19.1

Tax Incidence

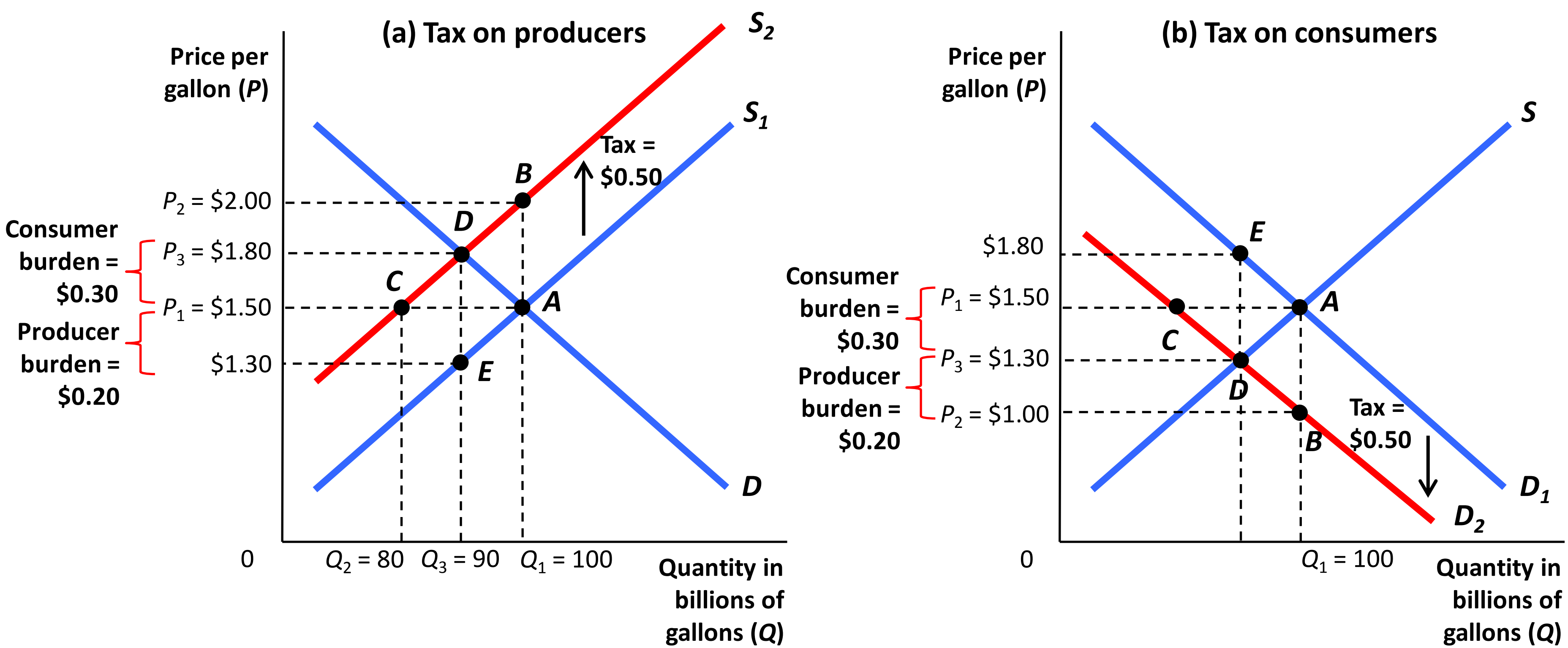
Sources of federal government revenue, 1960 and 2008:

Category:	**1960**	**2008**
Income taxes	44.5%	43.7%
Corporate taxes	22.8	11.3
Payroll tax	17.0	37.8
Excise taxes	12.8	2.6
Other	2.9	4.5

- **Tax incidence:** Assessing which party (consumers or producers) bears the true burden of a tax.

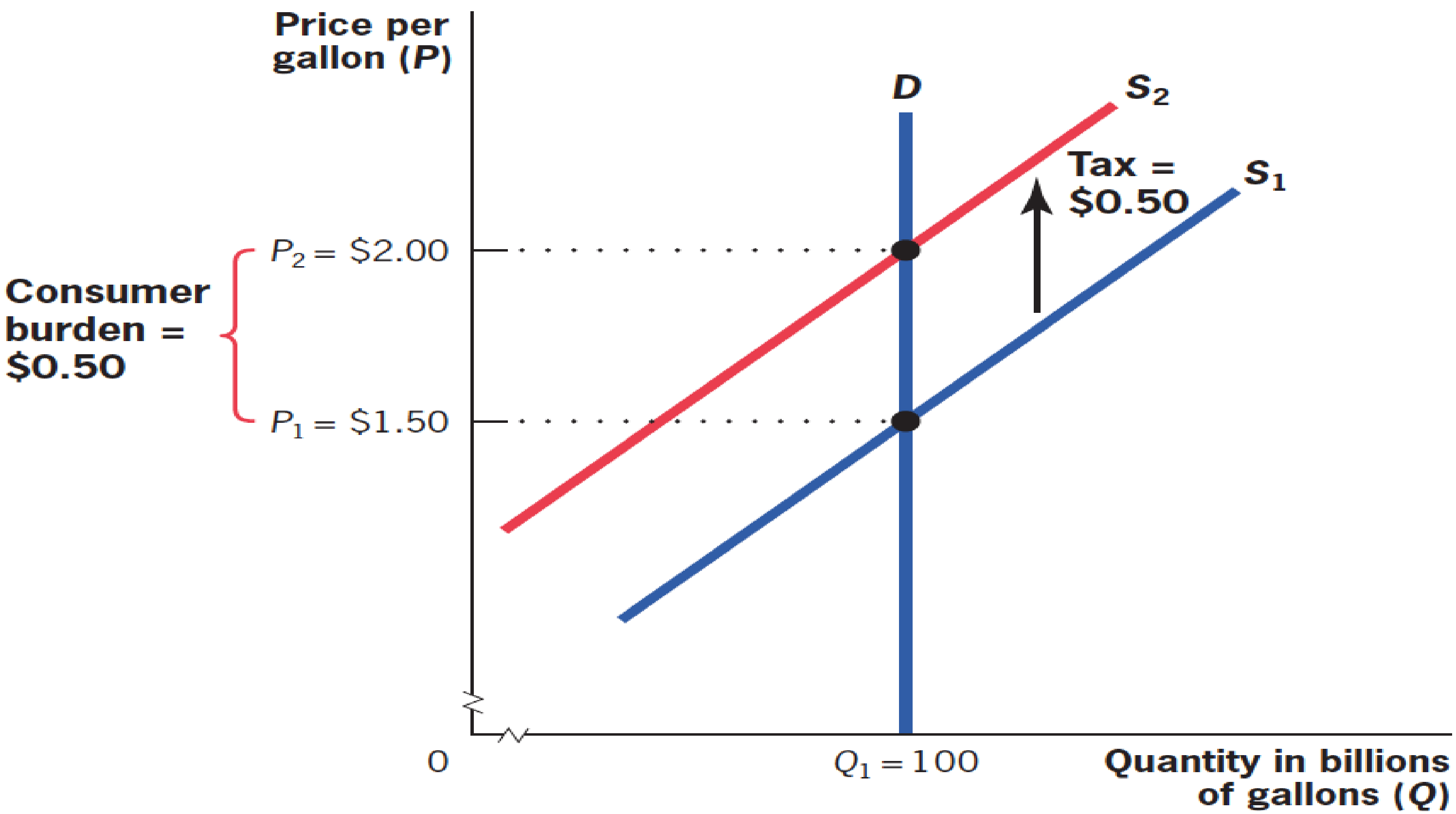
19.1

The Statutory Burden of a Tax Does Not Describe Who Really Bears the Tax, and Is Irrelevant to the Tax Burden



