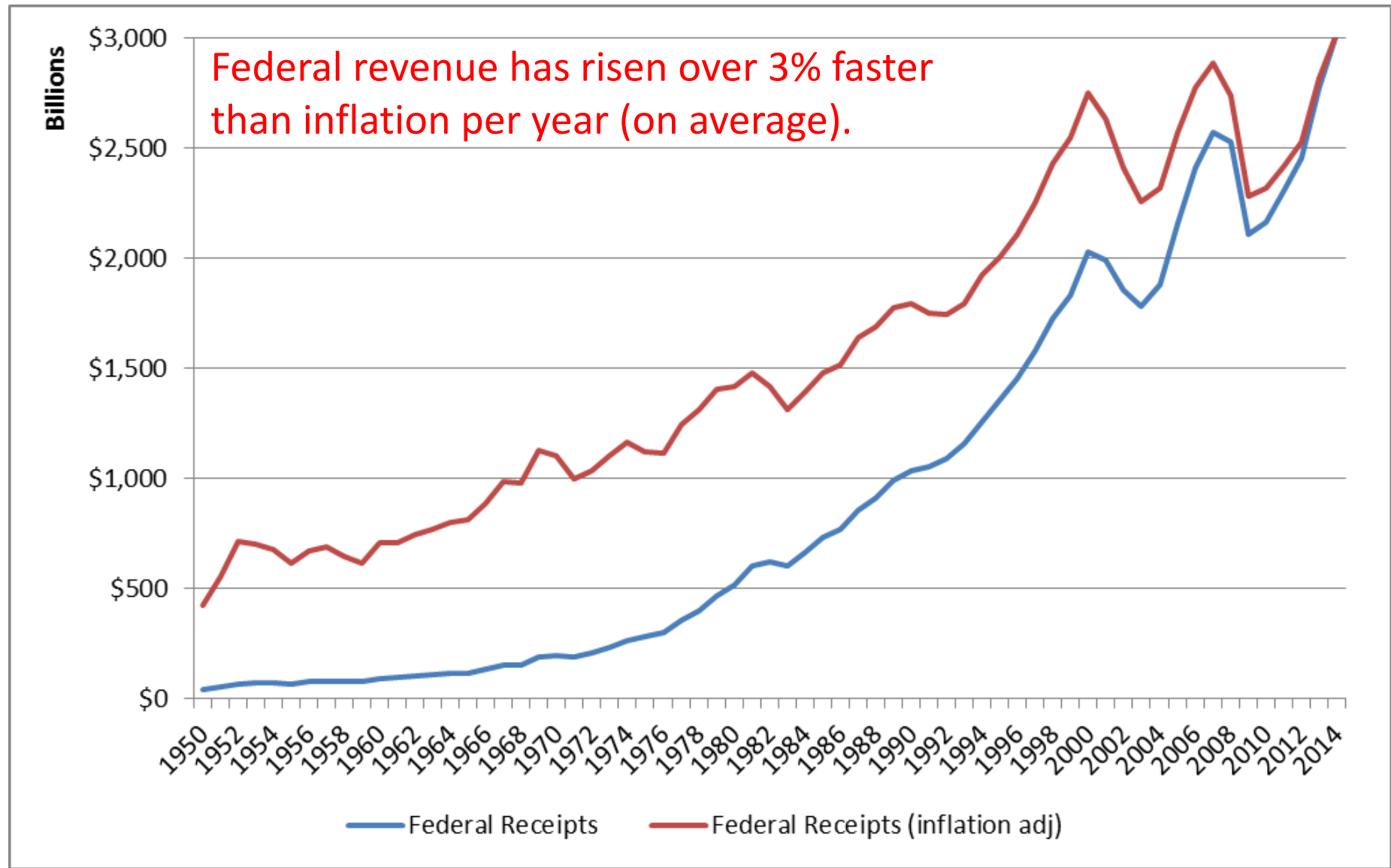
Lesson #2: The government can't raise taxes. It can only raise tax rates.

Federal tax revenue has been rising over time.



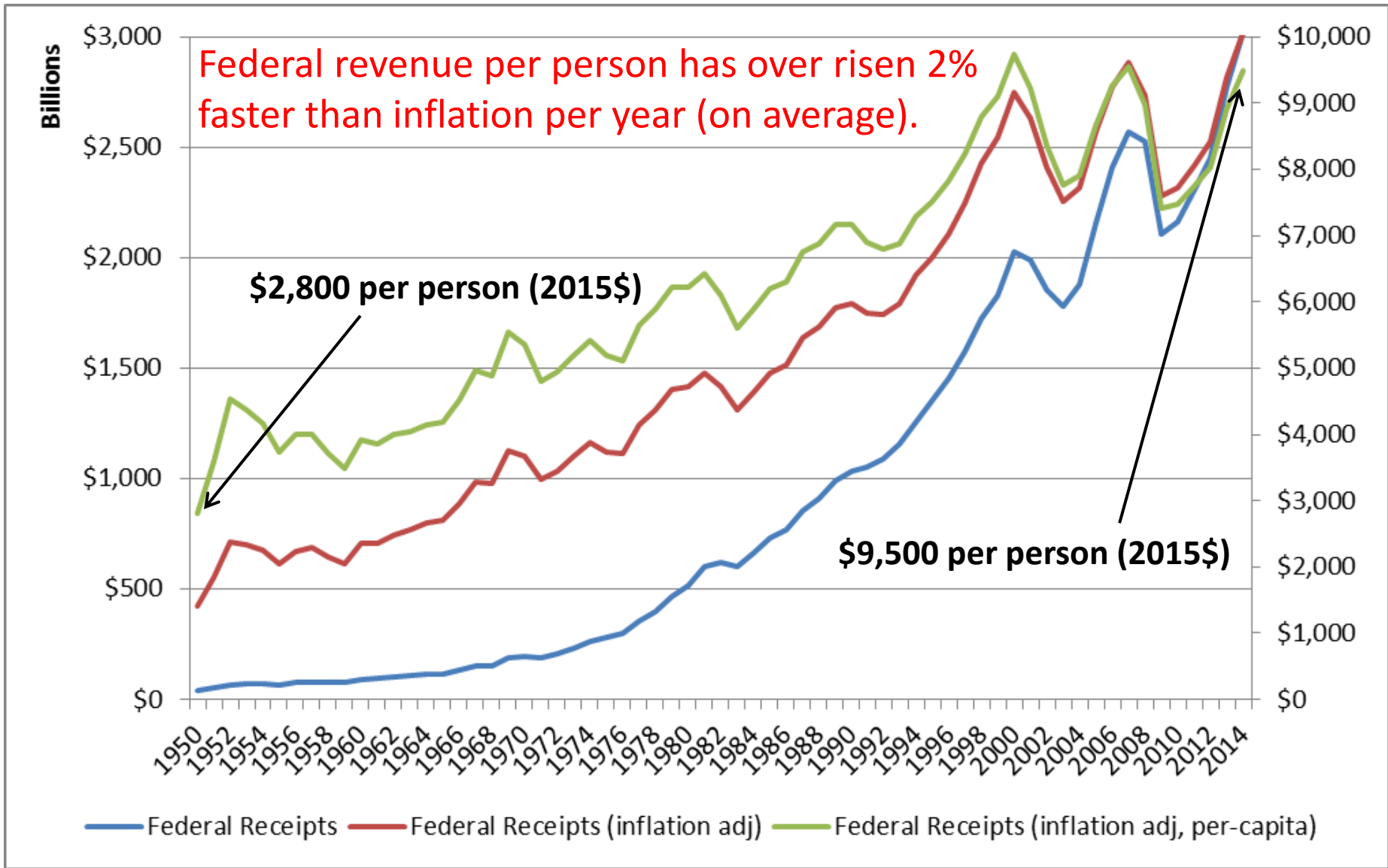
Data Source: US Department of the Treasury