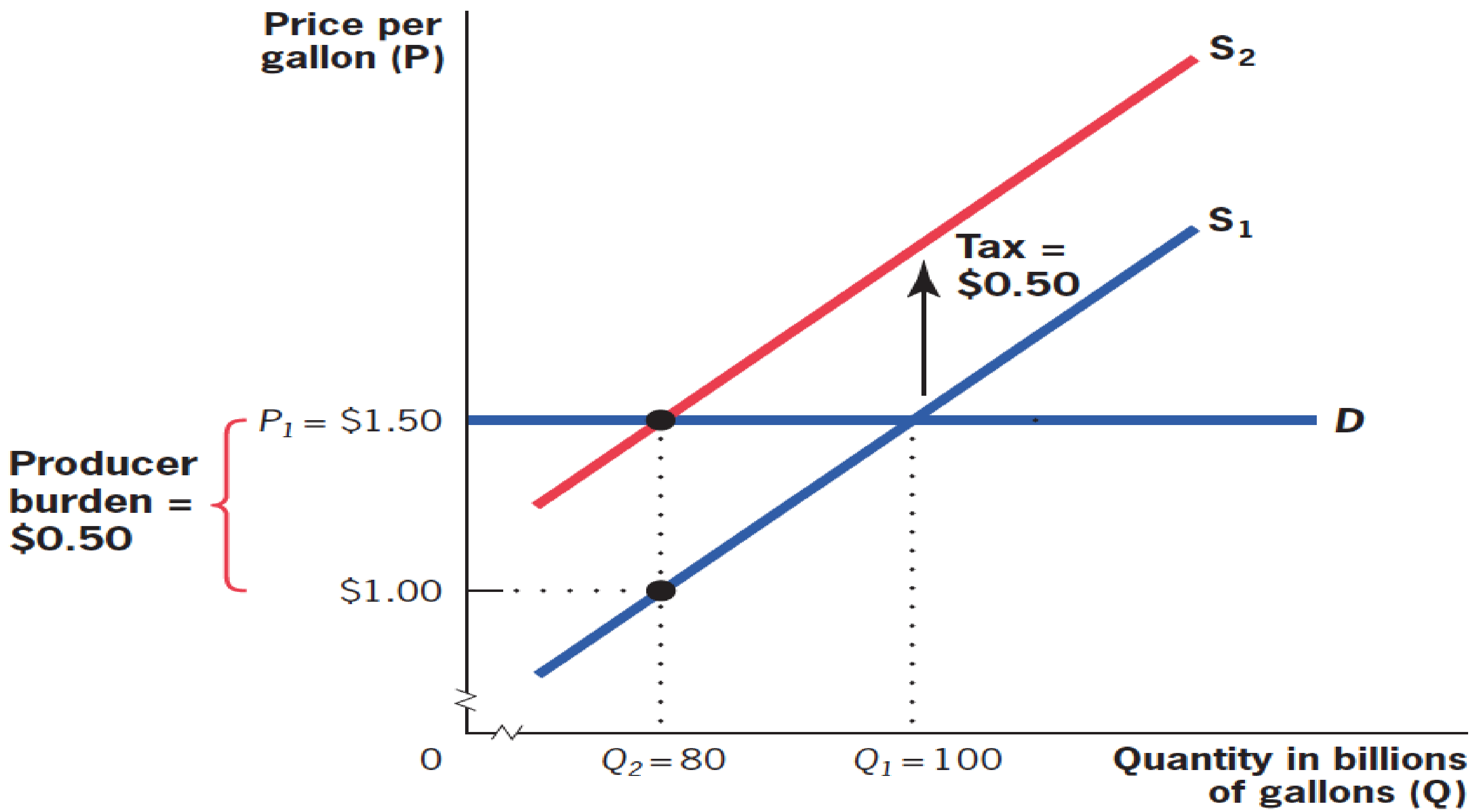
19.1

Perfectly Inelastic Demand



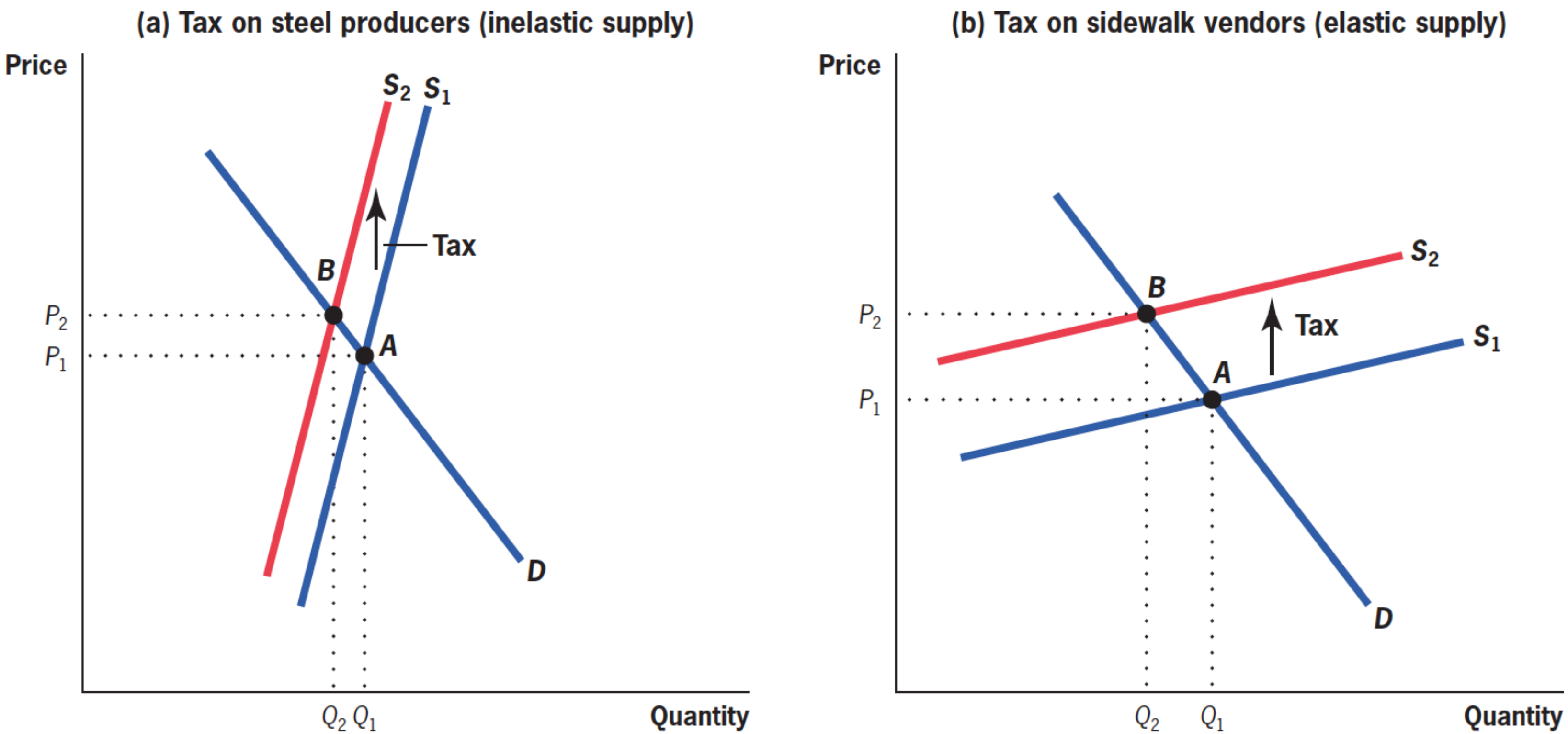
19.1

Perfectly Elastic Demand



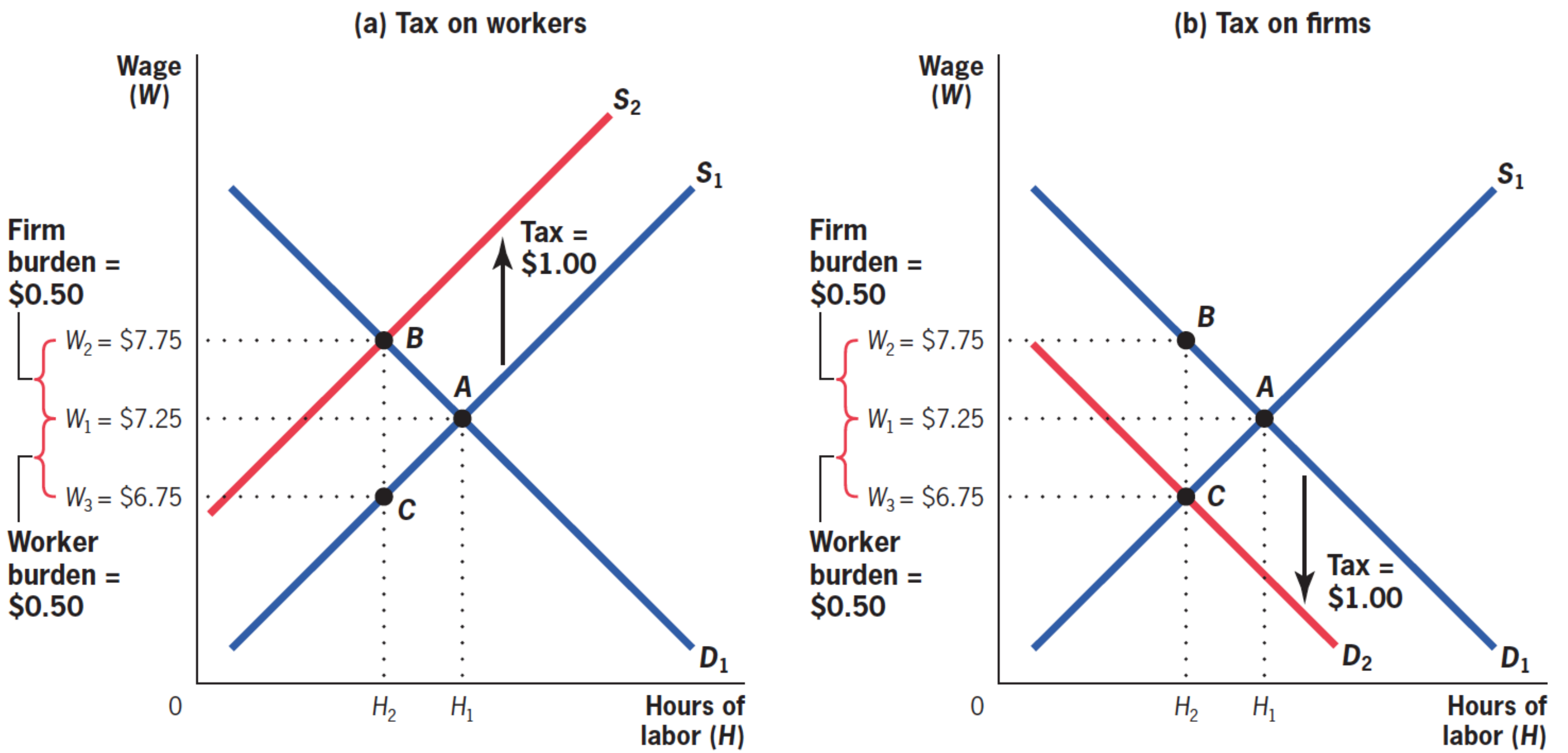
19.1

Supply Elasticities



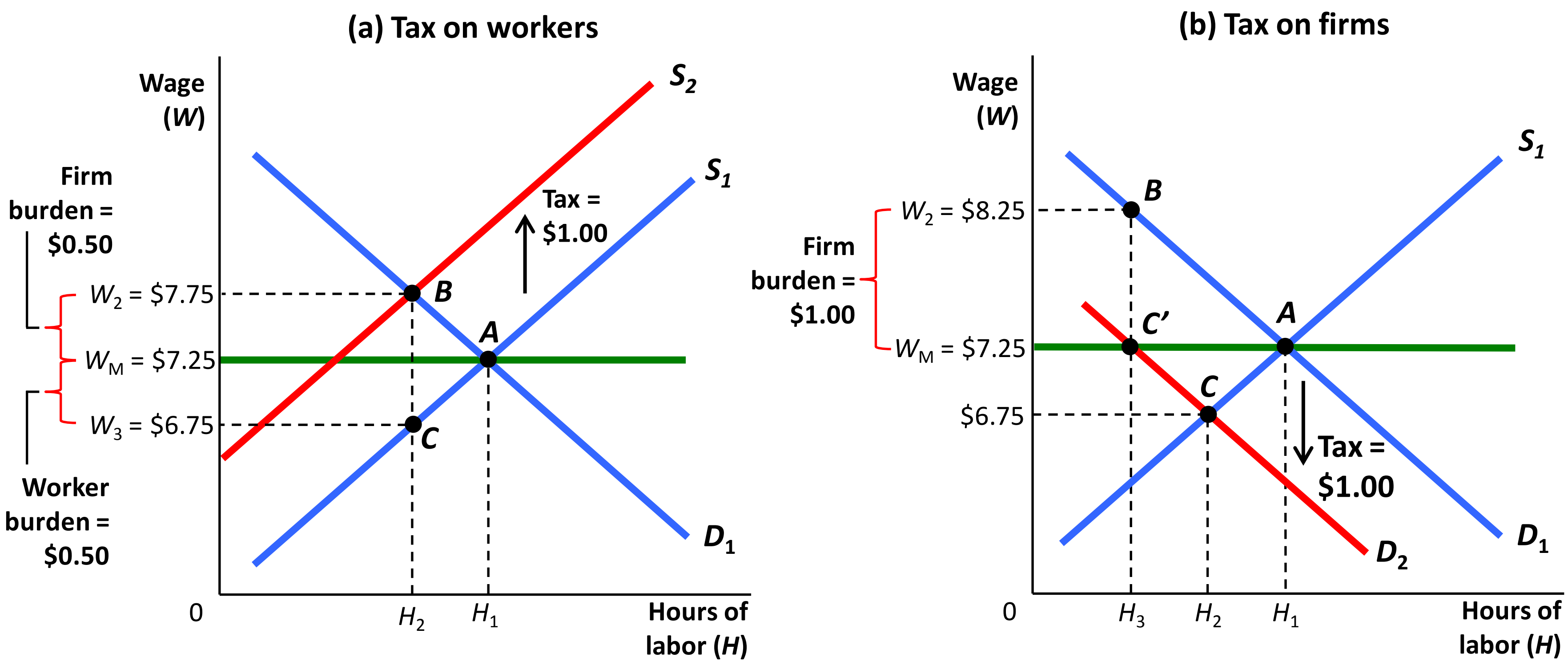
19.2

Tax Incidence in Factor Markets



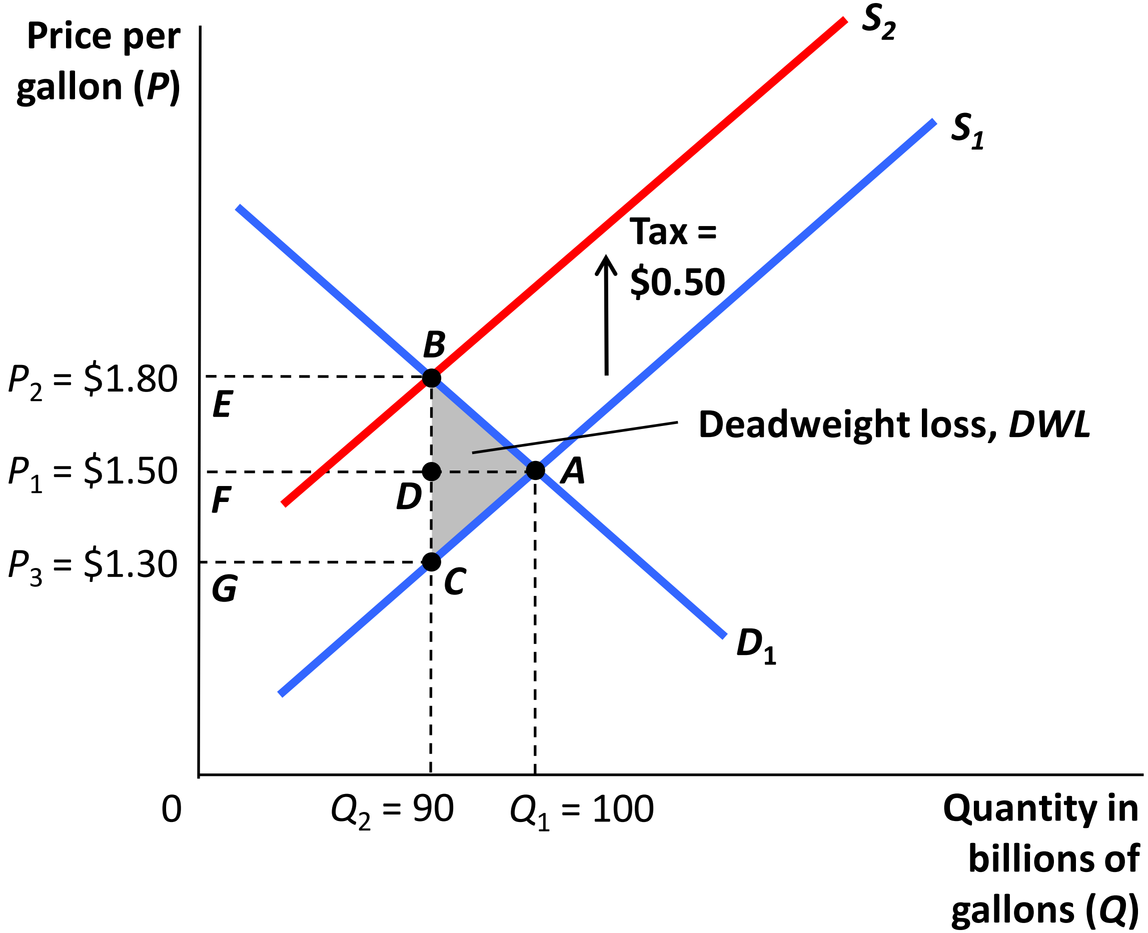
19.2

Impediments to Wage Adjustment



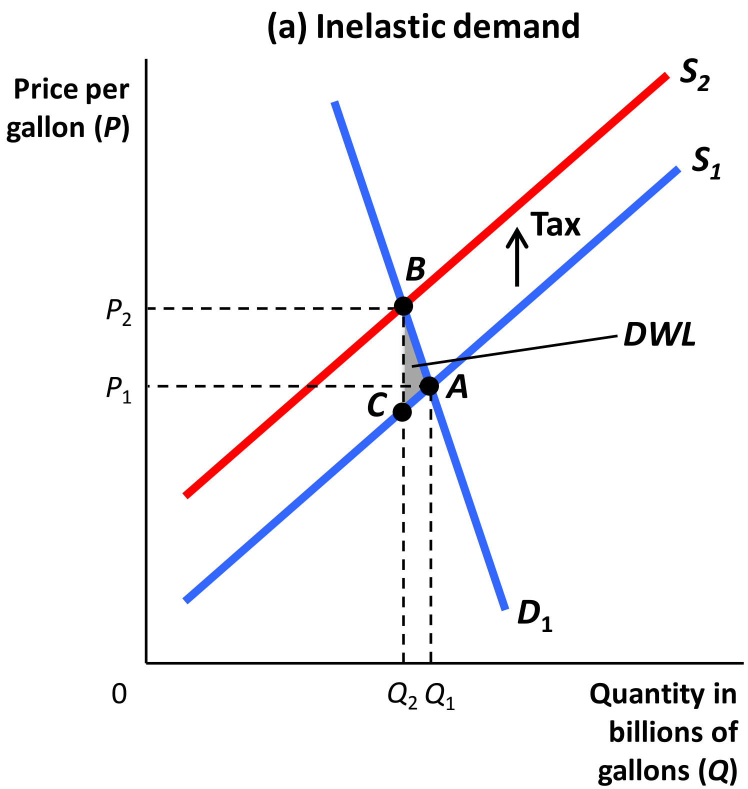
20.1

Taxation and Economic Efficiency: Graphical Approach



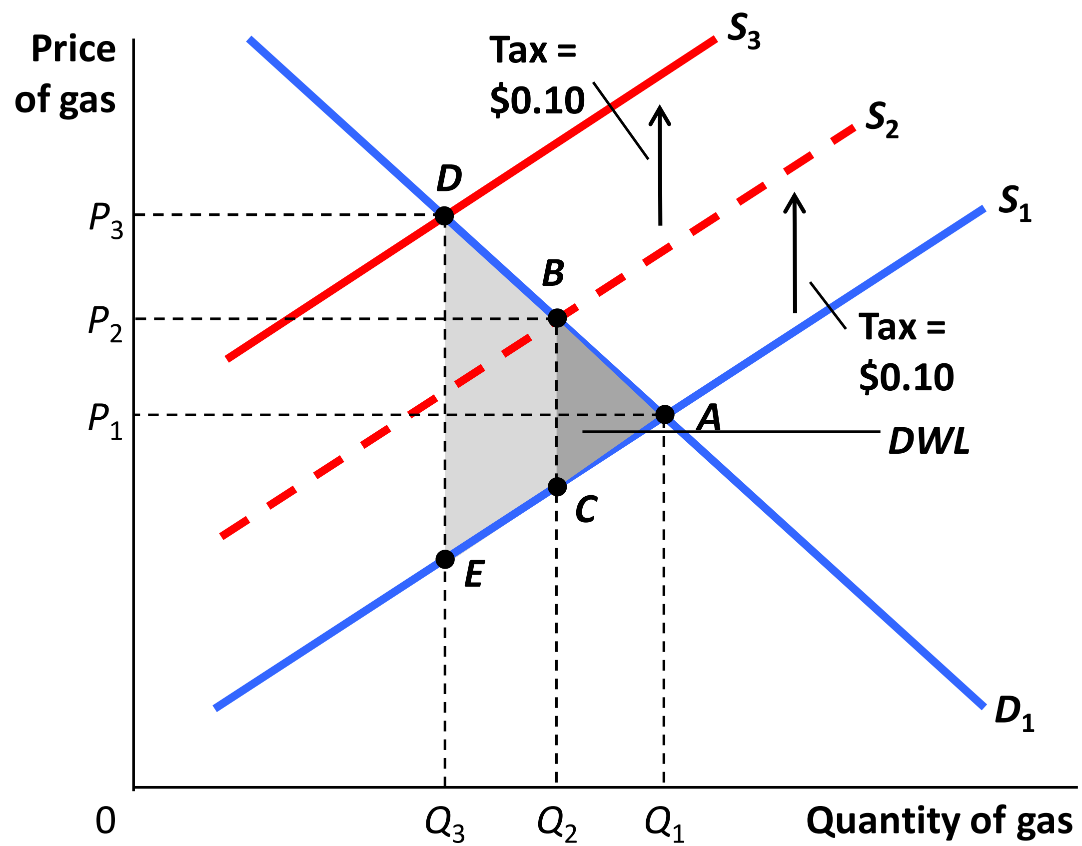
20.1

Elasticities Determine Tax Inefficiency



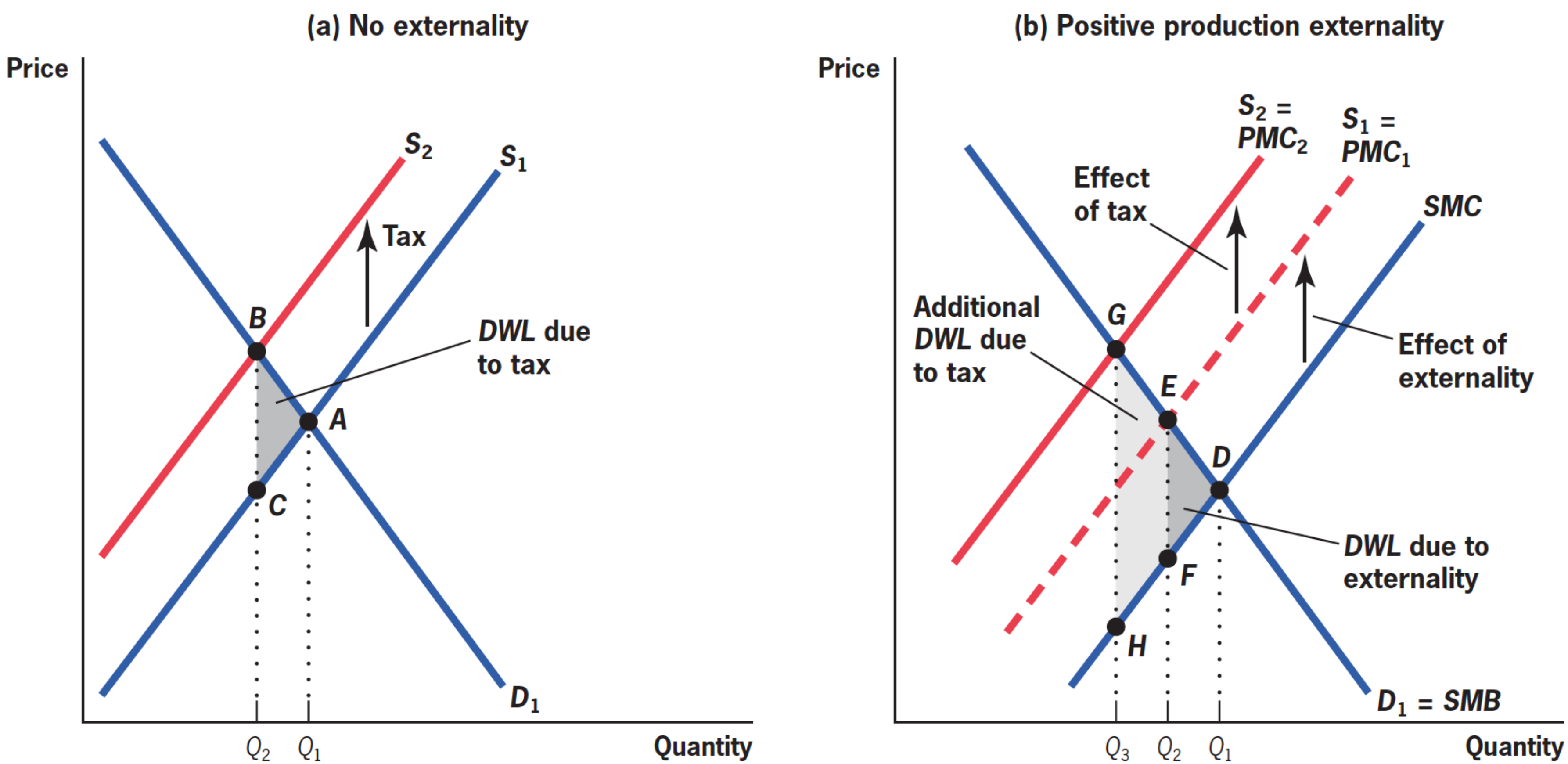
20.1

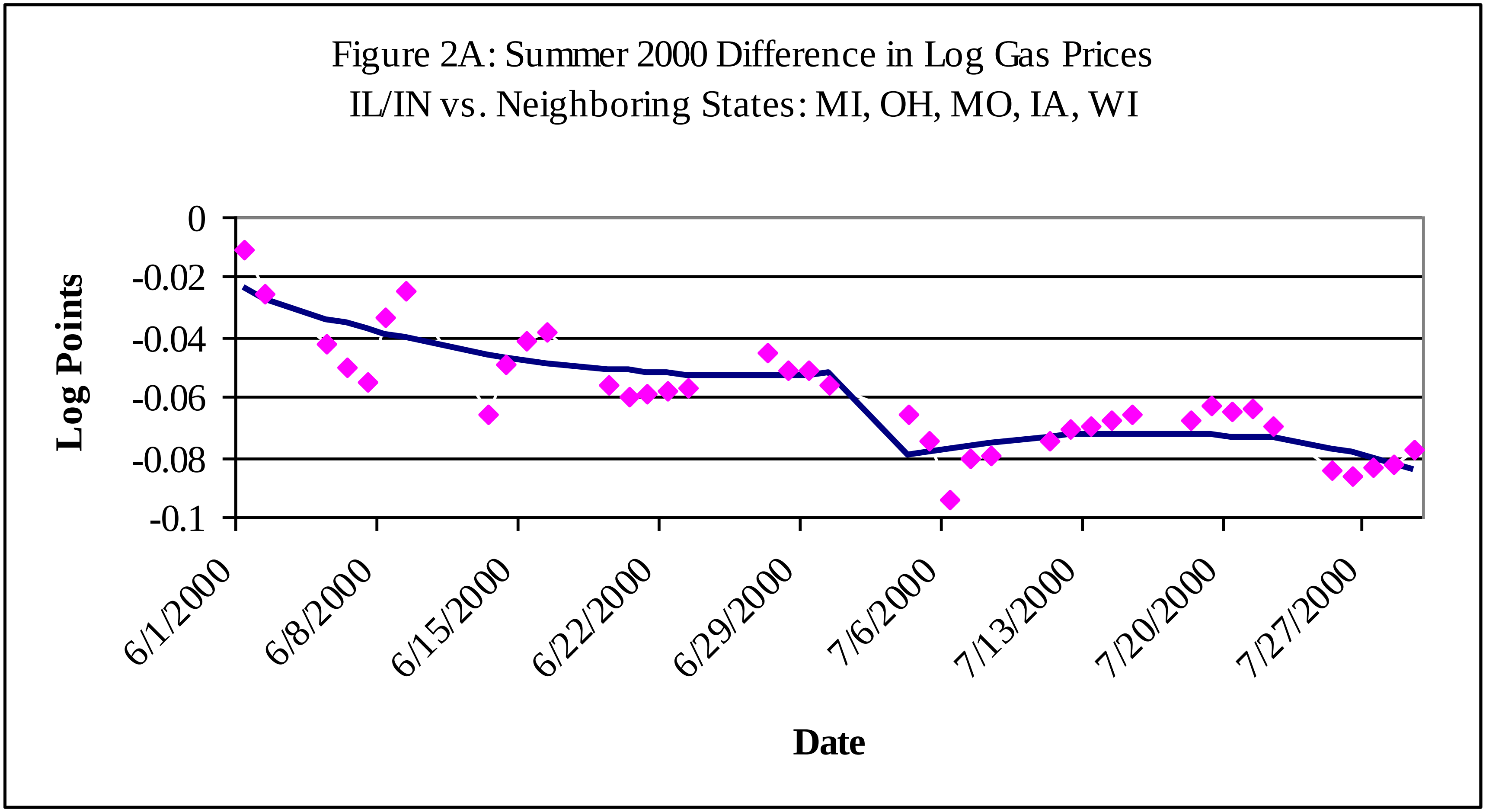
Marginal DWL Rises with Tax Rate



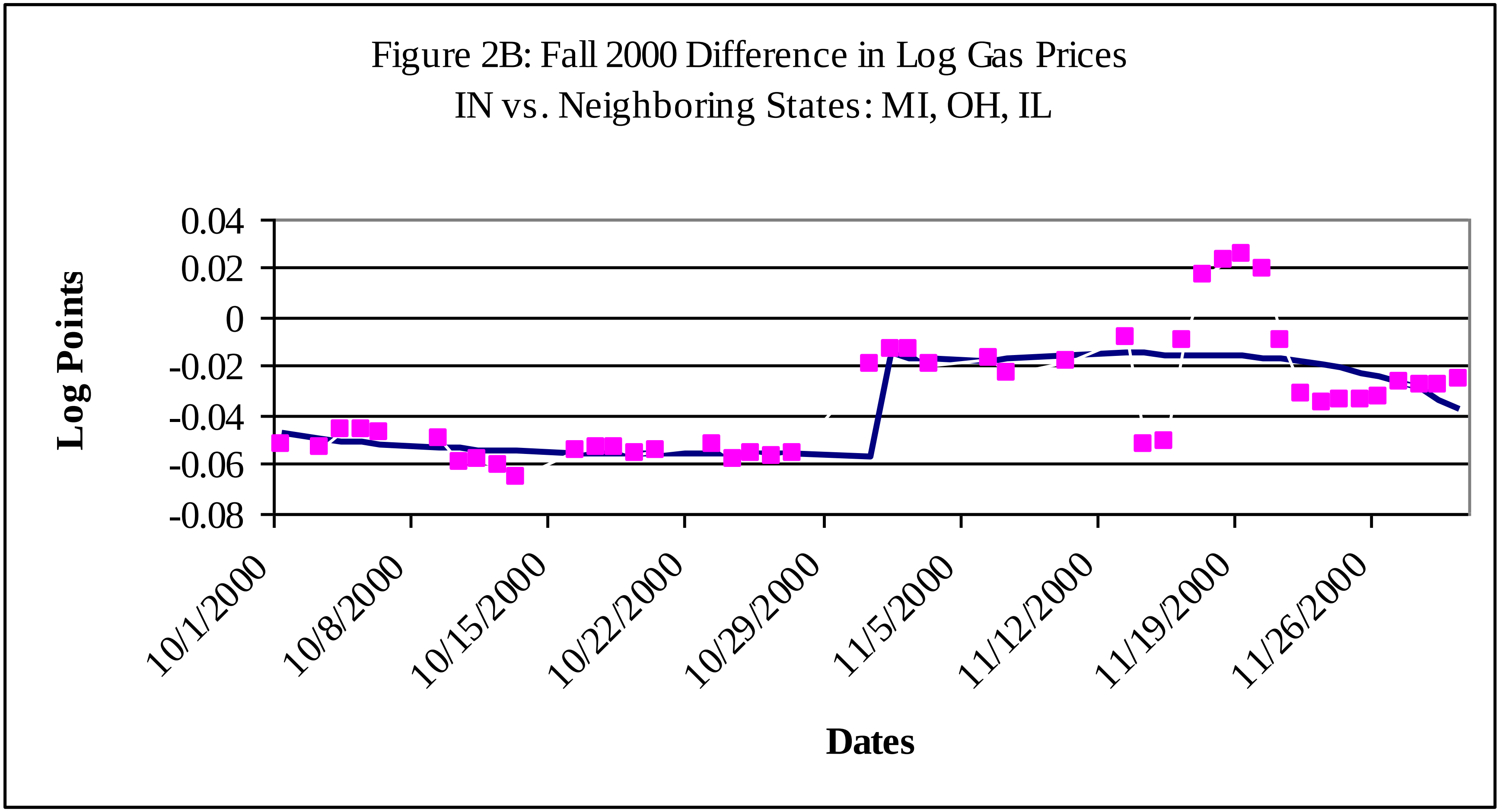
20.1

A Tax System's Efficiency Is Affected by a Market's Preexisting Distortions

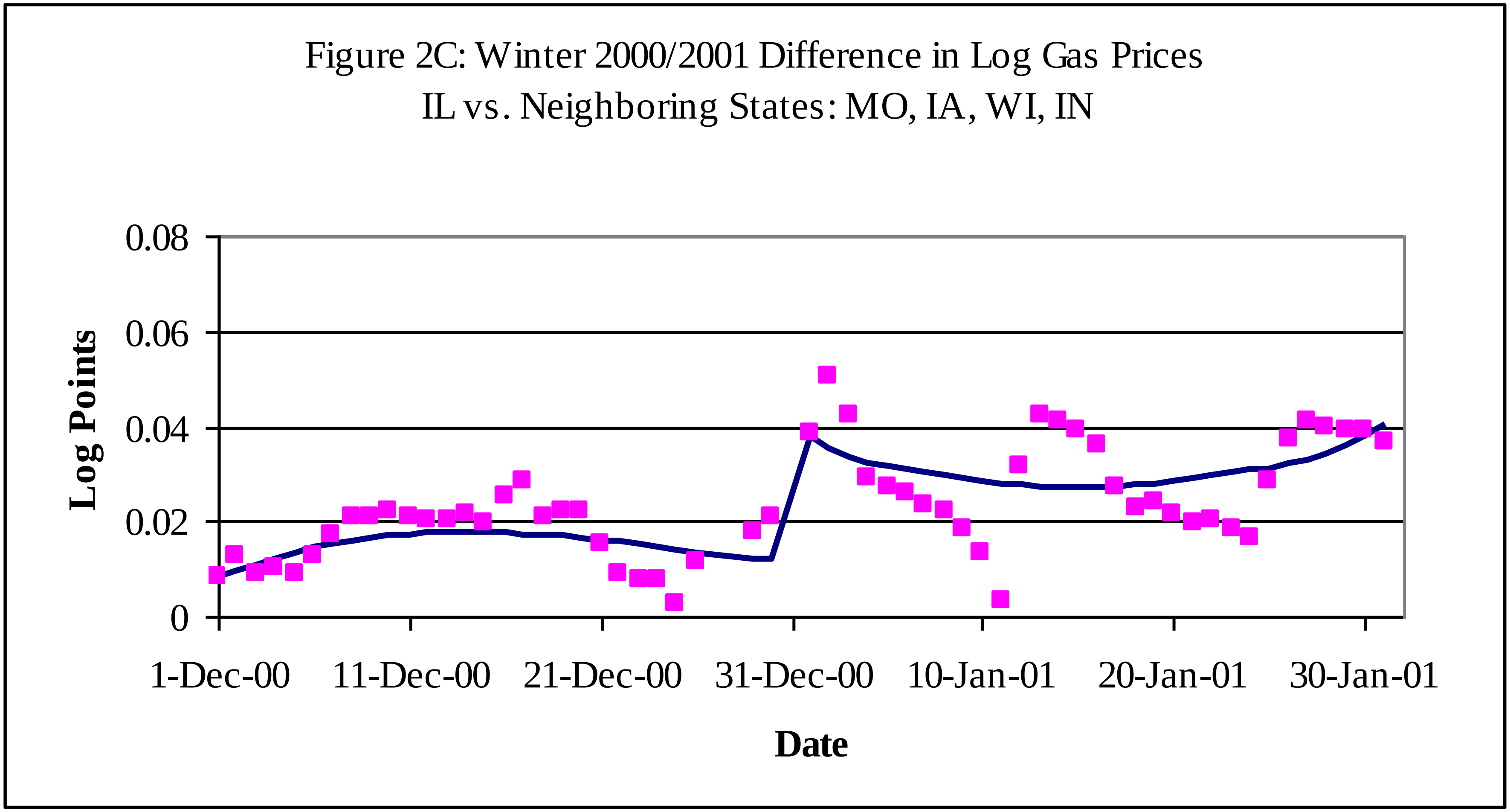




Source: Doyle and Samphantharak 2008.



Source: Doyle and Samphantharak 2008.



Source: Doyle and Samphantharak 2008.

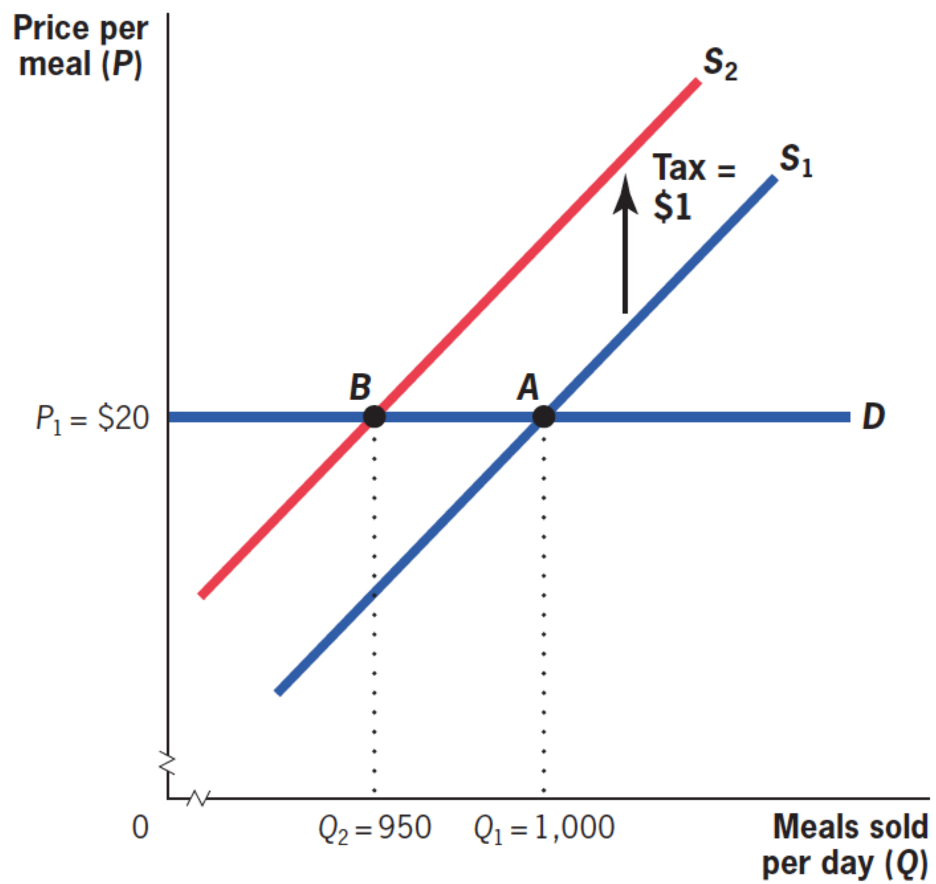
19.4

EVIDENCE: The Incidence of Excise Taxation

- Excises tax on cigarettes varies widely across the United States.
  - Low of $0.025/pack per pack in VA.
  - High of $1.51/pack in CT and MA.
  - Since 1990, NJ increased its tax rate nearly sixfold.
  - Arizona has increased its tax nearly eightfold.
- Many studies examine how taxes affect prices.
- These studies uniformly conclude that the price of cigarettes rises by the full amount of the excise tax.

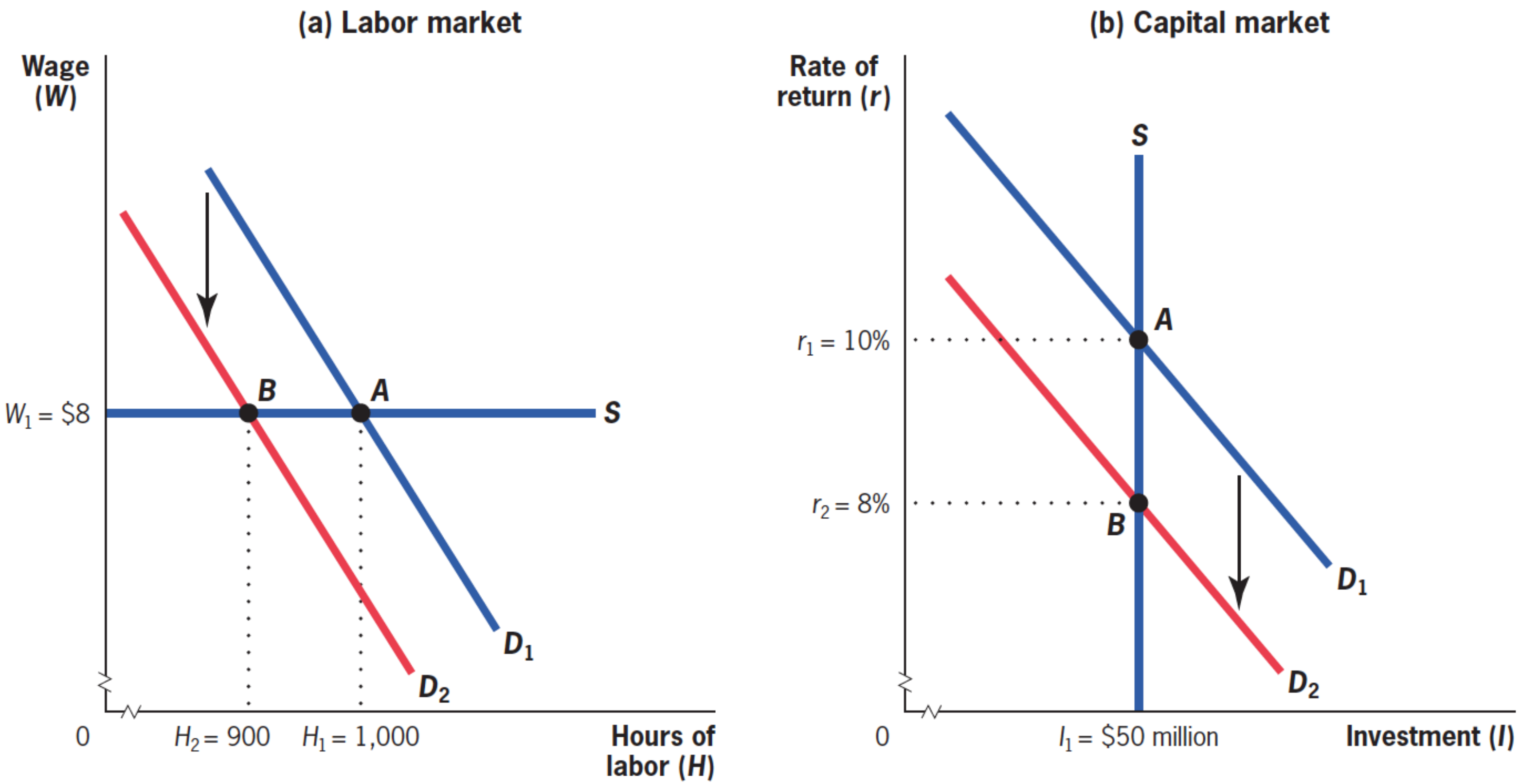
19.3

Effects of a Restaurant Tax: A General Equilibrium Example



19.3

General Equilibrium Tax Incidence



19.4

The Incidence of Taxation in the United States

Results of CBO Incidence Analysis

■ TABLE 19-1

Effective Tax Rates

	1979	1985	1990	1995	2000	2006
	Total effective tax rate					
All households	22.2%	20.9%	21.5%	22.6%	23.0%	20.7%
Bottom quintile	8.0%	9.8%	8.9%	6.3%	6.4%	4.3%
Top quintile	27.5%	24.0%	25.1%	27.8%	28.0%	25.8%
	Effective income tax rate					
All households	11.0%	10.2%	10.1%	10.2%	11.8%	9.1%
Bottom quintile	0.0%	0.5%	−1.0%	−4.4%	−4.6%	−6.6%
Top quintile	15.7%	14.0%	14.4%	15.5%	17.5%	14.1%
	Effective payroll tax rate					
All households	6.9%	7.9%	8.4%	8.5%	7.9%	7.5%
Bottom quintile	5.3%	6.6%	7.3%	7.6%	8.2%	8.5%
Top quintile	5.4%	6.5%	6.9%	7.2%	6.3%	5.8%
	Effective corporate tax rate					
All households	3.4%	1.8%	2.2%	2.8%	2.4%	3.4%
Bottom quintile	1.1%	0.6%	0.6%	0.7%	0.5%	0.5%
Top quintile	5.7%	2.8%	3.3%	4.4%	3.7%	5.4%
	Effective excise tax rate					
All households	1.0%	0.9%	0.9%	1.0%	0.9%	0.7%
Bottom quintile	1.6%	2.2%	2.0%	2.4%	2.3%	1.9%
Top quintile	0.7%	0.7%	0.6%	0.7%	0.5%	0.4%

The top panel of this table shows the total effective federal tax rate on all households and on the top and bottom quintiles of the income distribution. The other panels show the effective tax rates of various other types of federal taxes.

19.4

The Incidence of Taxation in the United States

Results of CBO Incidence Analysis

■ TABLE 19-2

Top and Bottom Quintile's Share of Income and Tax Liabilities

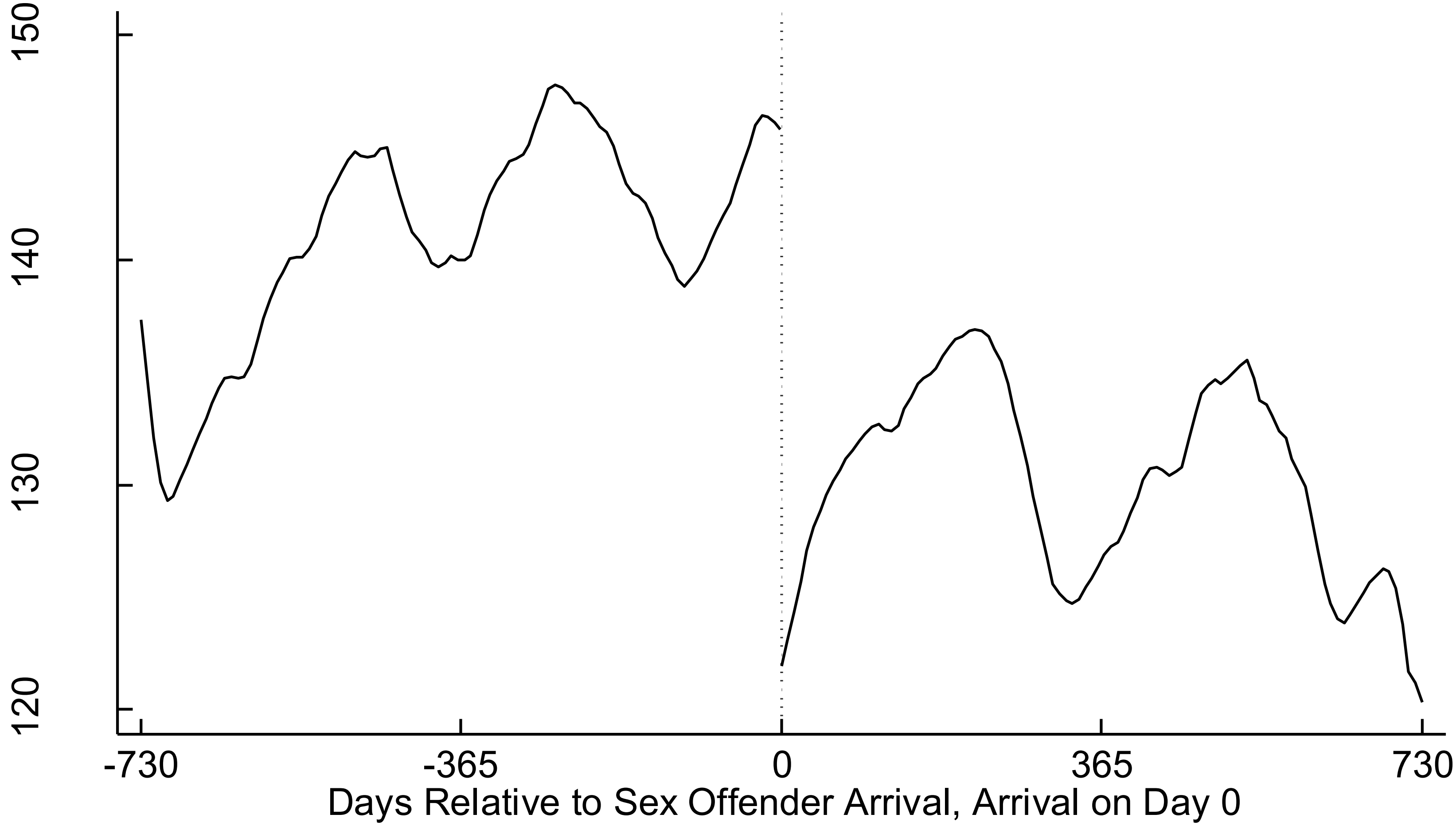
	1979	1985	1990	1995	2000	2006
Top quintile						
Share of income	45.5%	48.6%	49.5%	50.2%	54.8%	55.7%
Share of tax liabilities	56.4%	55.8%	57.9%	61.9%	66.6%	69.3%
Bottom quintile						
Share of income	5.8%	4.8%	4.6%	4.6%	4.0%	3.9%
Share of tax liabilities	2.1%	2.3%	1.9%	1.3%	1.1%	0.8%
Top 1%						
Share of income	9.3%	11.5%	12.1%	12.5%	17.8%	18.8%
Share of tax liabilities	15.4%	14.8%	16.2%	20.1%	25.5%	28.3%

This table shows the share of income and tax liabilities accruing to the top and bottom income quintiles over time.