Not fair. Prices have been rising over time.



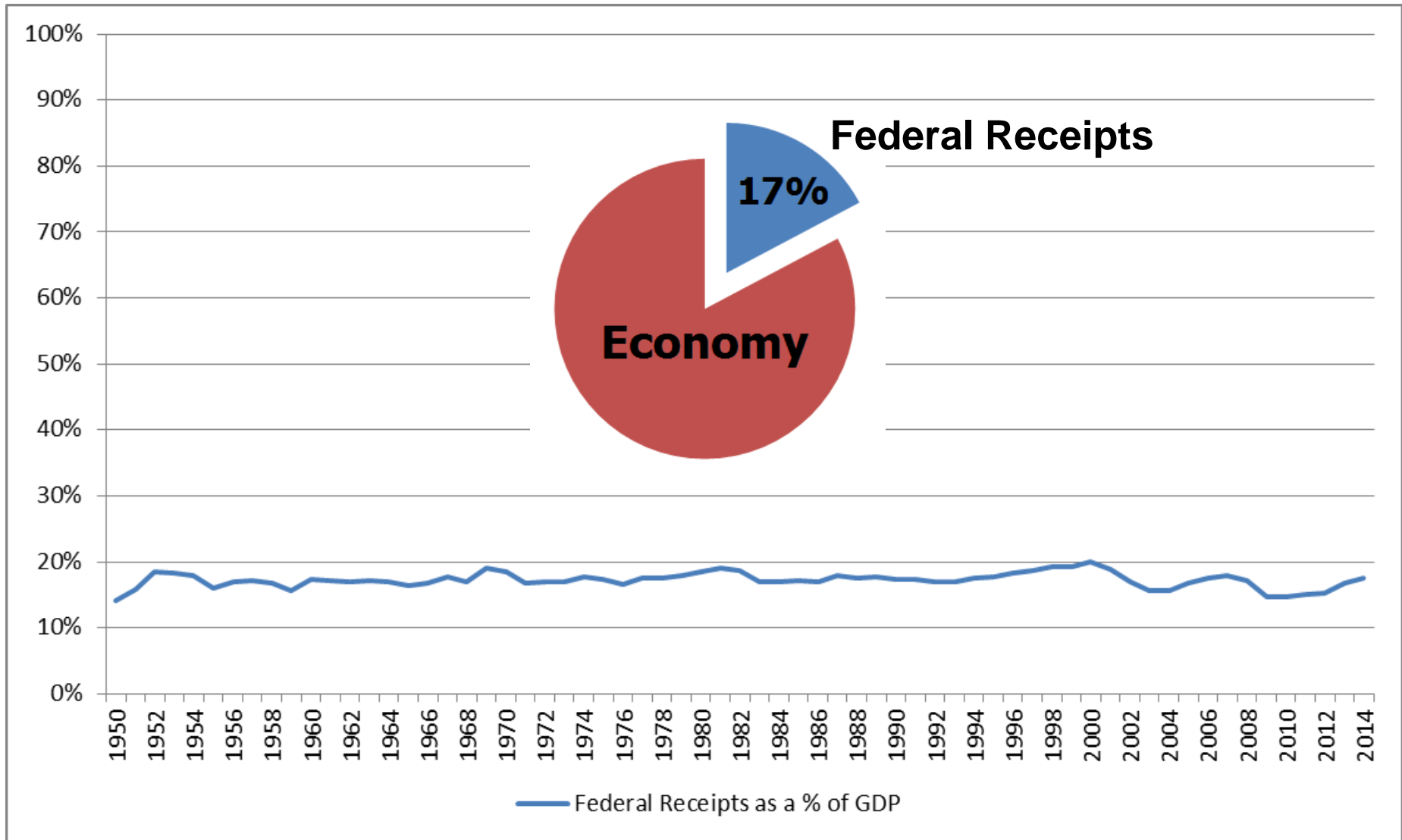
Data Source: US Department of the Treasury

Not fair. The population has been growing over time.