Illustration of Identification Strategy

Source: Linden and Rockoff 2008.

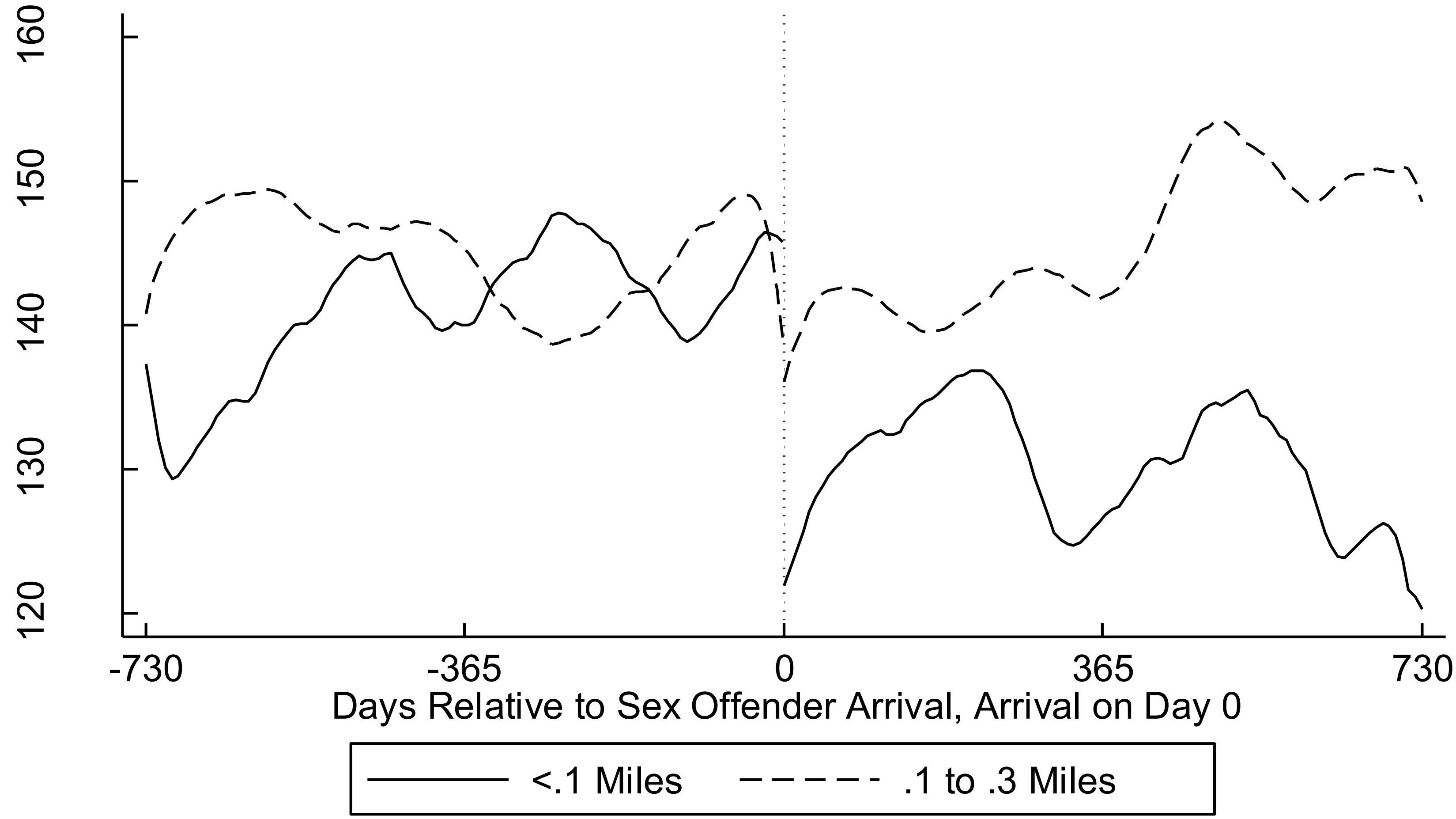
Figure 3a: Price Trends Before and After Offenders' Arrivals
Parcels Within Tenth Mile of Offender Location



Note: Results from local polynomial regressions (bandwidth=90 days) of sale price on days before/after offender arrival.

Source: Linden and Rockoff 2008.

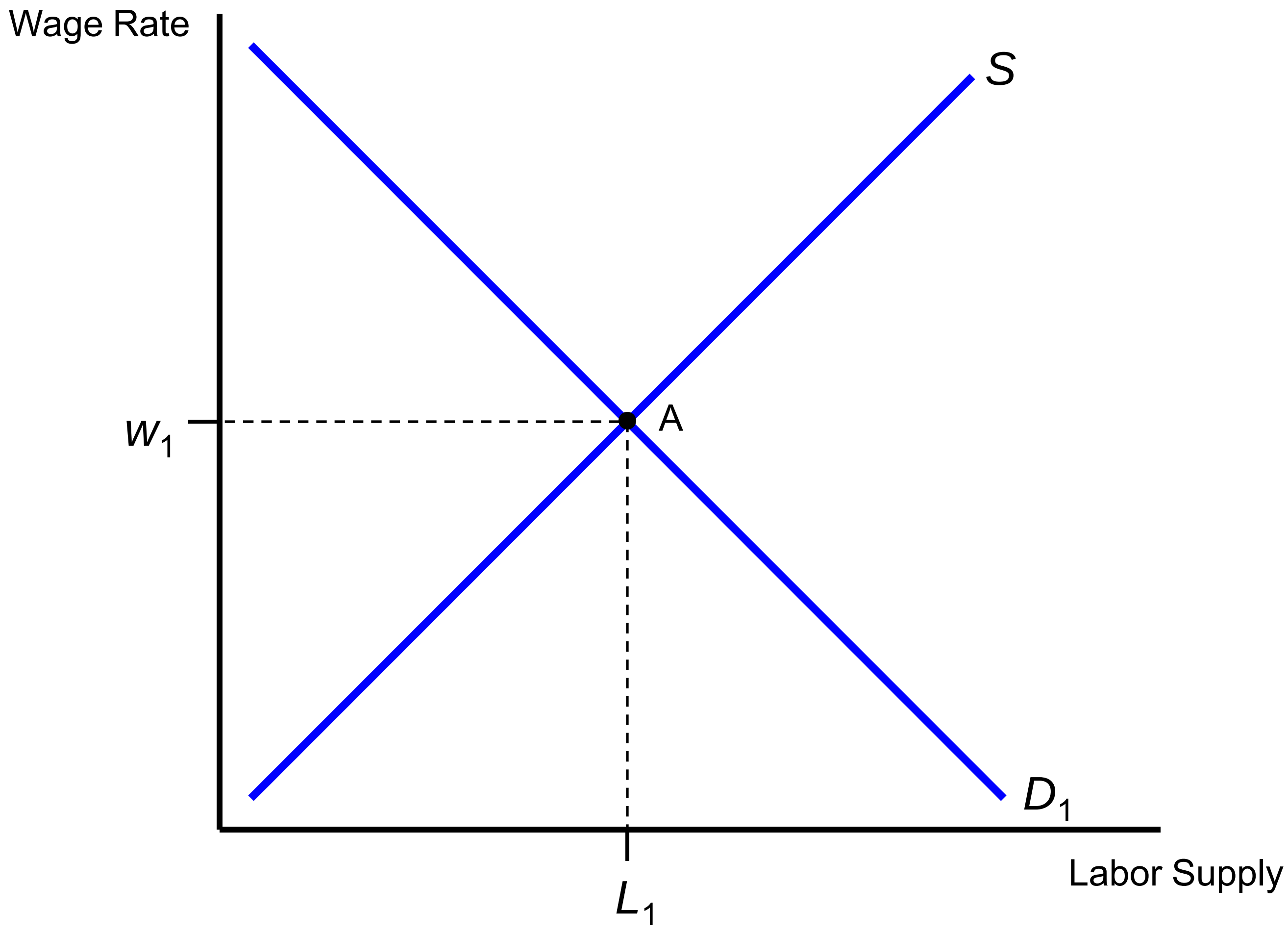
Figure 3b: Price Trends Before and After Offenders' Arrivals
Parcels Within 1/3 Mile of Offender Location



Note: Results from local polynomial regressions (bandwidth=90 days) of sale price on days before/after offender arrival.

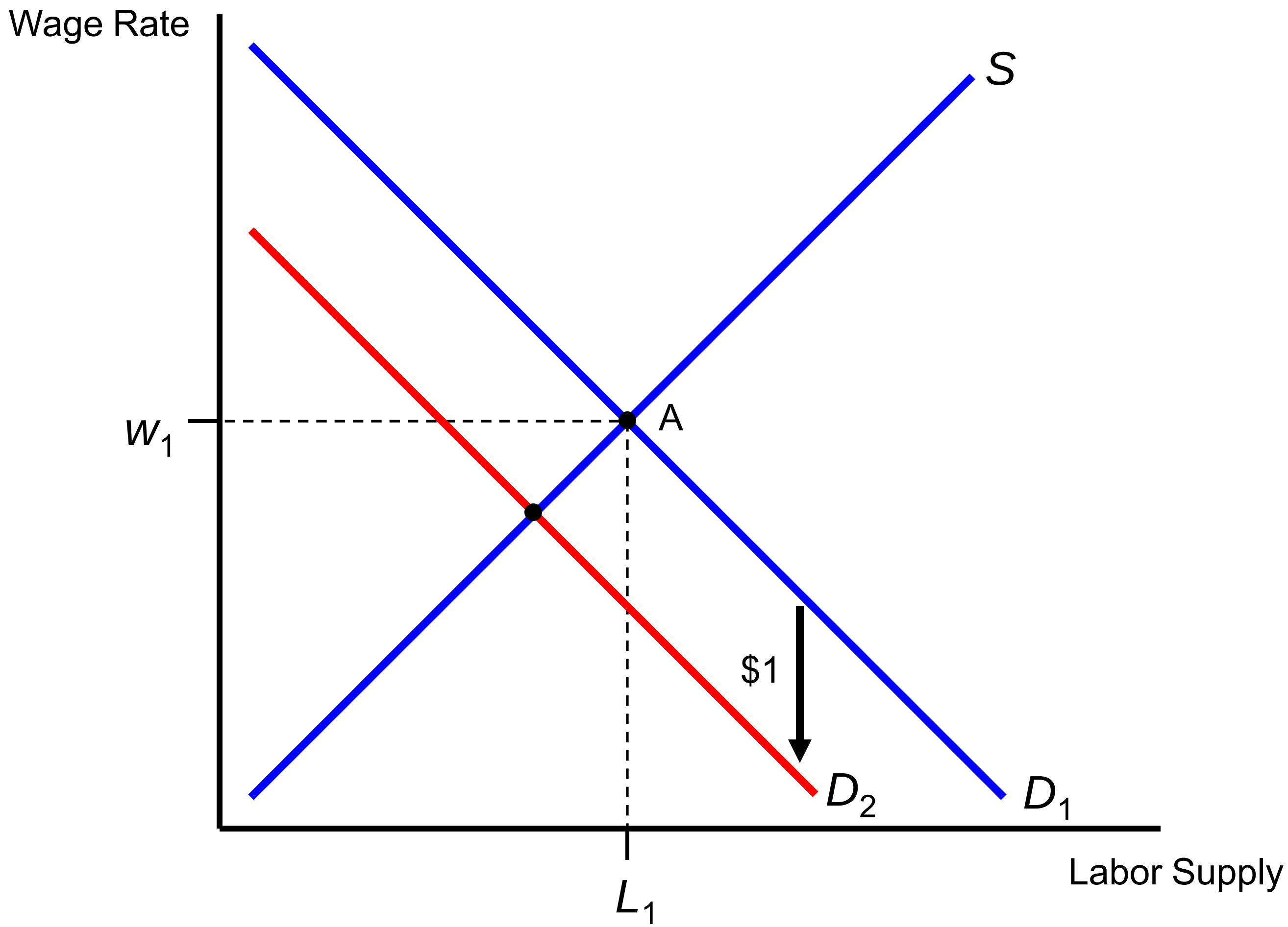
Source: Linden and Rockoff 2008.

Figure 1: Mandated Benefit



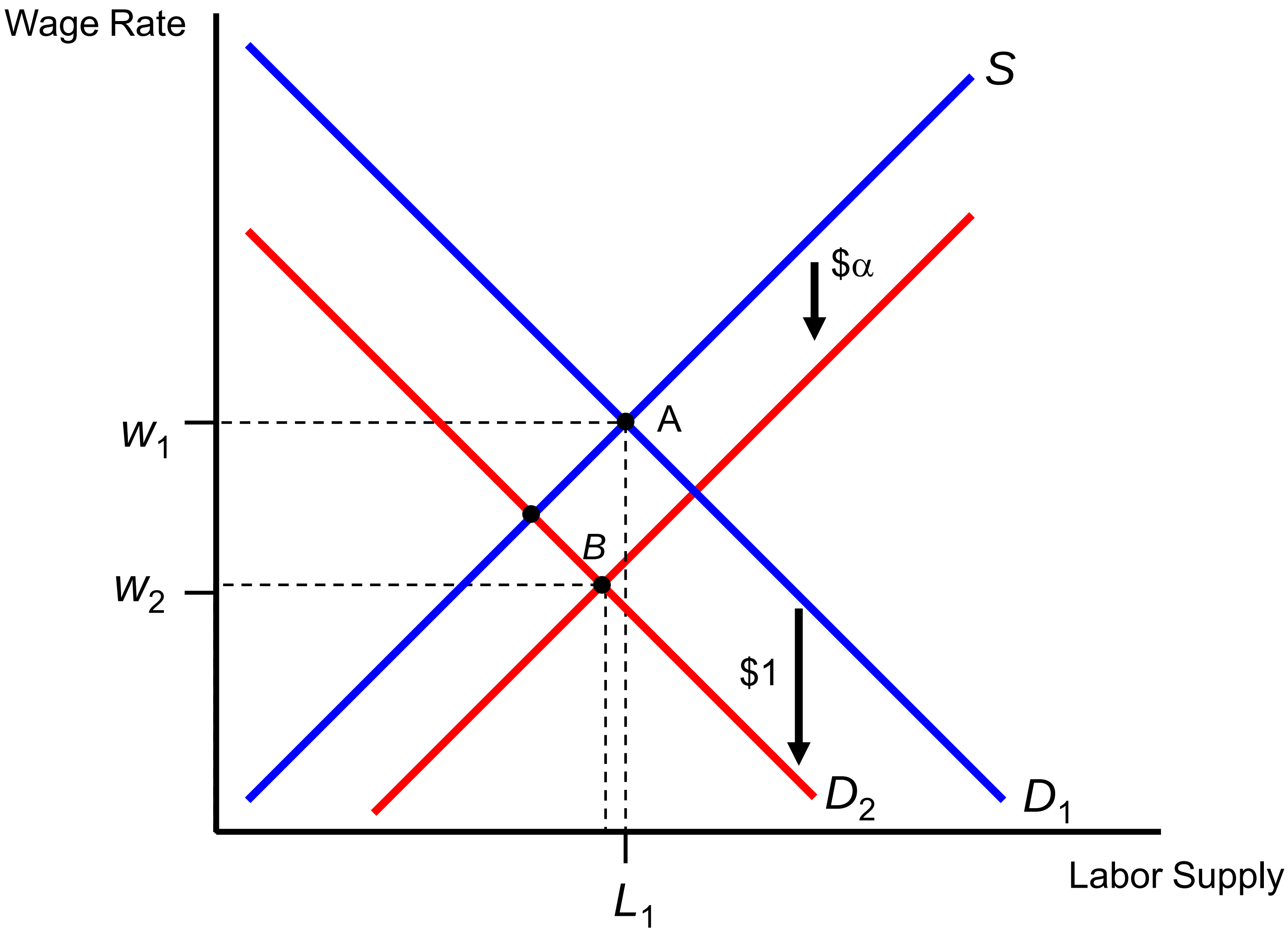
Source: Raj Chetty's Undergraduate Lecture Note

Figure 1: Mandated Benefit



Source: Raj Chetty's Undergraduate Lecture Note

Figure 1: Mandated Benefit



Source: Raj Chetty's Undergraduate Lecture Note

Orig. Tag

Exp. Tag

Source: Chetty, Looney, Kroft (2009)

Effect of Posting Tax-Inclusive Prices: Mean Quantity Sold

TREATMENT STORE

Period	Control Categories	Treated Categories	Difference
Baseline	26.48	25.17	-1.31
	(0.22)	(0.37)	(0.43)
Experiment	27.32	23.87	-3.45
	(0.87)	(1.02)	(0.64)
Difference over time	0.84	-1.30	**DD_{TS} = -2.14**
	(0.75)	(0.92)	(0.64)

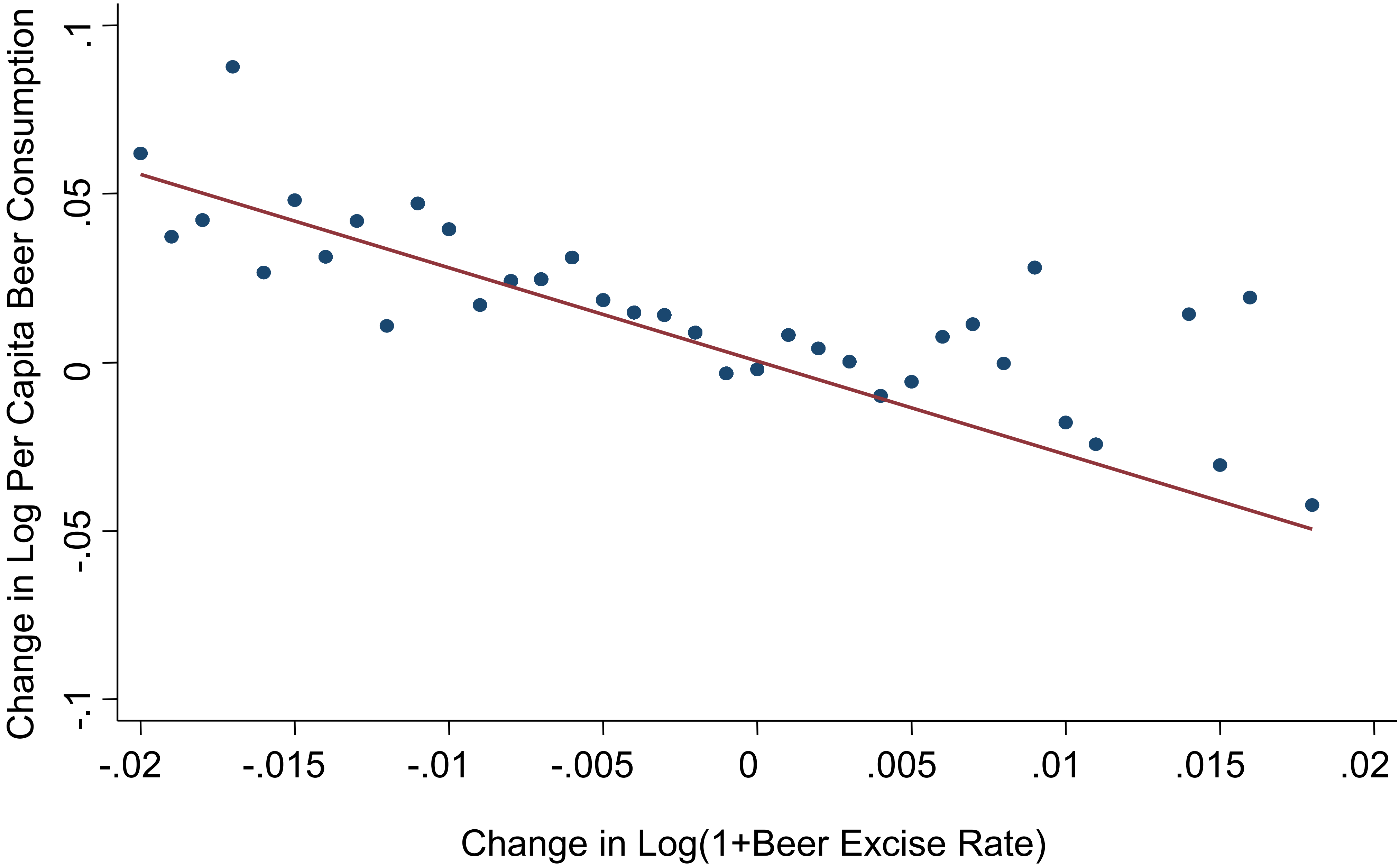
CONTROL STORES

Period	Control Categories	Treated Categories	Difference
Baseline	30.57	27.94	-2.63
	(0.24)	(0.30)	(0.32)
Experiment	30.76	28.19	-2.57
	(0.72)	(1.06)	(1.09)
Difference over time	0.19	0.25	**DD_{CS} = 0.06**
	(0.64)	(0.92)	(0.90)
		DDD Estimate	***-2.20***
			(0.58)

Source: Chetty, Looney, Kroft (2009)

Figure 2a

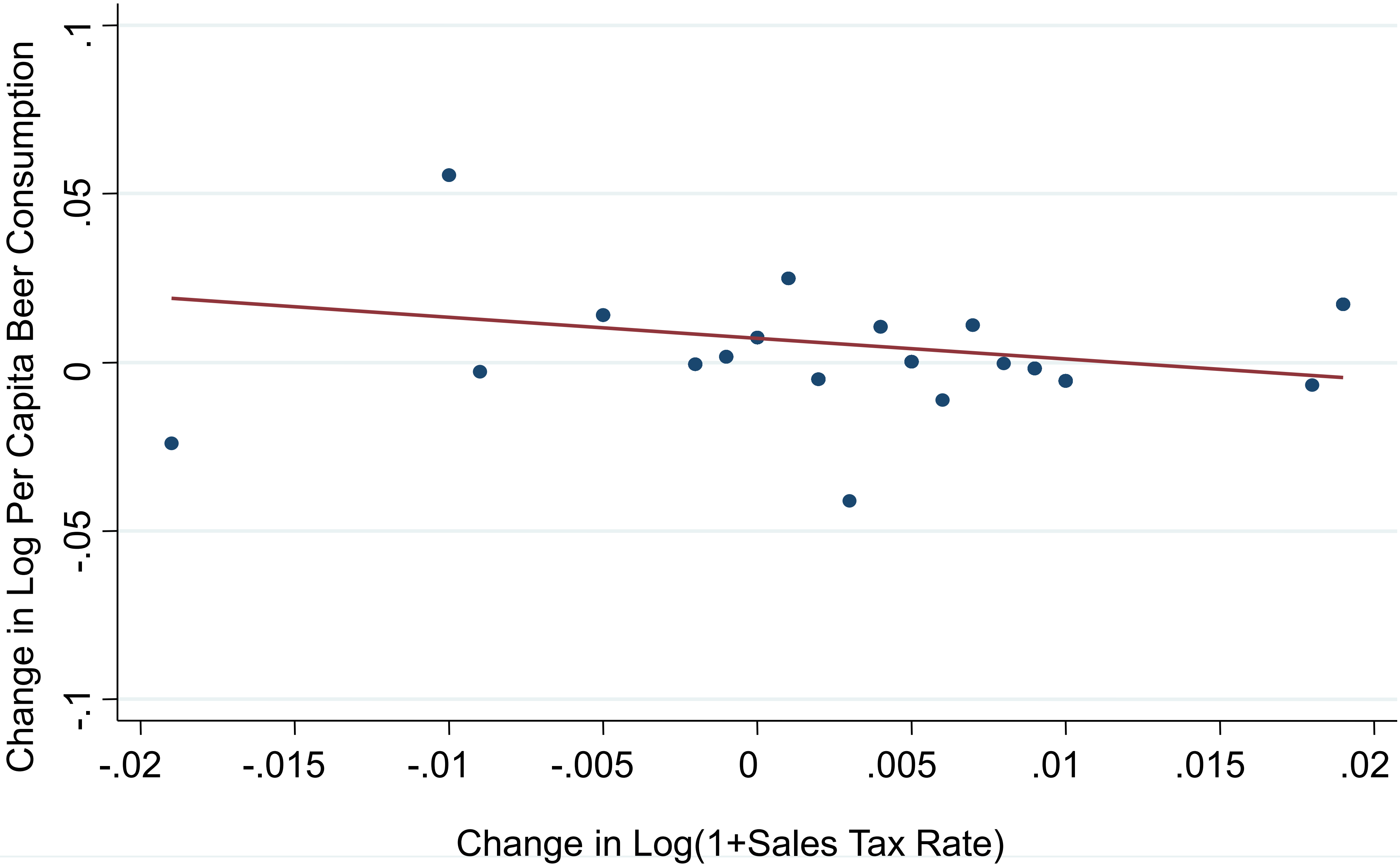
Per Capita Beer Consumption and State Beer Excise Taxes



Source: Chetty, Looney, Kroft (2009)

Figure 2b

Per Capita Beer Consumption and State Sales Taxes



Source: Chetty, Looney, Kroft (2009)

Effect of Excise and Sales Taxes on Beer Consumption

Dependent Variable: Change in Log(per capita beer consumption)

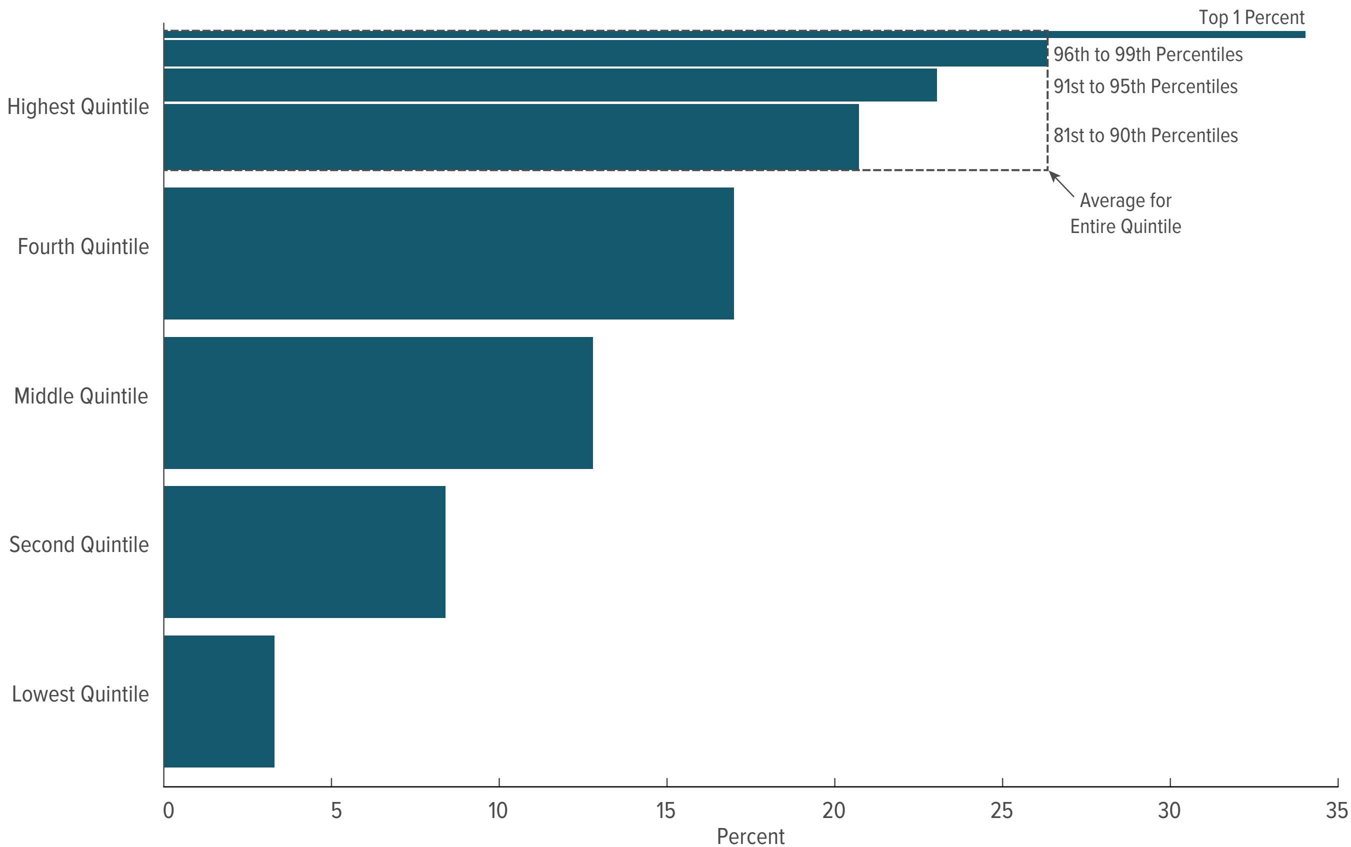
	Baseline	Bus Cyc, Alc Regs.	3-Year Diffs	Food Exempt
	(1)	(2)	(3)	(4)
ΔLog(1+Excise Tax Rate)	**-0.87**	**-0.89**	**-1.11**	**-0.91**
	(0.17)***	(0.17)***	(0.46)**	(0.22)***
ΔLog(1+Sales Tax Rate)	**-0.20**	**-0.02**	**-0.00**	**-0.14**
	(0.30)	(0.30)	(0.32)	(0.30)
Business Cycle Controls		x	x	x
Alcohol Regulation Controls		x	x	x
Year Fixed Effects	x	x	x	x
F-Test for Equality of Coeffs.	0.05	0.01	0.05	0.04
Sample Size	1,607	1,487	1,389	937

Note: Estimates imply $\theta_\tau \approx 0.06$

Source: Chetty, Looney, Kroft (2009)

Figure 4.

Average Federal Tax Rates, by Before-Tax Income Group, 2013

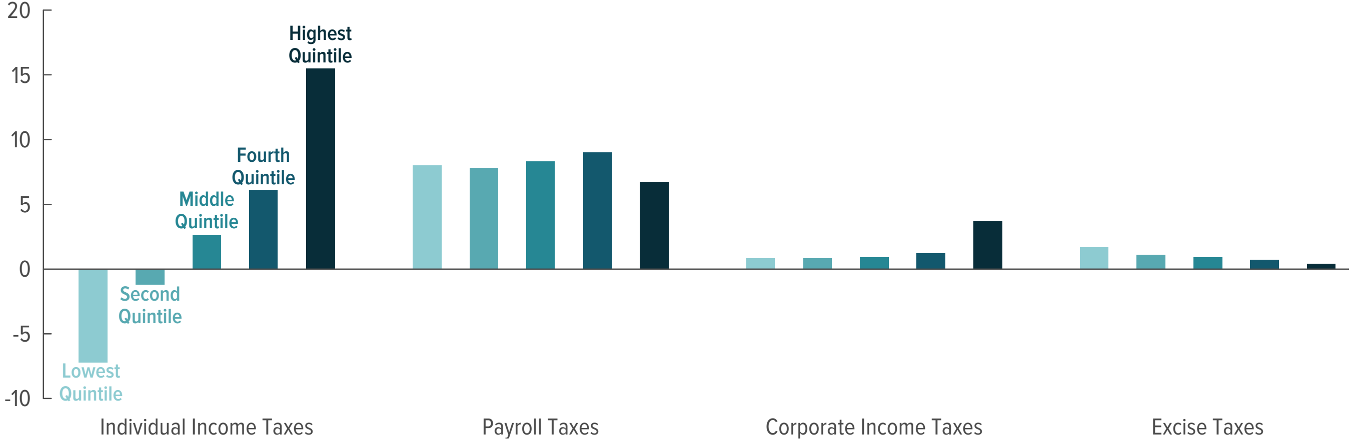


Source: Congressional Budget Office.

Average federal tax rates are calculated by dividing federal taxes by before-tax income.

Figure 5.

Average Federal Tax Rates, by Before-Tax Income Group and Tax Source, 2013



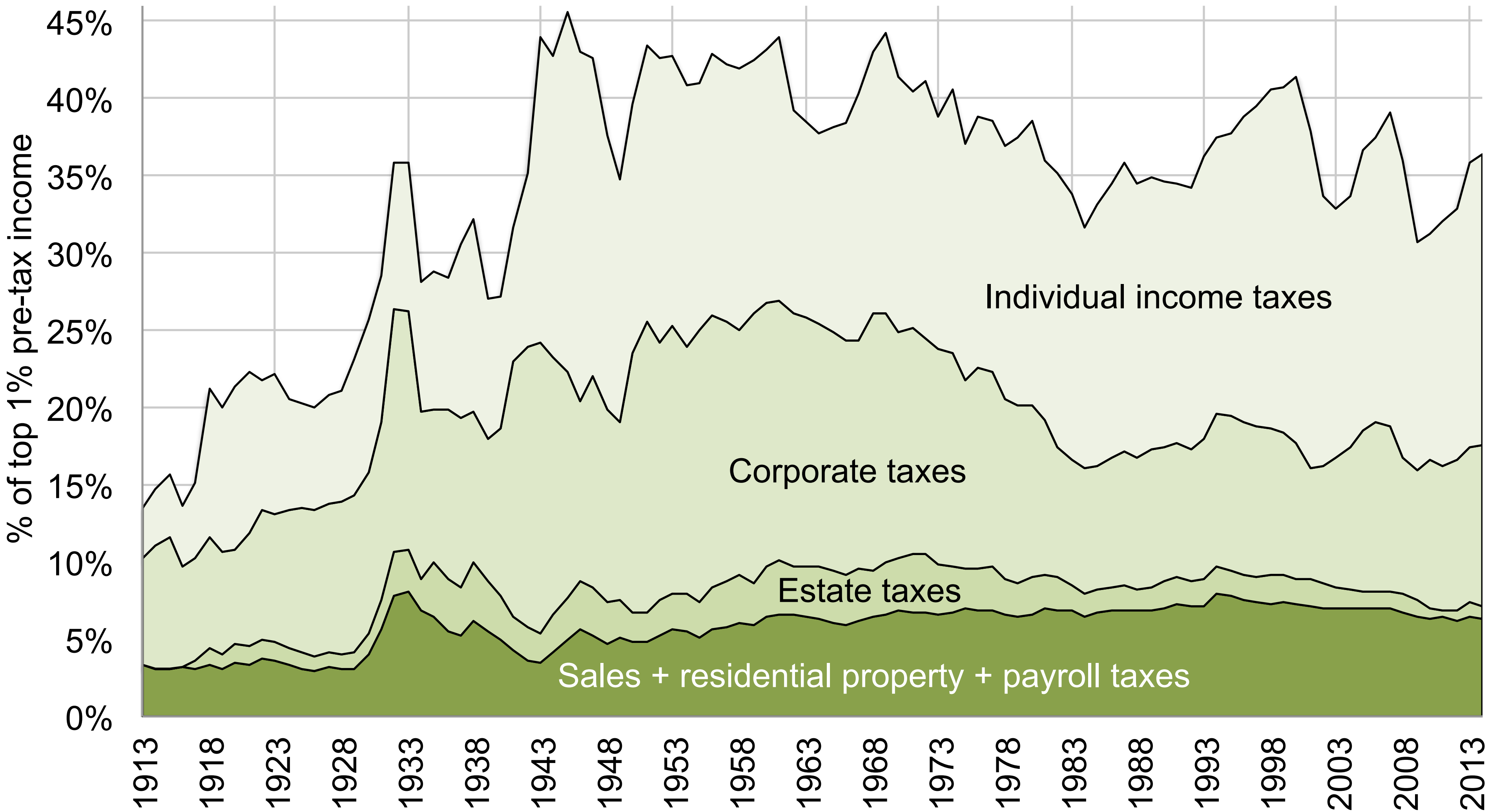
Source: Congressional Budget Office.

Average federal tax rates are calculated by dividing federal taxes by before-tax income.