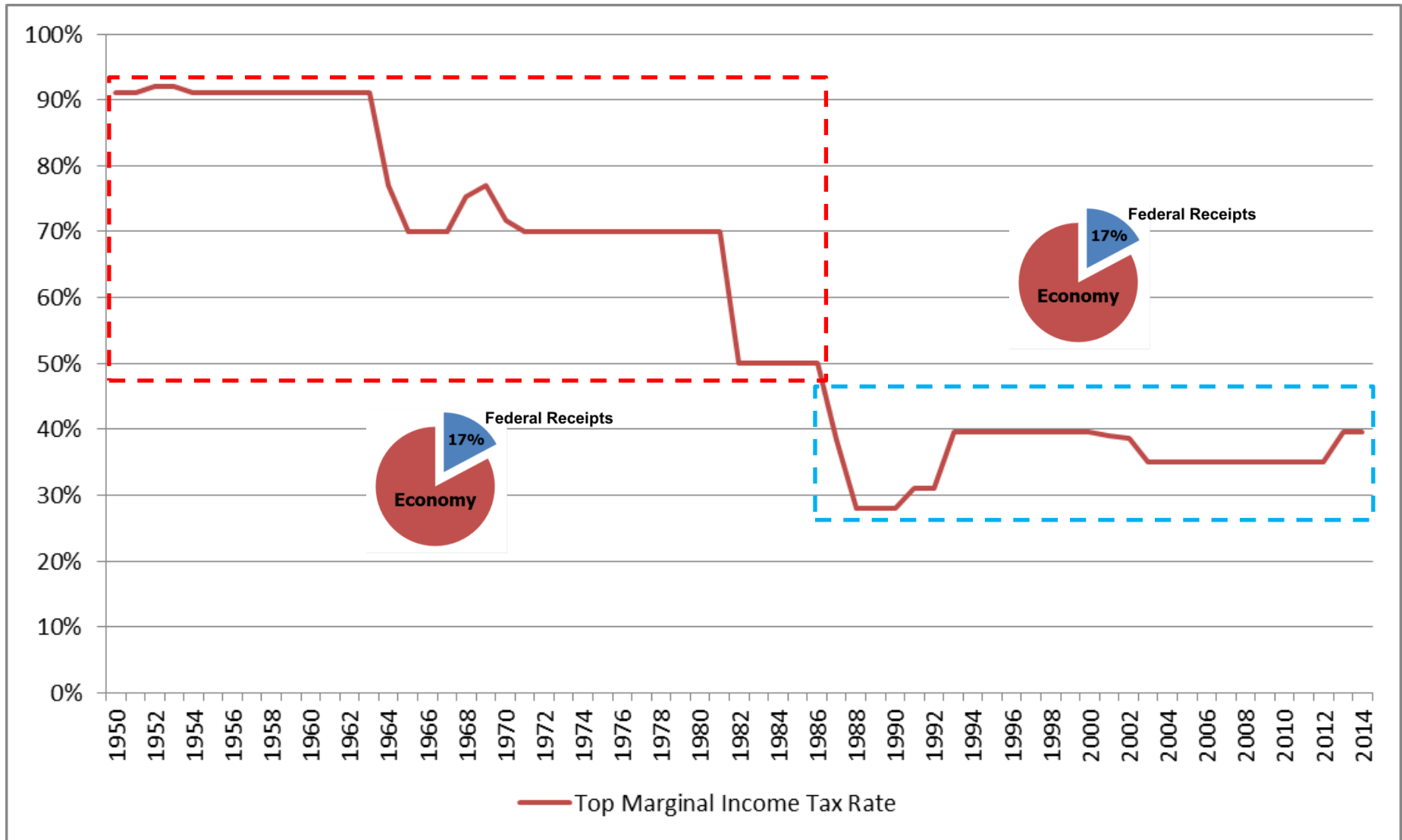


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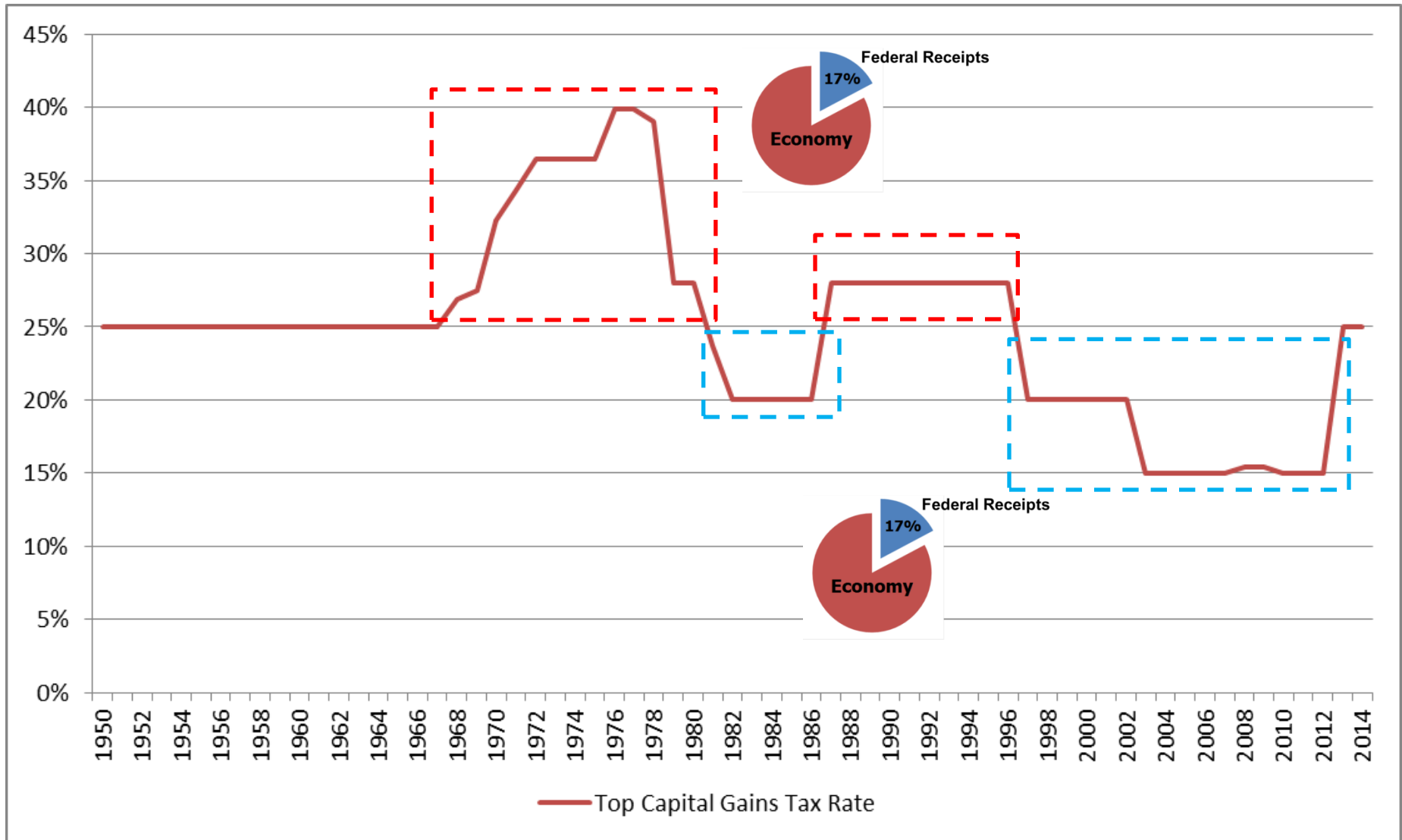
Federal revenue has remained remarkably stable (as a fraction of GDP).