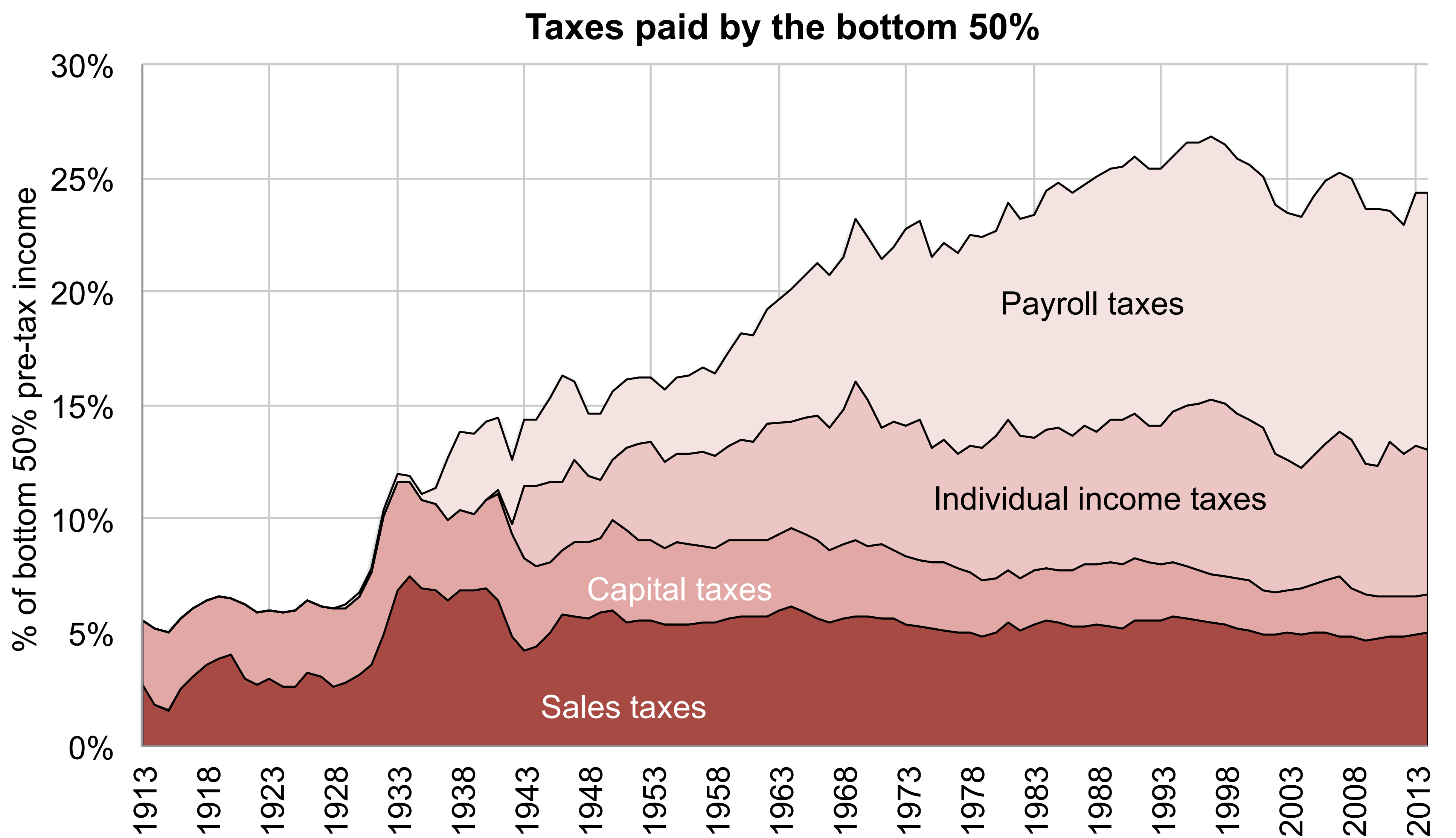
Before-tax income is market income plus government transfers. Market income consists of labor income, business income, capital gains (profits realized from the sale of assets), capital income excluding capital gains, income received in retirement for past services, and other sources of income. Government transfers are cash payments and in-kind benefits from social insurance and other government assistance programs. Those transfers include payments and benefits from federal, state, and local governments.

Negative average tax rates for individual income taxes result when refundable tax credits, such as the earned income tax credit and the child tax credit, exceed the other income tax liabilities of the households in an income group.