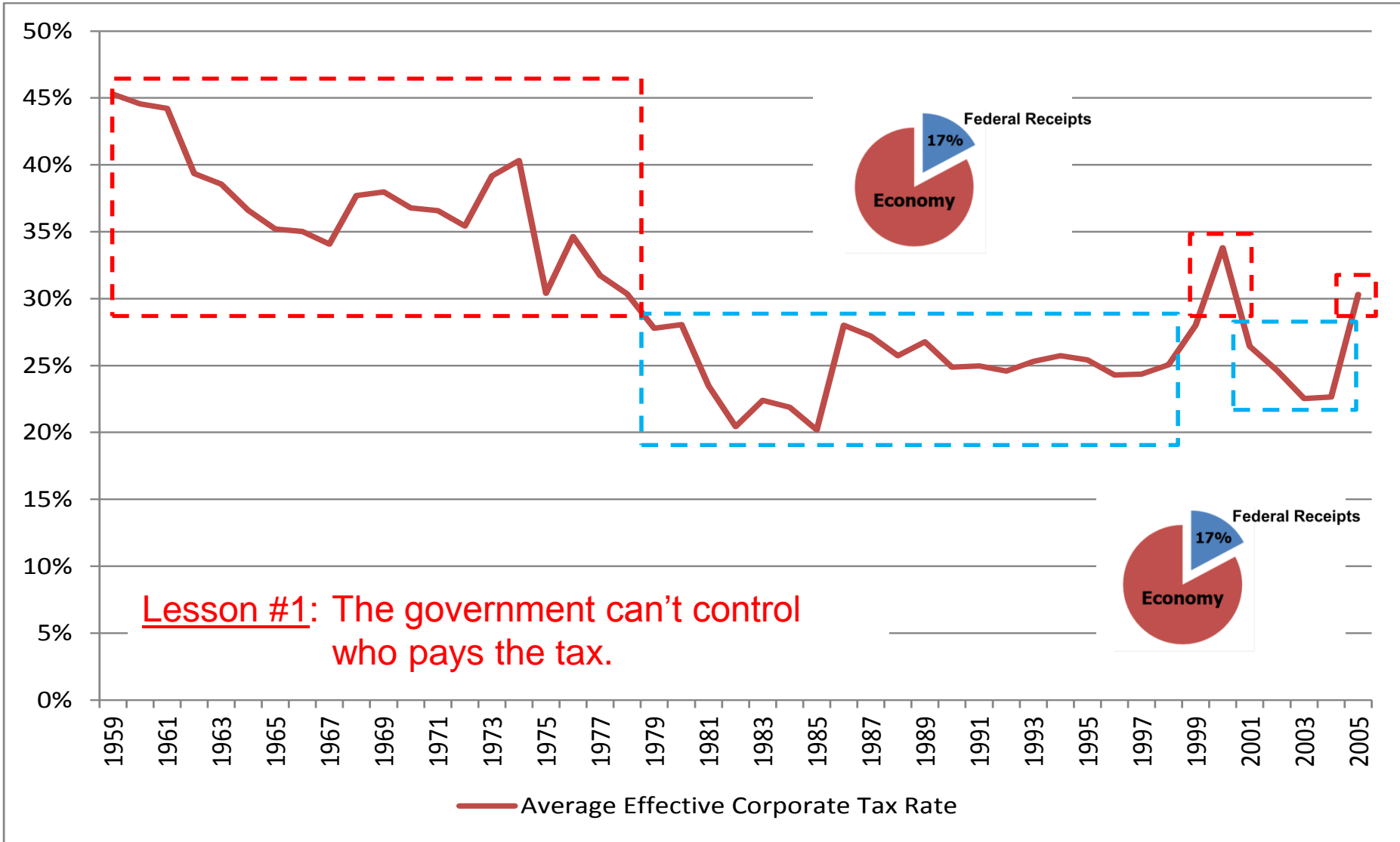
Data Source: Internal Revenue Service, Bureau of the Census



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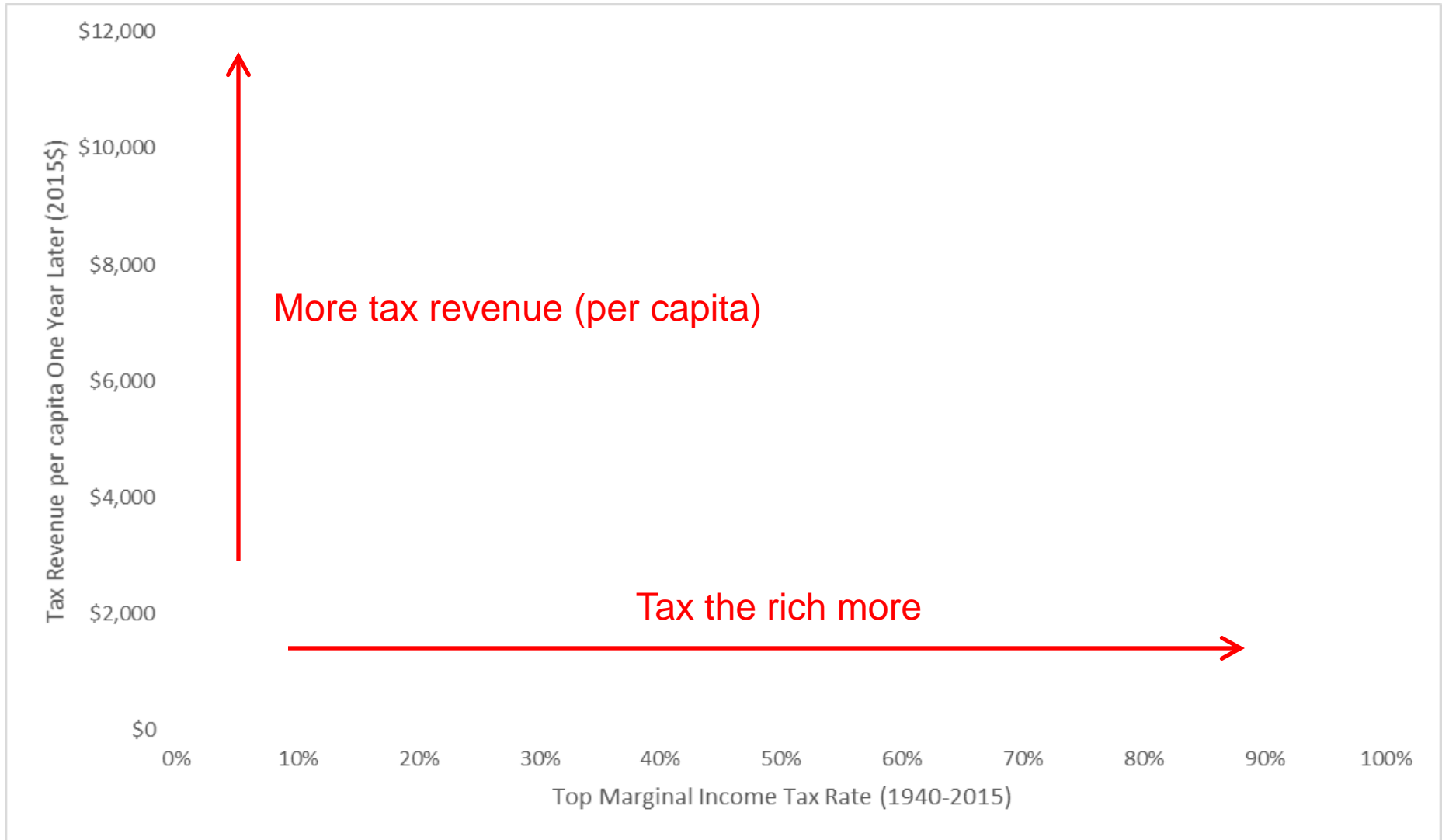


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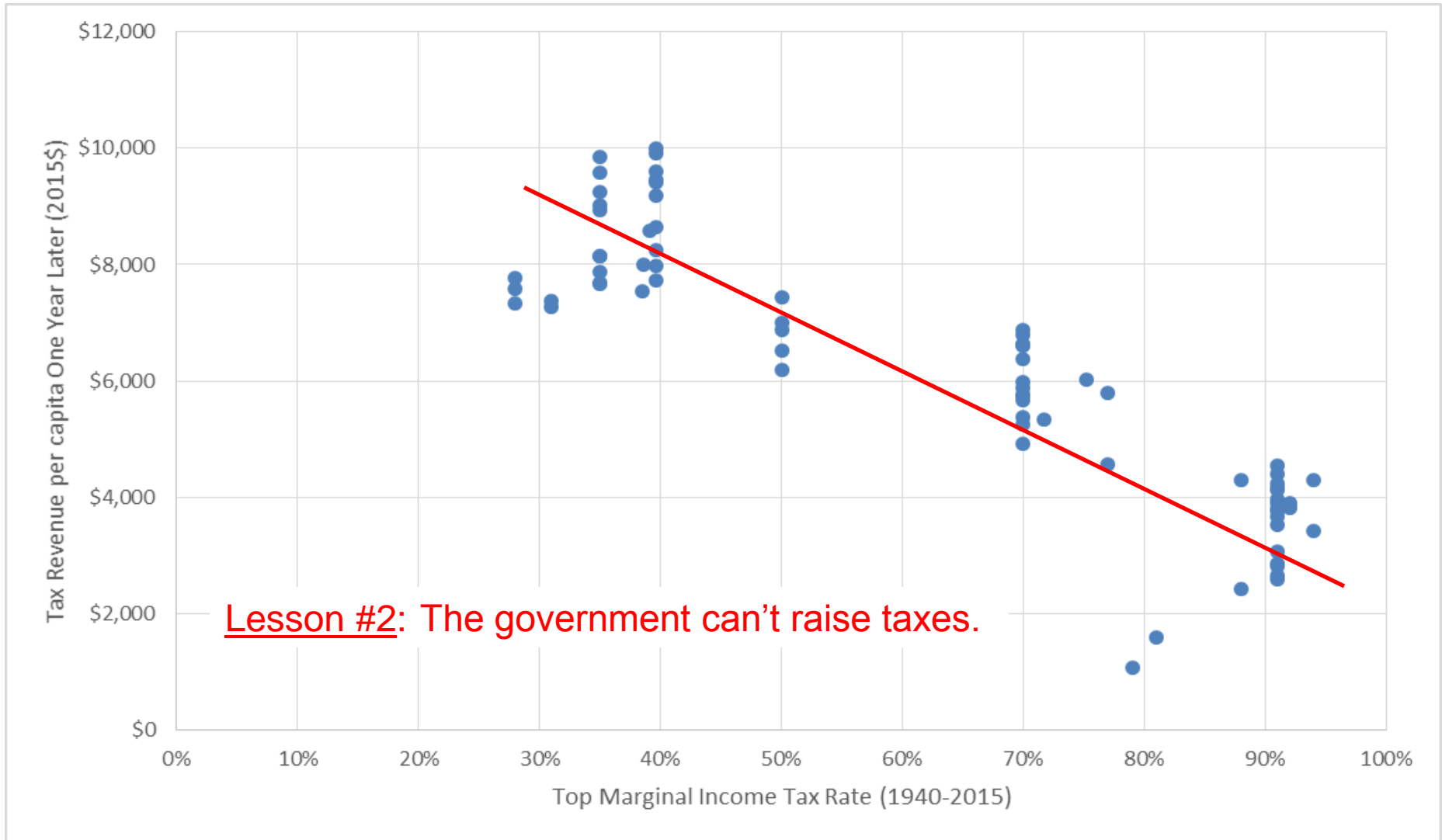