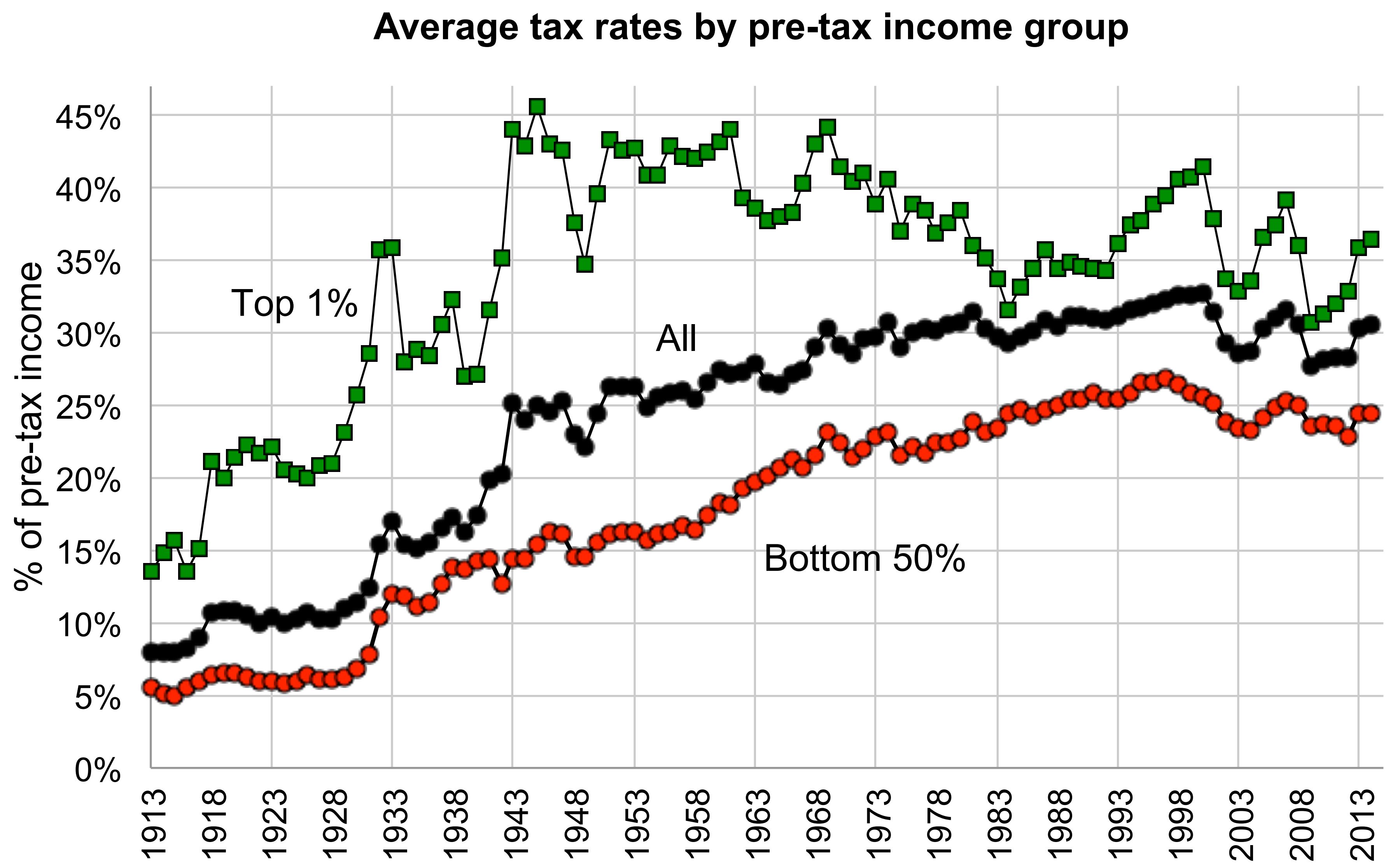
Figure S.22: Taxes paid by the top 1%



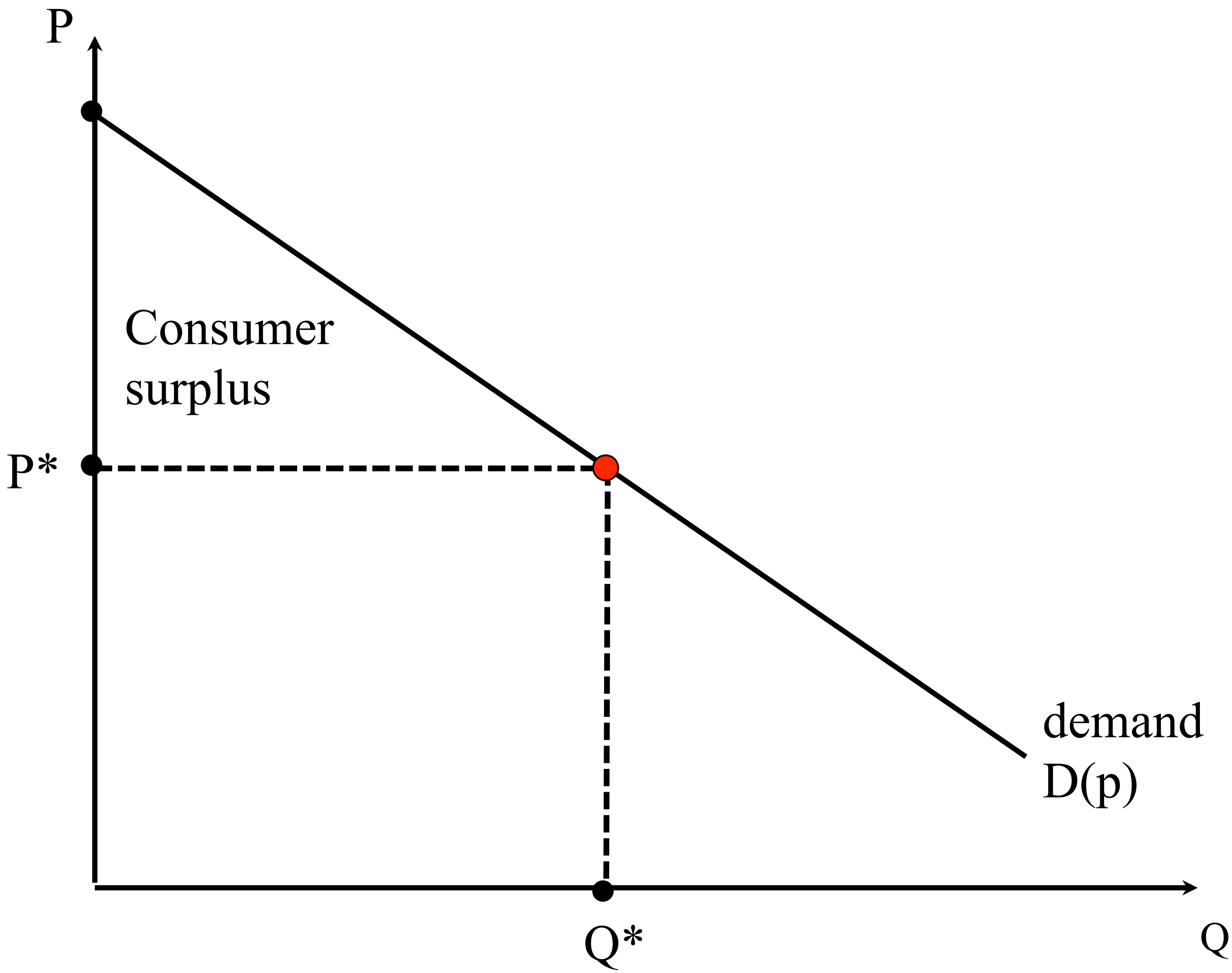
Source: Appendix Table II-G2

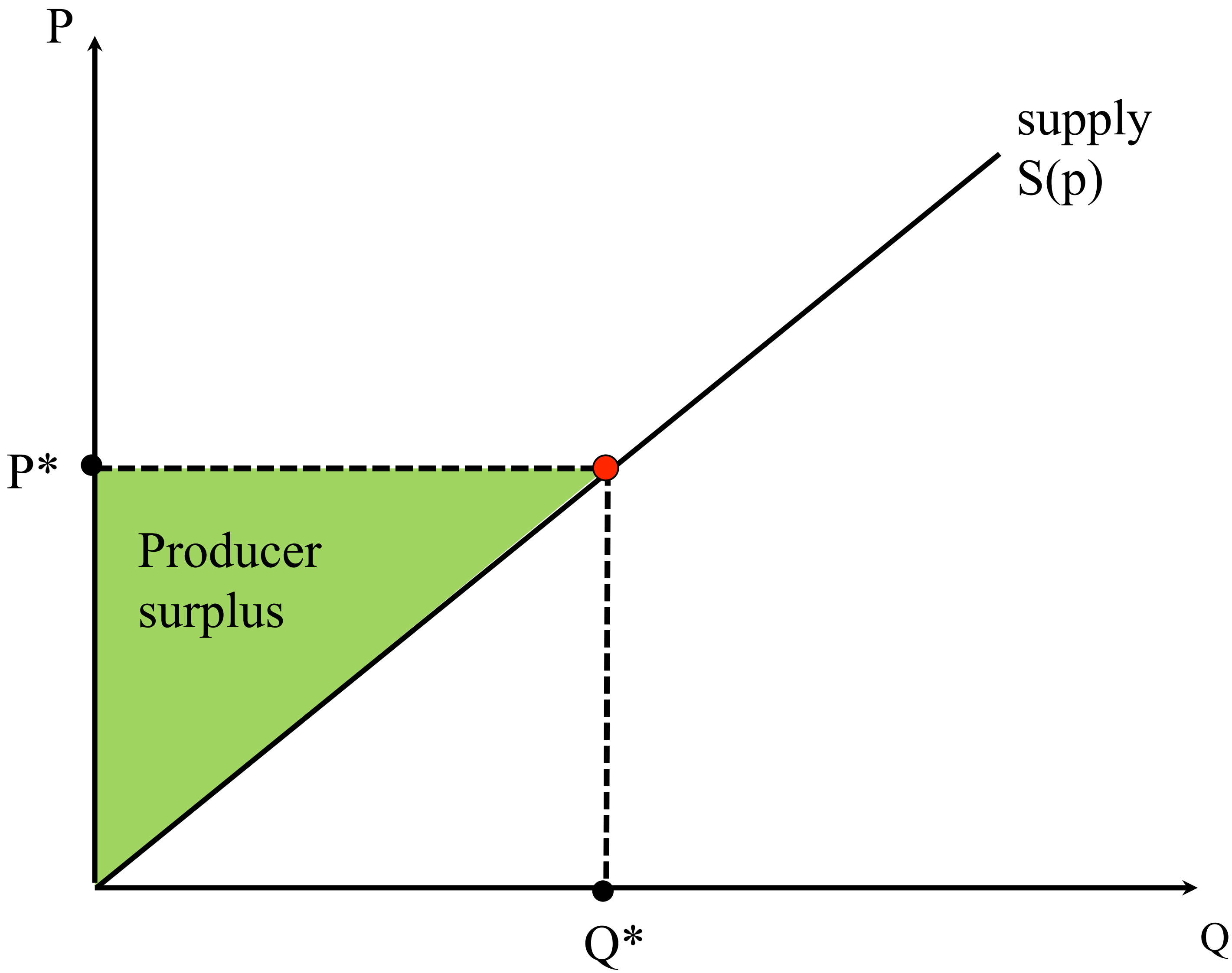


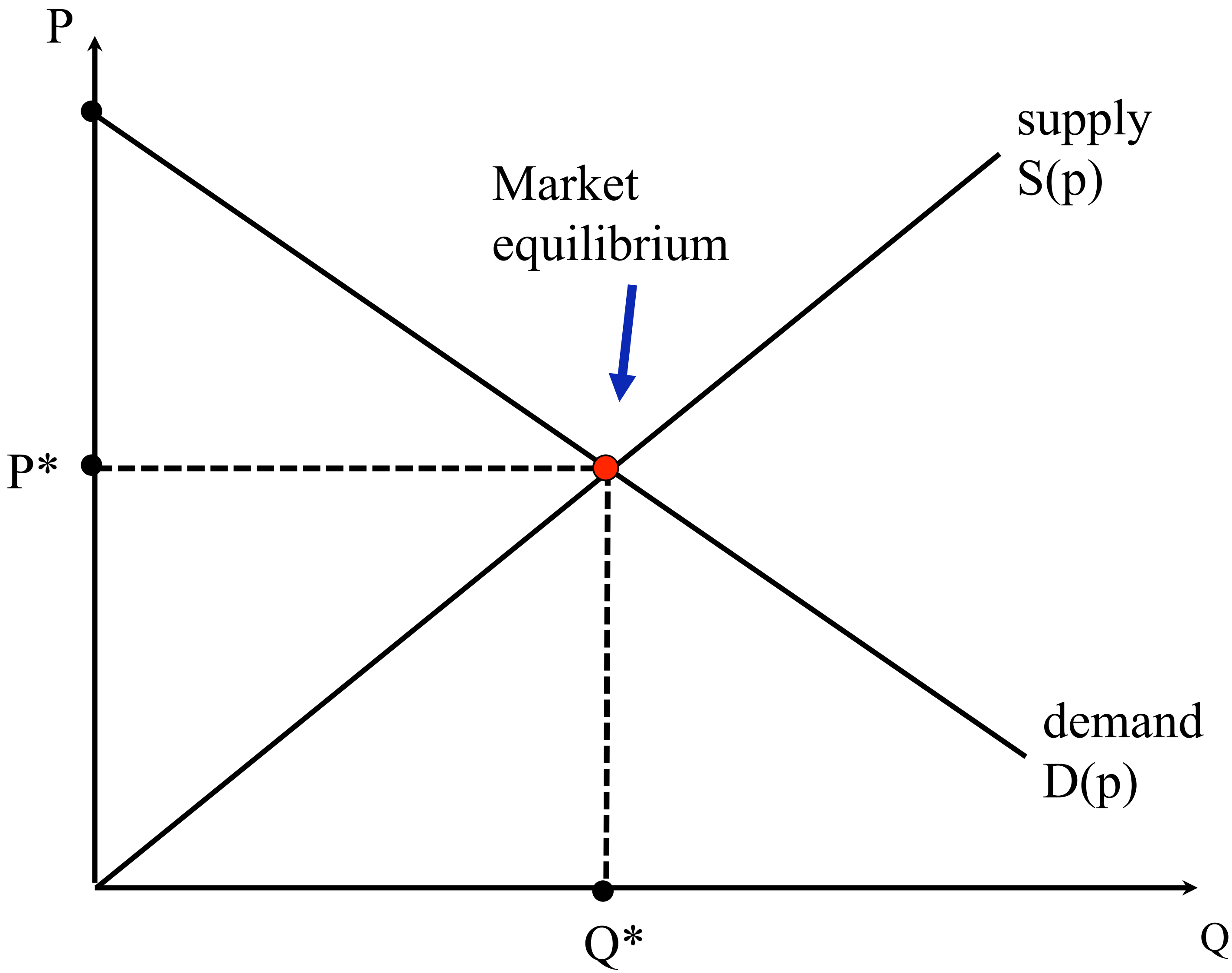
Source: Appendix Table II-G2

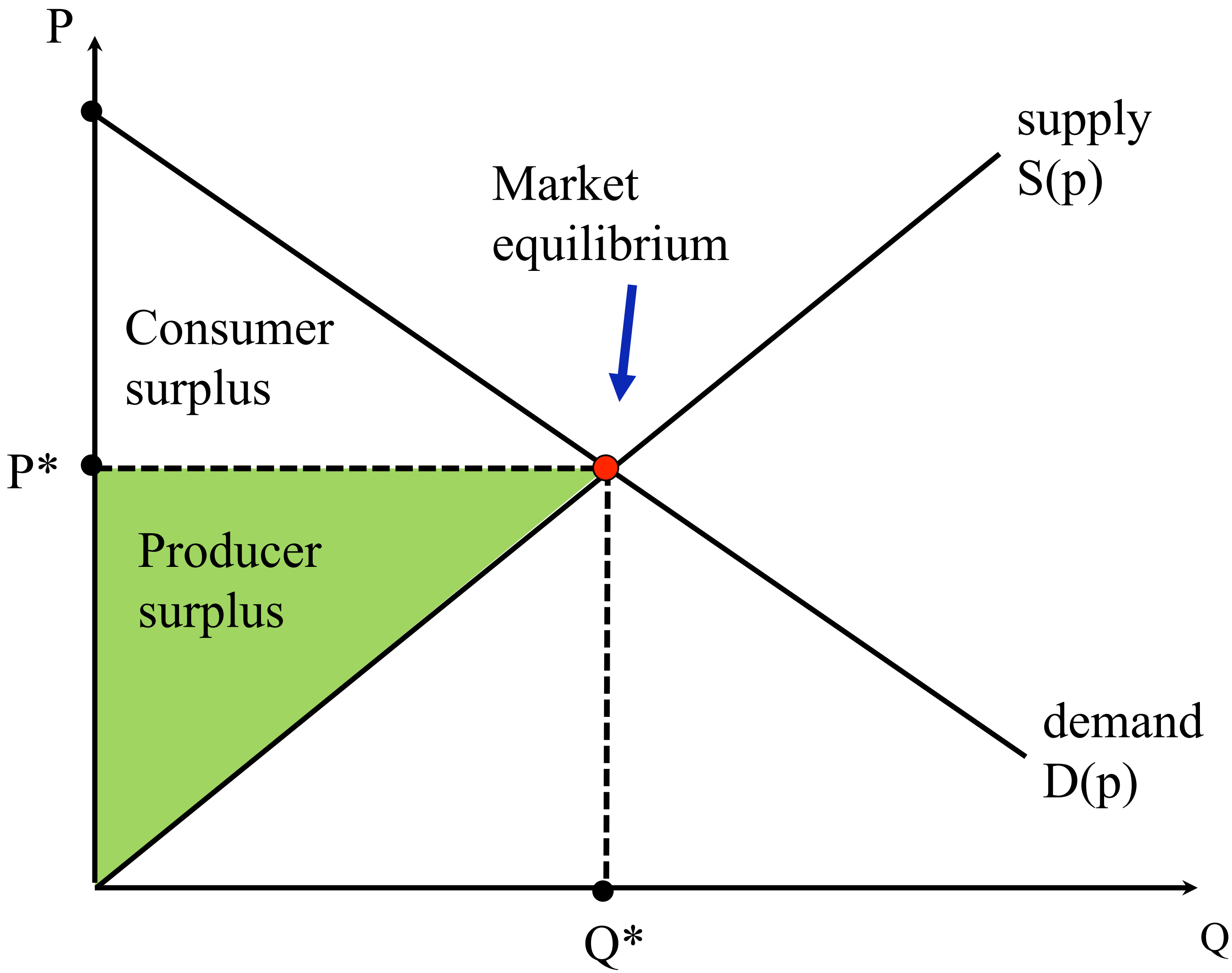


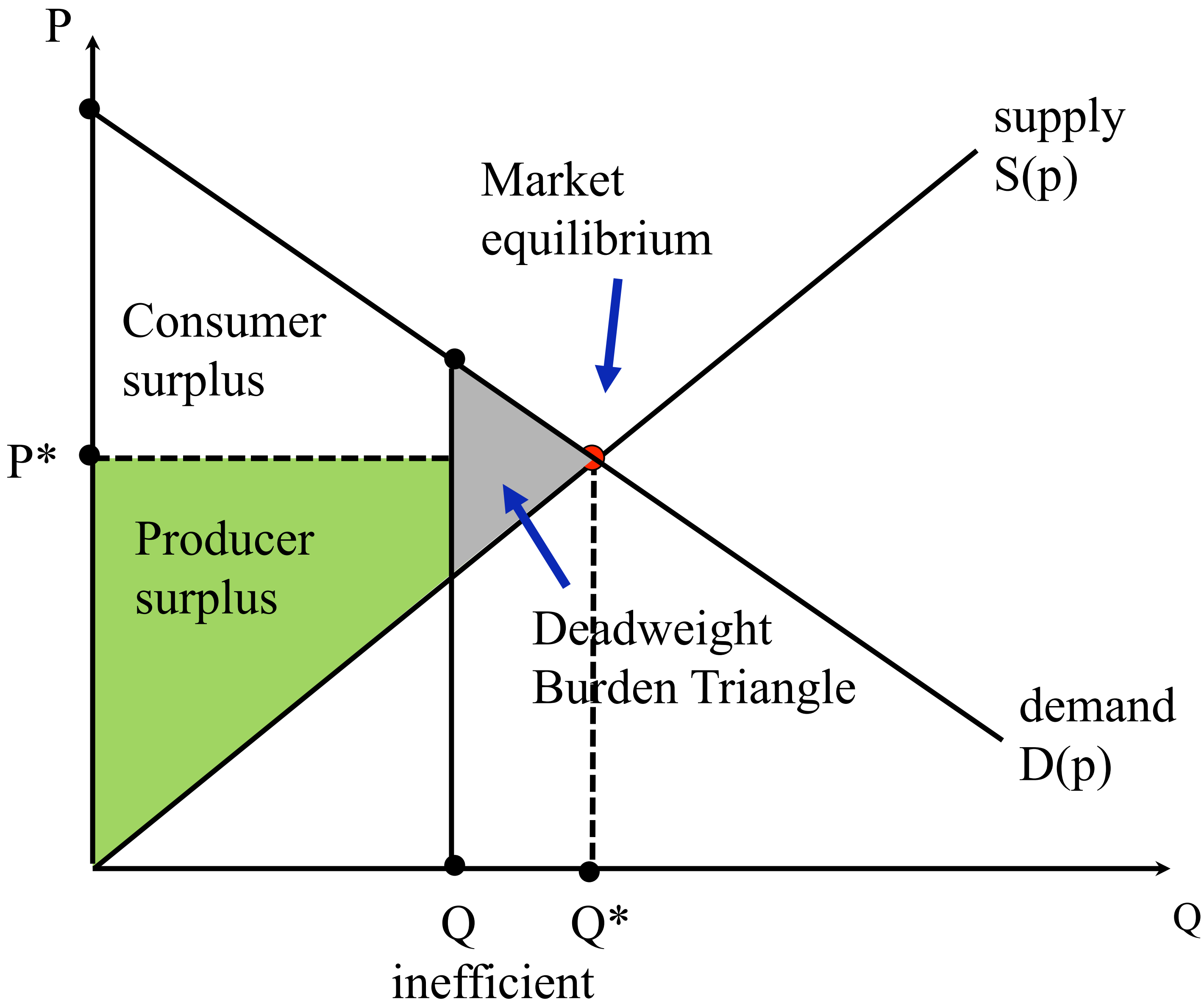
Source: Appendix Table II-G1.

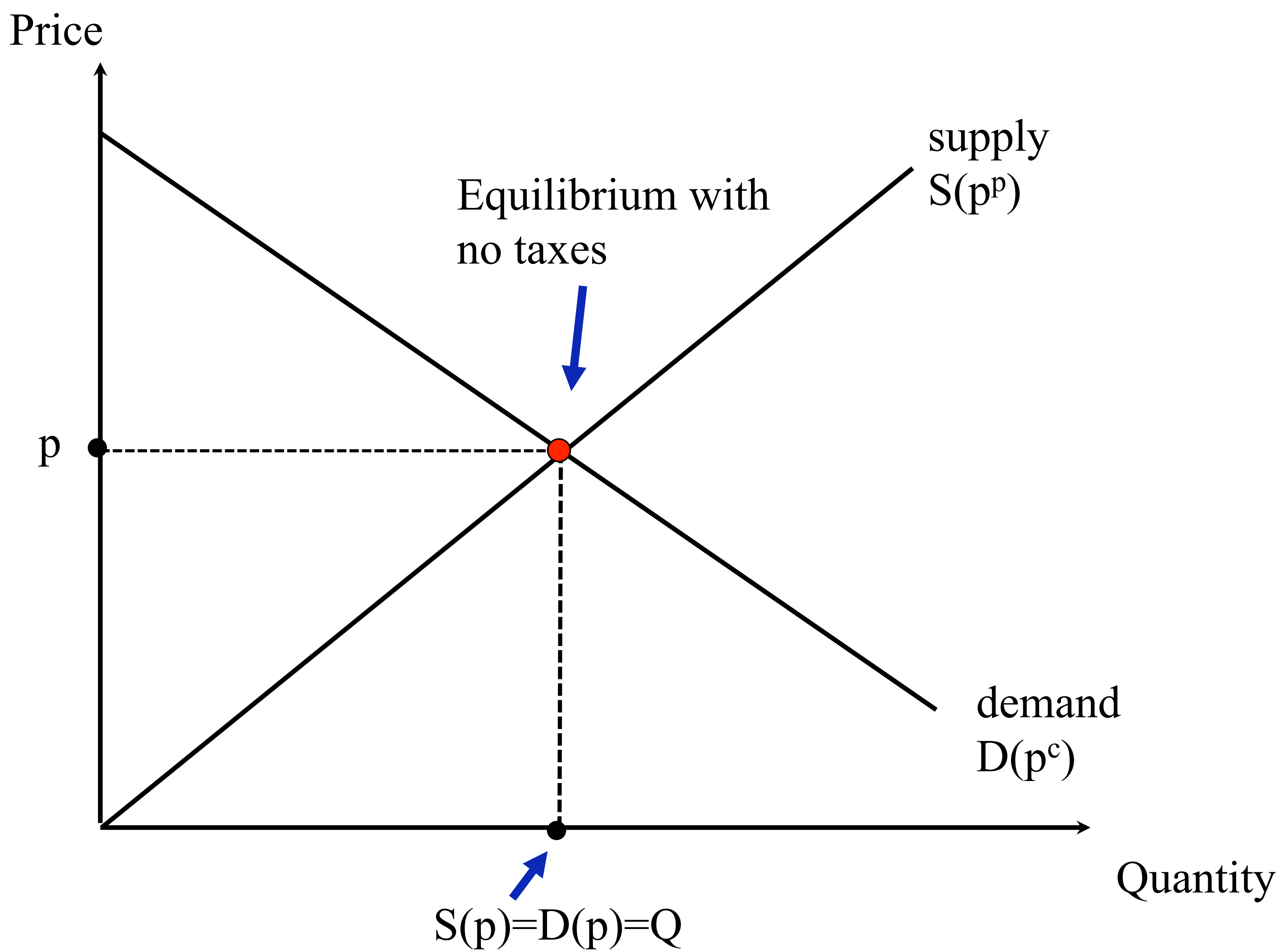

P
Consumer
surplus
P*
demand
D(p)
Q*
Q

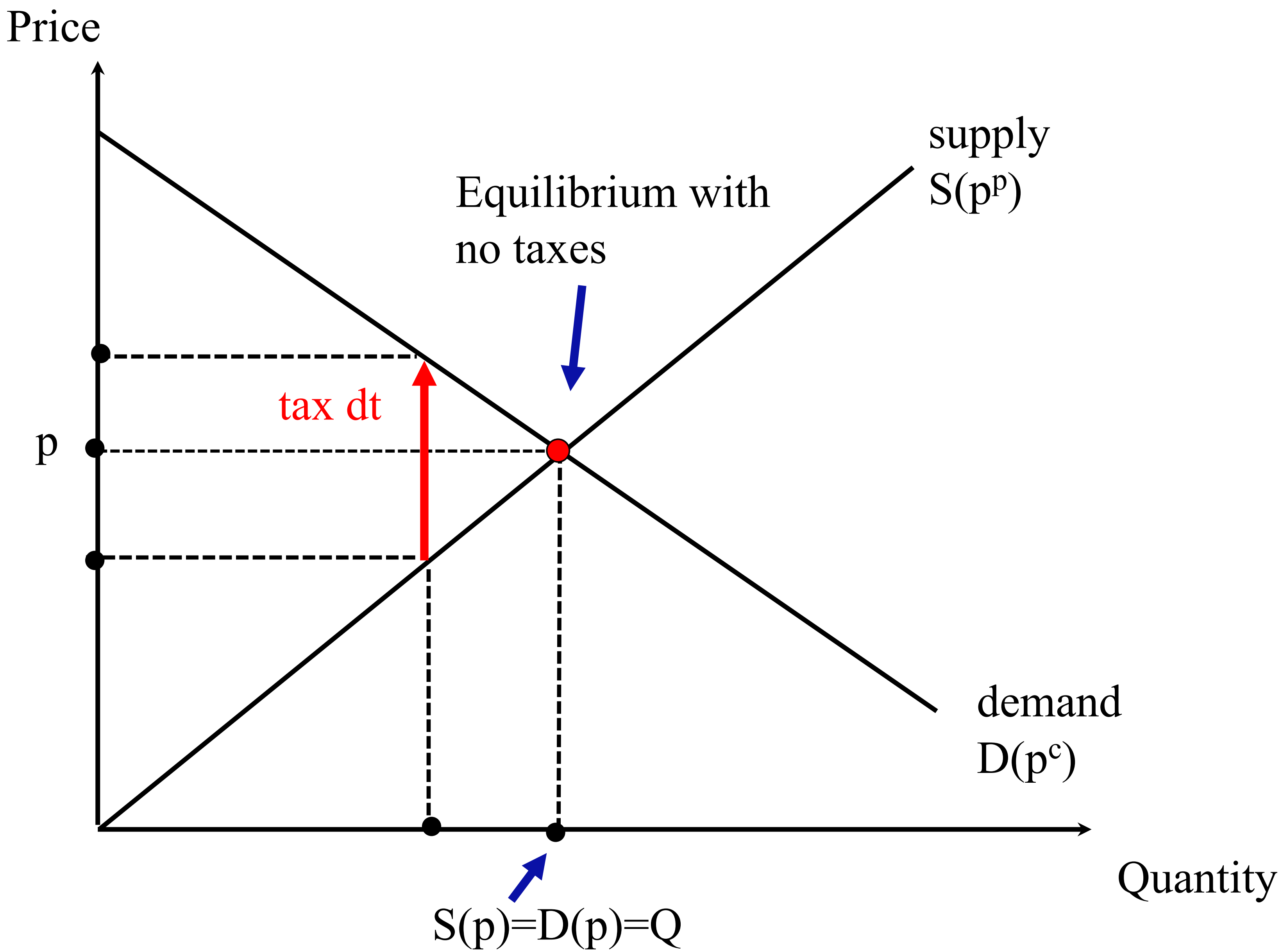

P
supply
S(p)
P*
Producer
surplus
Q*
Q

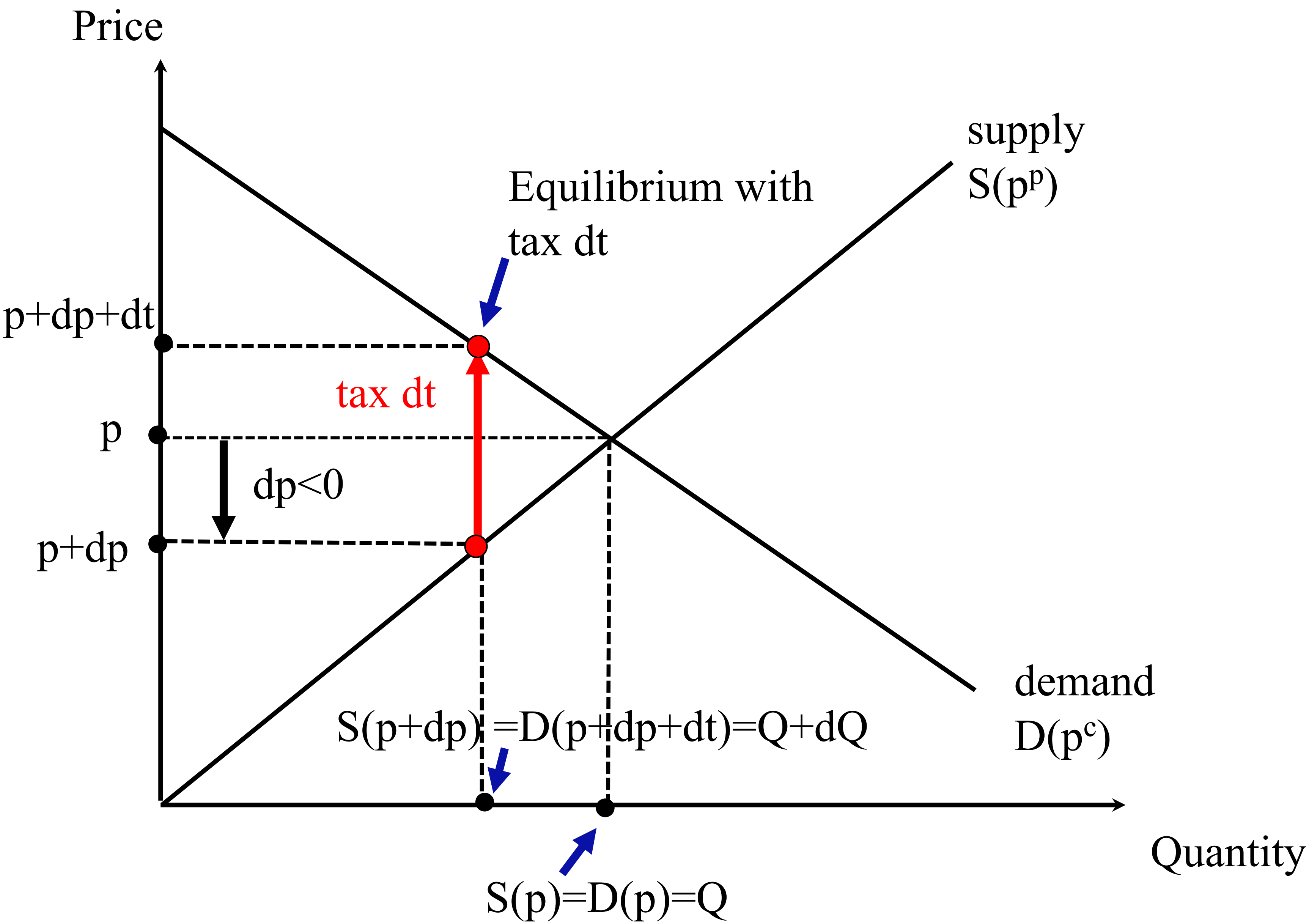

P
supply
S(p)
Market
equilibrium
P*
demand
D(p)
Q*
Q

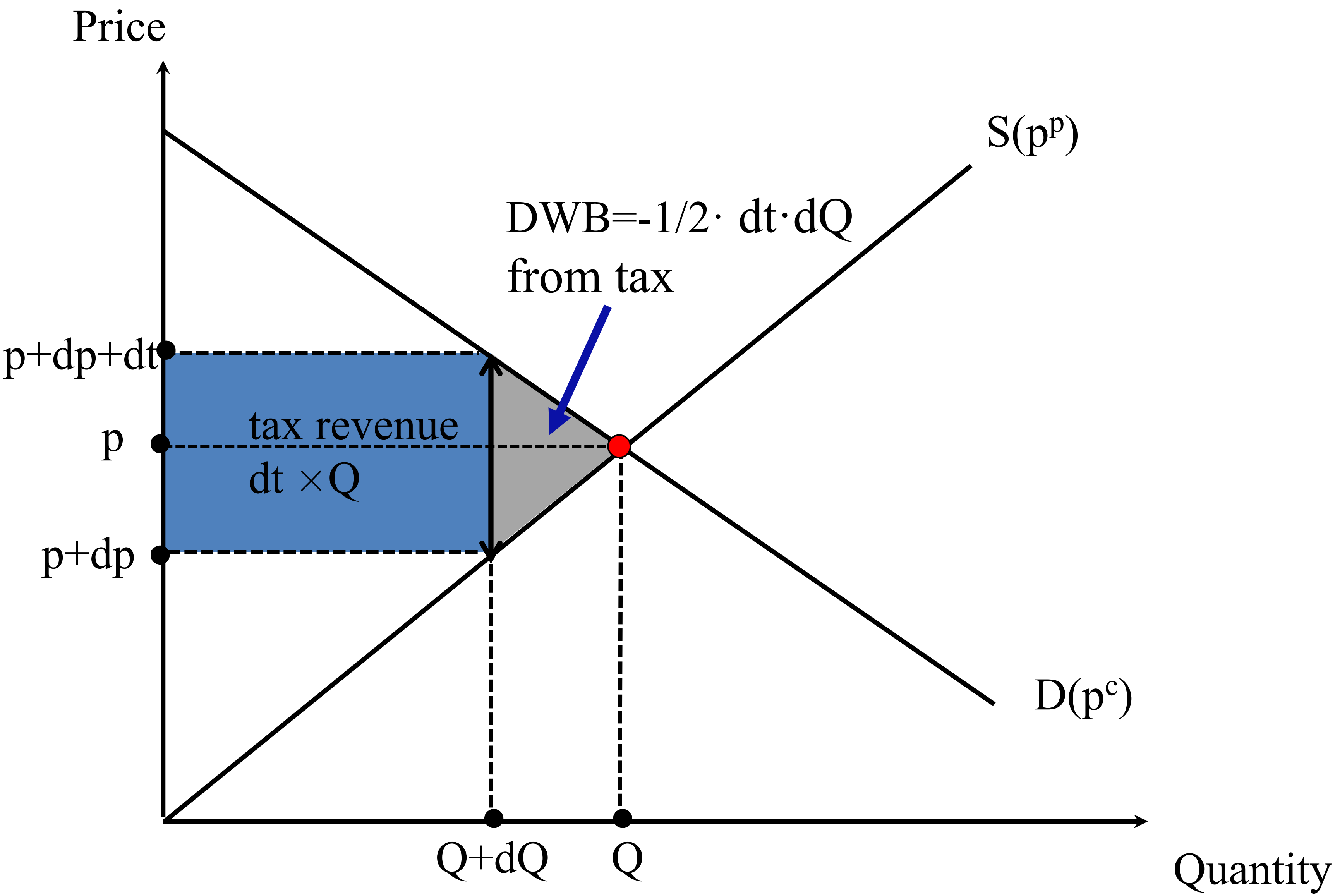

P
supply
S(p)
Market
equilibrium
Consumer
surplus
P*
Producer
surplus
demand
D(p)
Q*
Q