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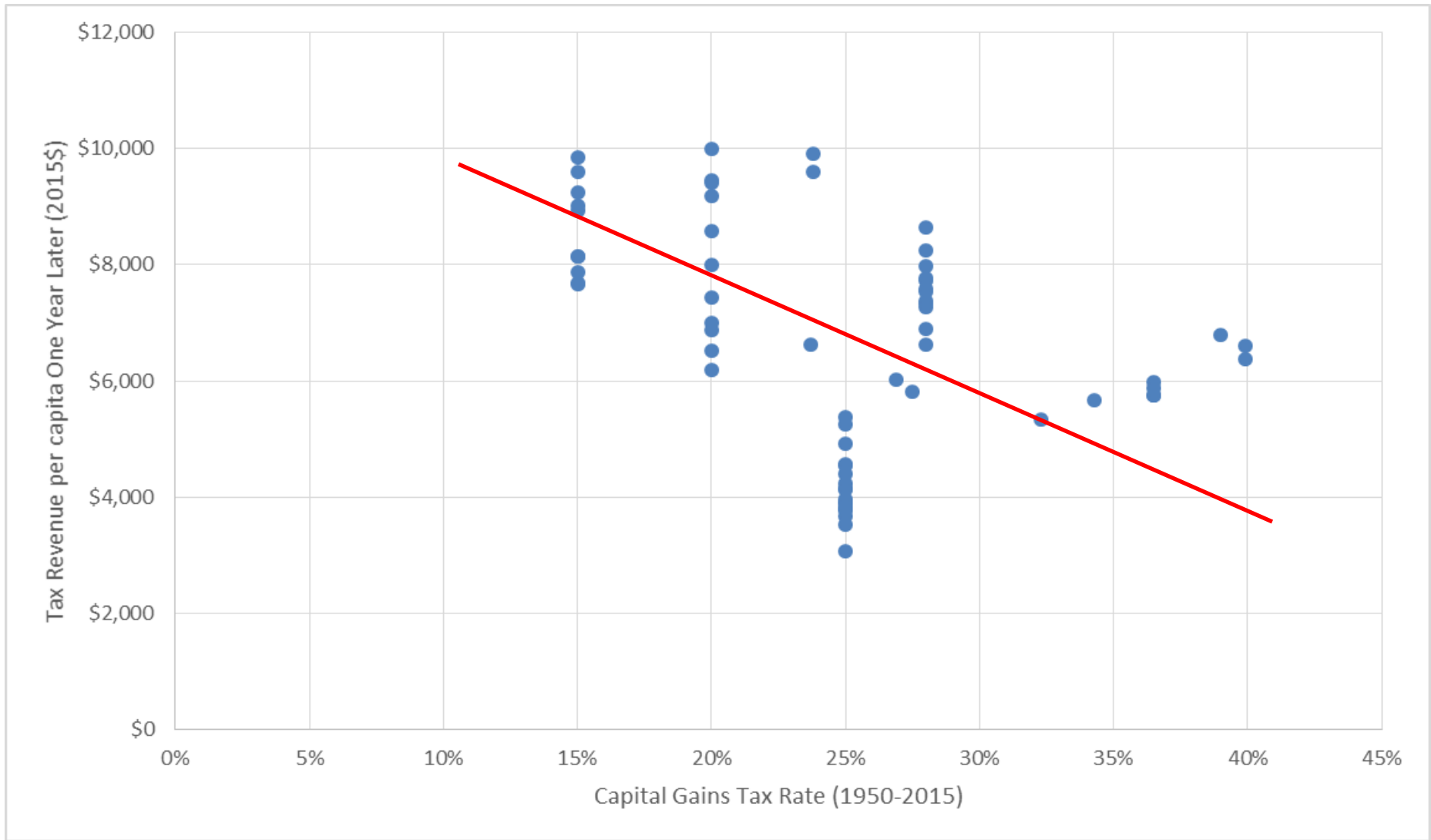
Federal tax revenues tend to fall as
(statutory) tax rates rise.



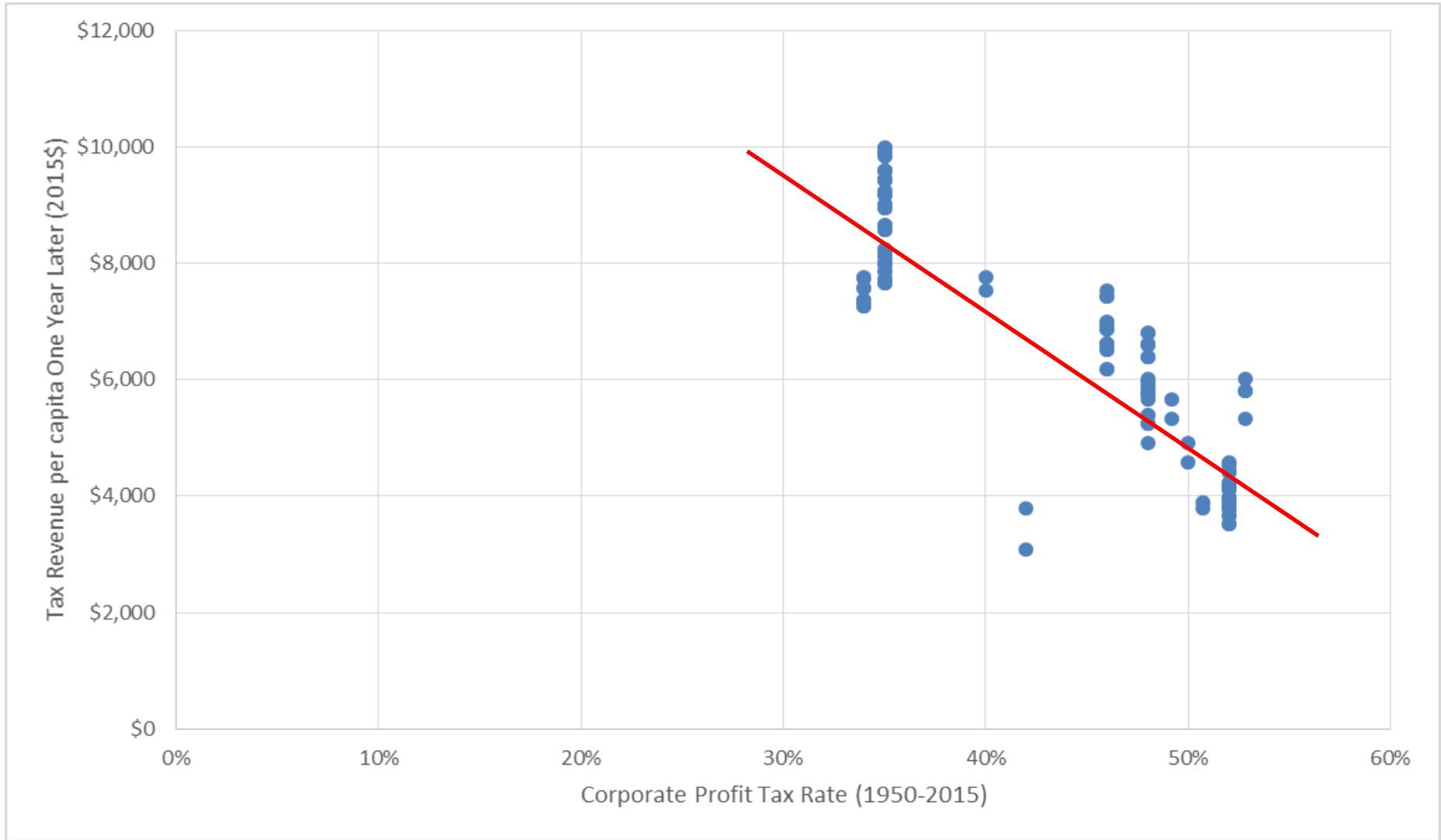
Data Source: Federal Reserve Bank of Minneapolis, Office of Management and Budget



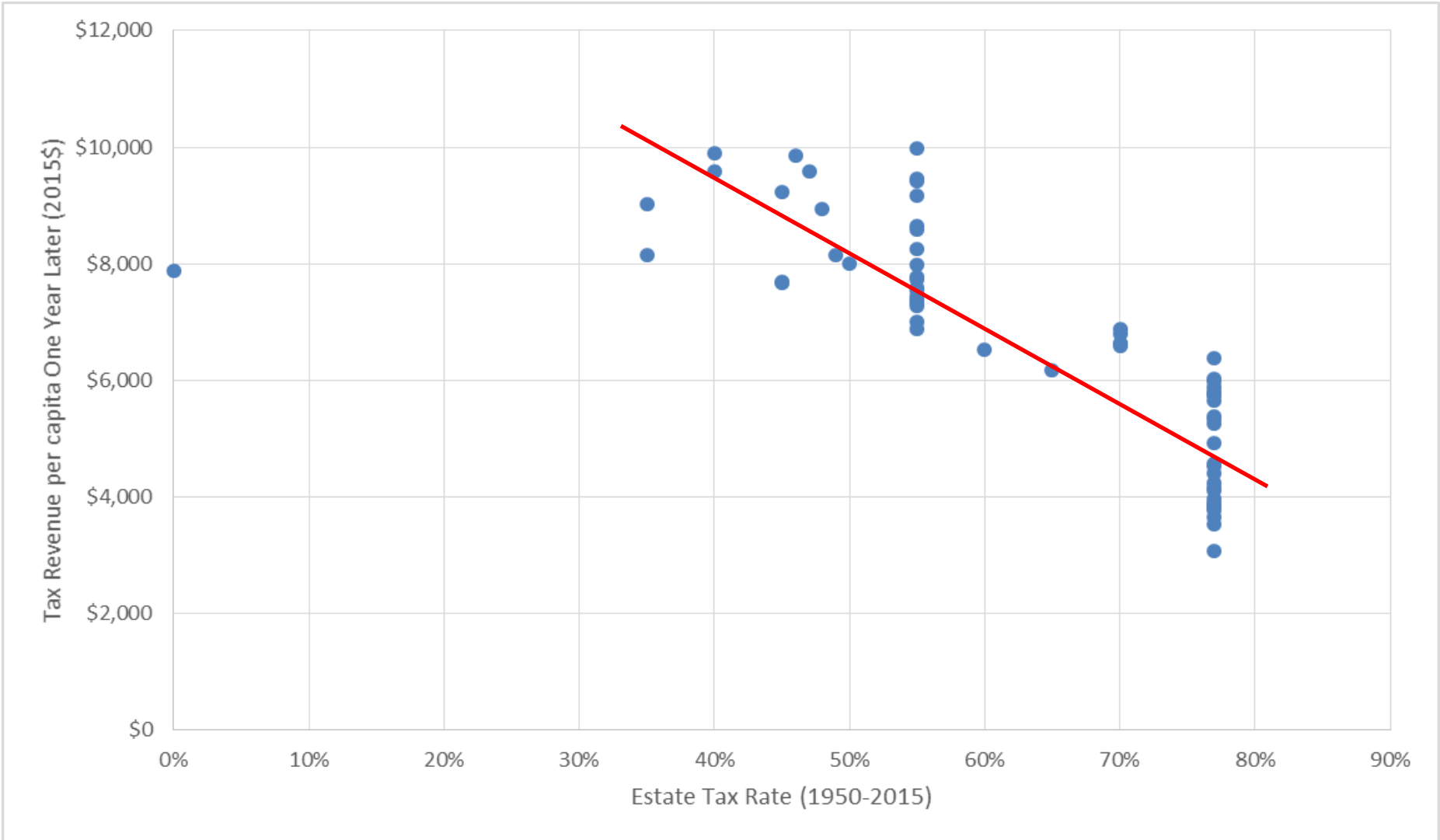
Data Source: Federal Reserve Bank of Minneapolis, Office of Management and Budget



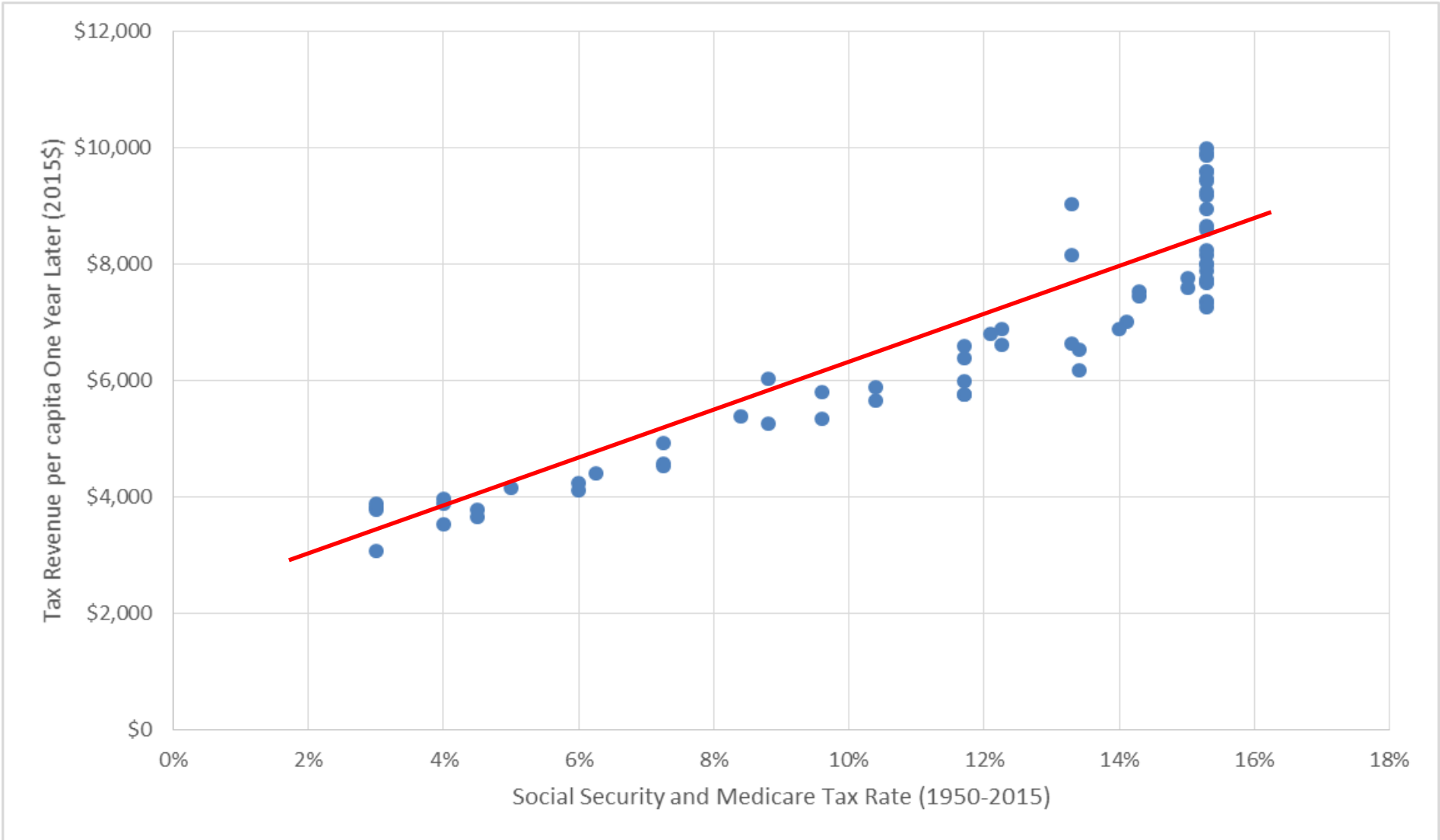
Data Source: Tax Policy Center (Urban Institute and Brookings Institute), National Bureau of Economic Research, Bureau of Economic Analysis



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Are people paying their fair shares?

What's fair?

What's actually happening?

Quintile	Market Income	Federal Taxes	Effective Rate
Poorest 20%	\$8,000	\$475	6%
Next 20%	\$31,000	\$3,150	10%
Middle 20%	\$55,000	\$7,400	13%
Next 20%	\$90,000	\$15,000	17%
Top 1%	\$1,450,000	\$420,000	29%

Data Source: Congressional Budget Office

$$\text{Effective tax rate} = \frac{\text{Taxes actually paid}}{\text{Total market income}}$$

Transfers are *negative* taxes

Net taxes
= Taxes – Transfers

\$700 \$1,000 \$300

What's actually happening?

Quintile	Market Income	Federal Taxes	Federal Transfers	Effective Rate
Poorest 20%	\$8,000	\$475	\$17,000	-207%
Next 20%	\$31,000	\$3,150	\$14,000	-35%
Middle 20%	\$55,000	\$7,400	\$11,000	-7%
Next 20%	\$90,000	\$15,000	\$8,000	8%
Top 1%	\$1,450,000	\$420,000	\$5,000	29%

Data Source: Congressional Budget Office

$$\text{Effective tax rate} = \frac{\text{Taxes actually paid} - \text{Transfers received}}{\text{Total market income}}$$

The larger problem may not be tax revenues but incentives.