P
supply
S(p)
Market
equilibrium
Consumer
surplus
P*
Producer
surplus
Deadweight
Burden Triangle
demand
D(p)
Q
inefficient
Q*
Q


Price
supply
S(p^p)
Equilibrium with
no taxes
p
demand
D(p^c)
Quantity
S(p)=D(p)=Q


Price
supply
S(p^p)
Equilibrium with
no taxes
tax dt
p
demand
D(p^c)
Quantity
S(p)=D(p)=Q

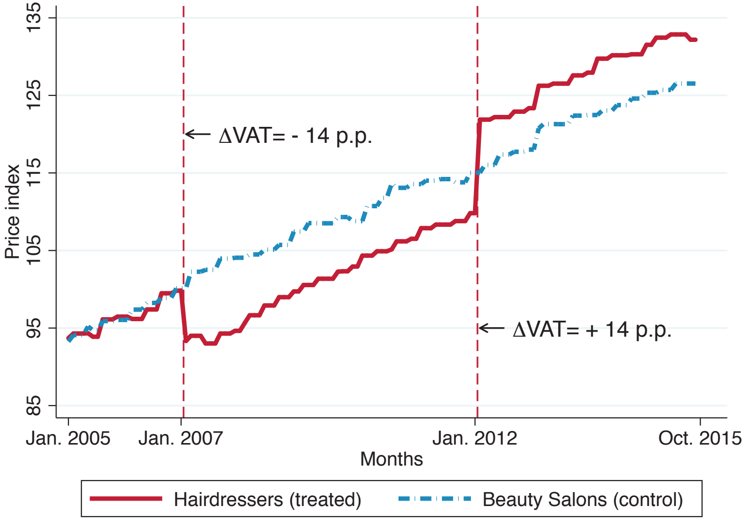

Price
supply
S(p^p)
Equilibrium with
tax dt
p+dp+dt
tax dt
p
dp<0
p+dp
demand
D(p^c)
S(p+dp) =D(p+dp+dt)=Q+dQ
Quantity
S(p)=D(p)=Q



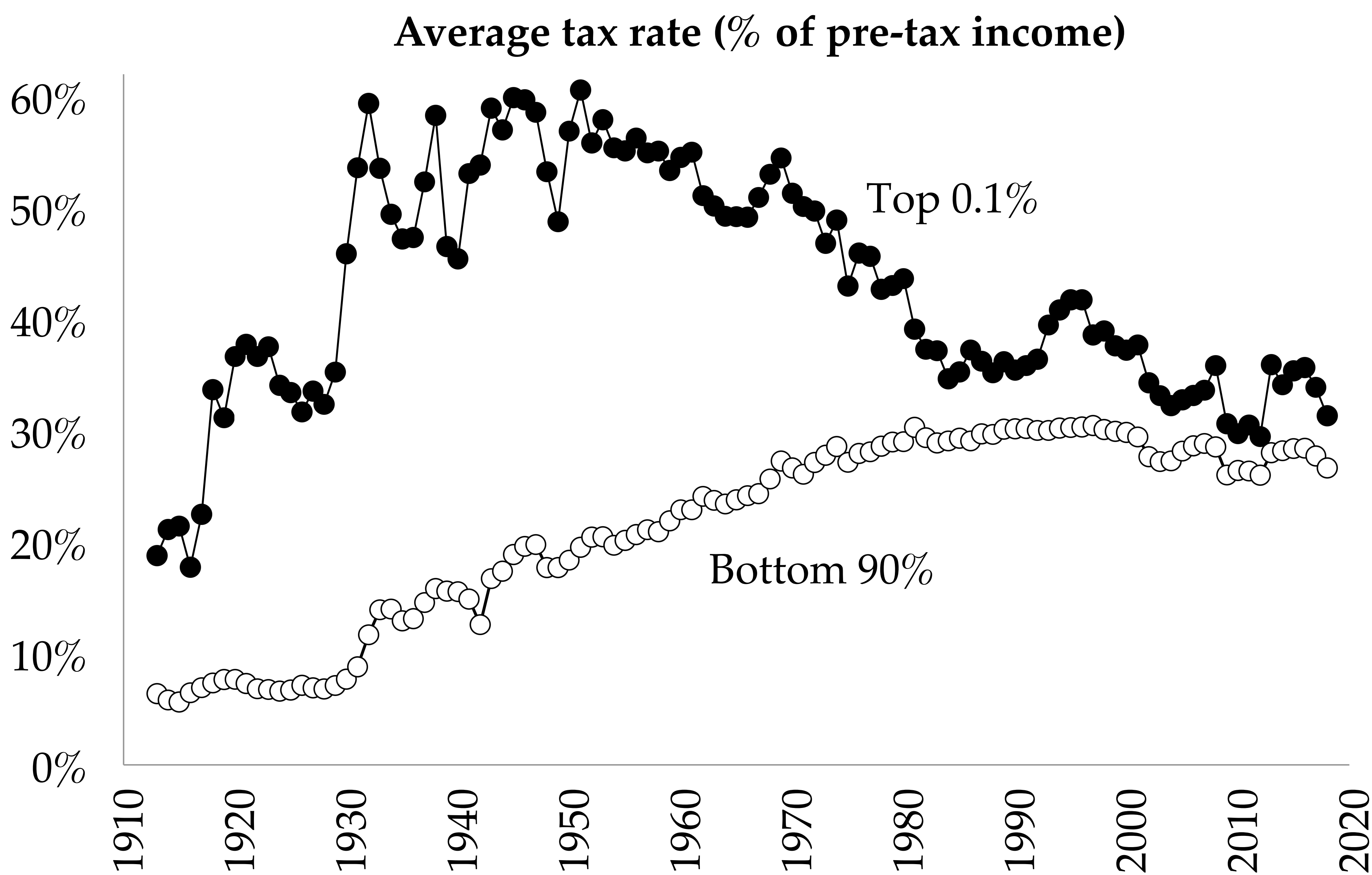
Price
S(p^p)
DWB=-1/2· dt·dQ
from tax
p+dp+dt
p
tax revenue
dt ×Q
p+dp
D(p^c)
Q+dQ
Q
Quantity

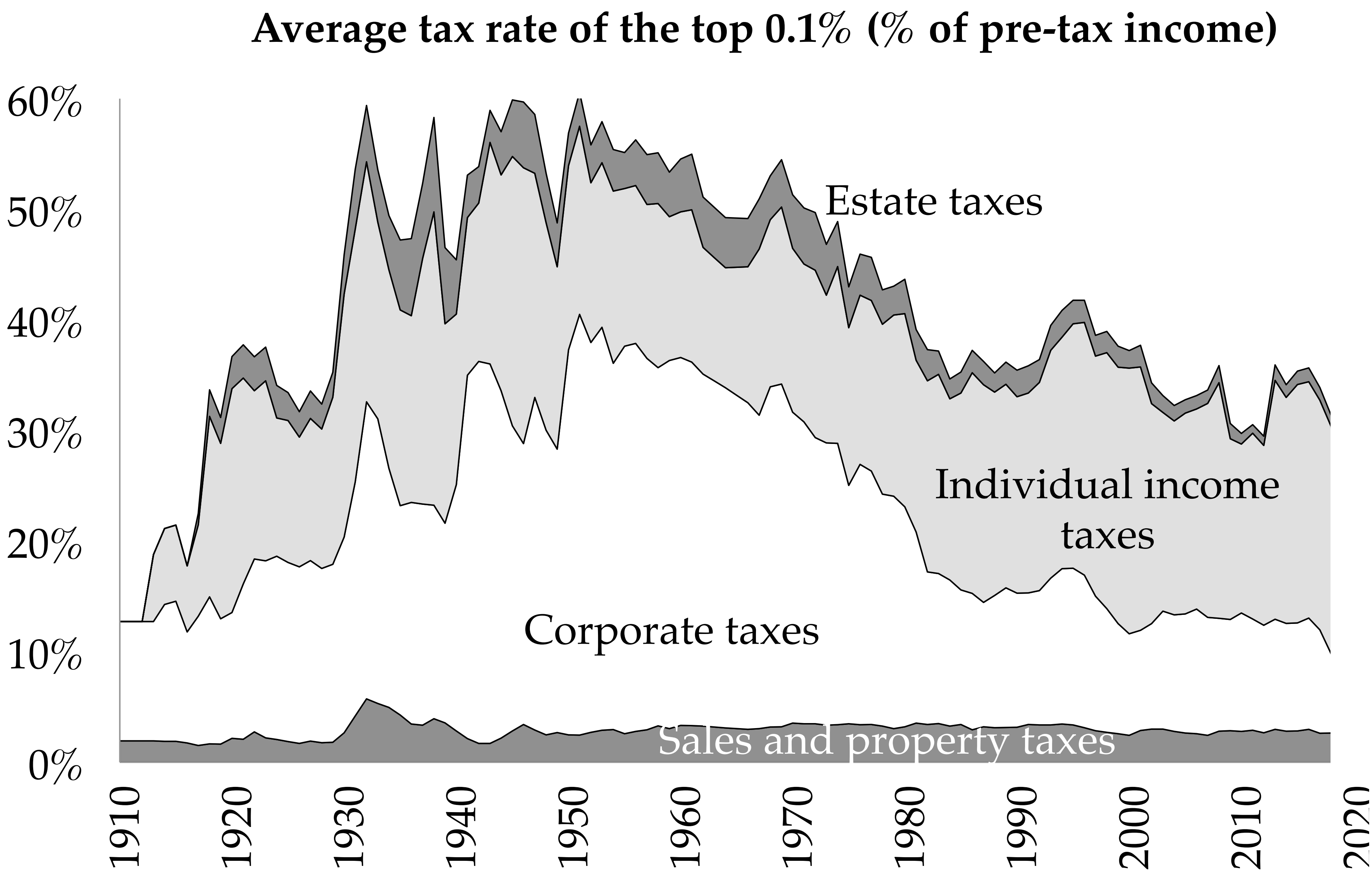
Figure 1: Finnish Hairdressing Sector VAT Reforms

Source: Benzarti et al. (2017)

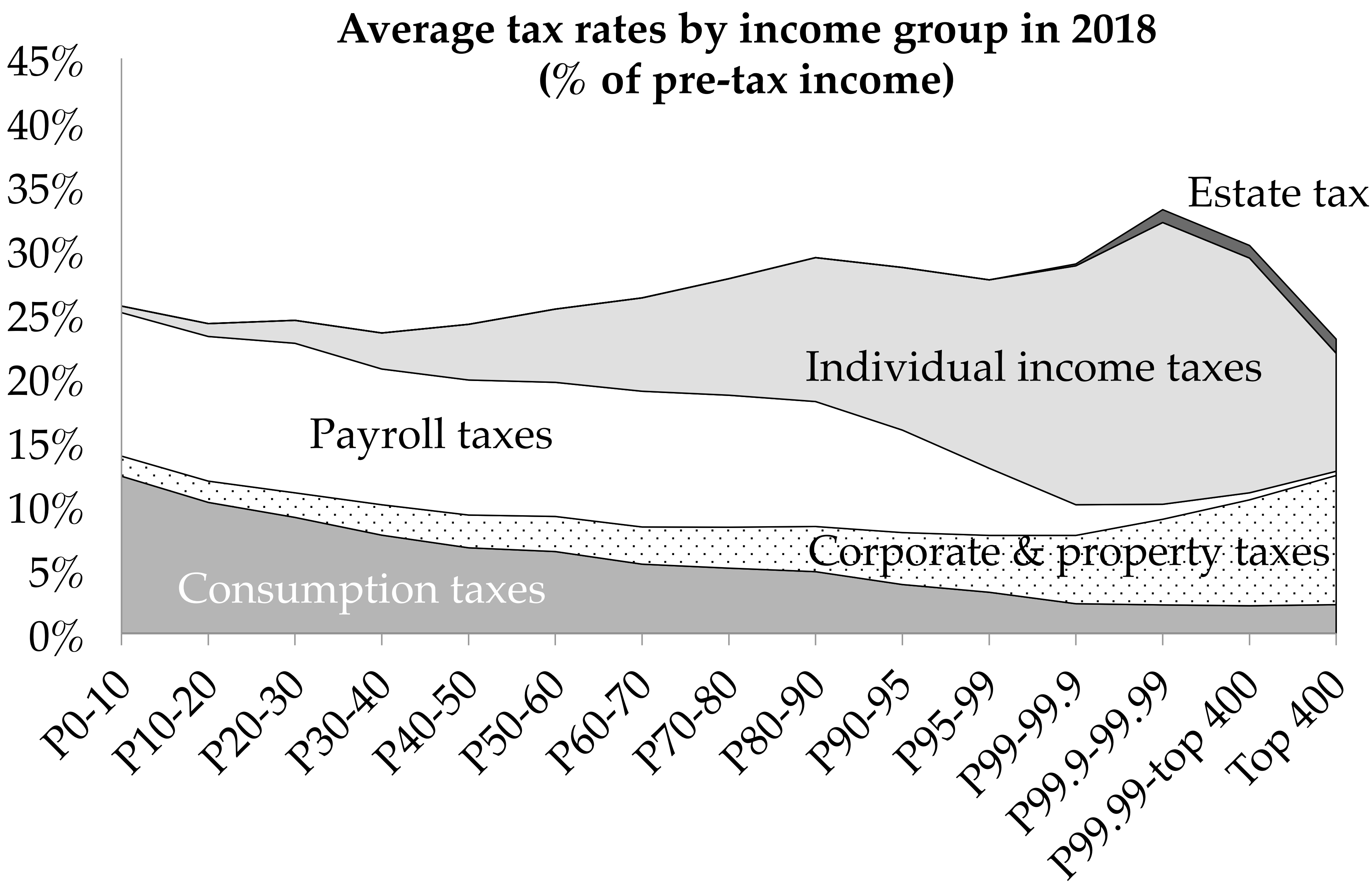


Notes: This figure shows the price of hairdressing services and beauty salons before and after the 14 percentage point hairdressing services VAT cut in January 2007 and the 14 percentage point VAT hairdressing services hike in January 2012.

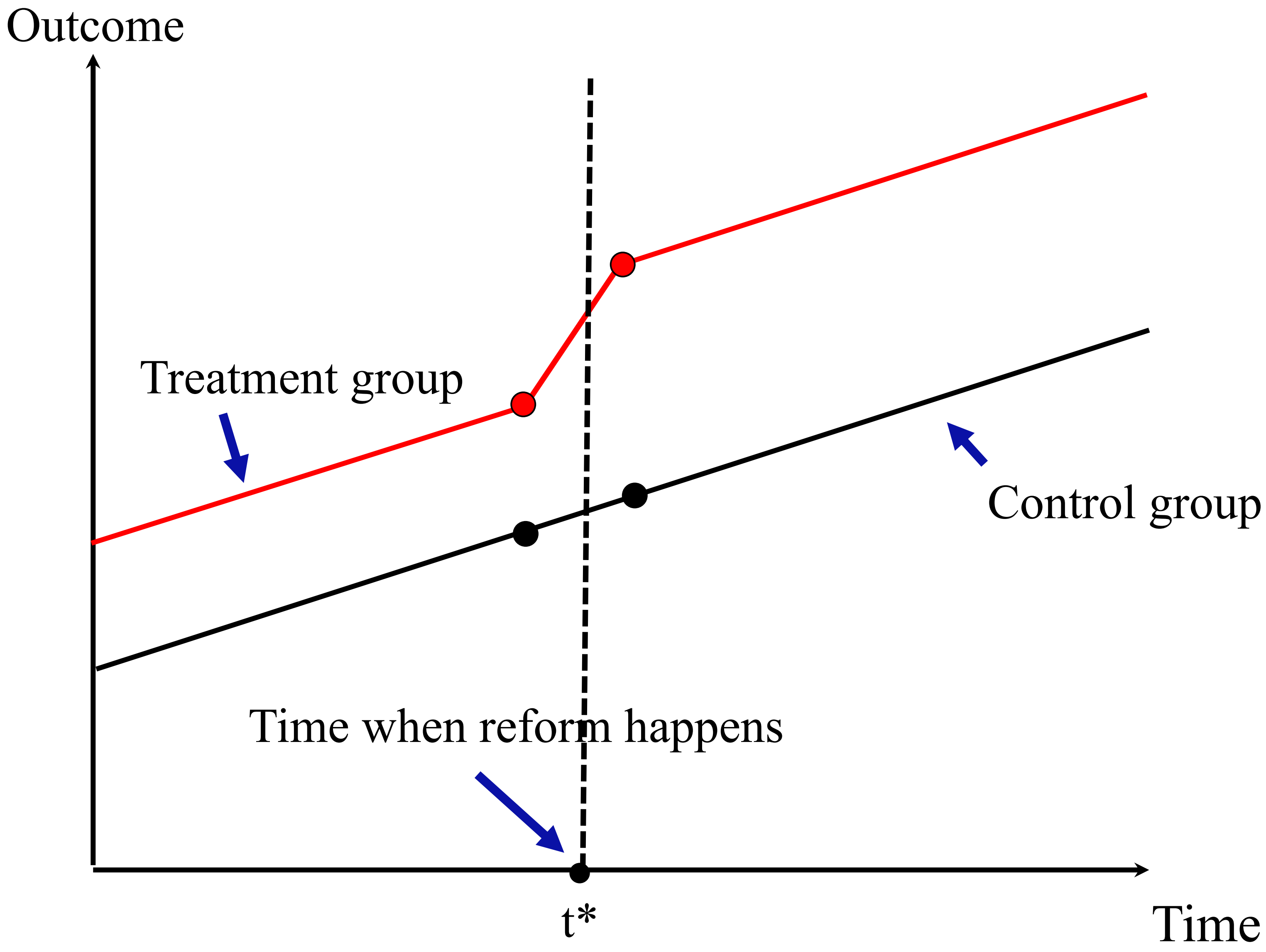

Average tax rate (% of pre-tax income)
60%
50%
40%
30%
20%
10%
0%
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
Top 0.1%
Bottom 90%



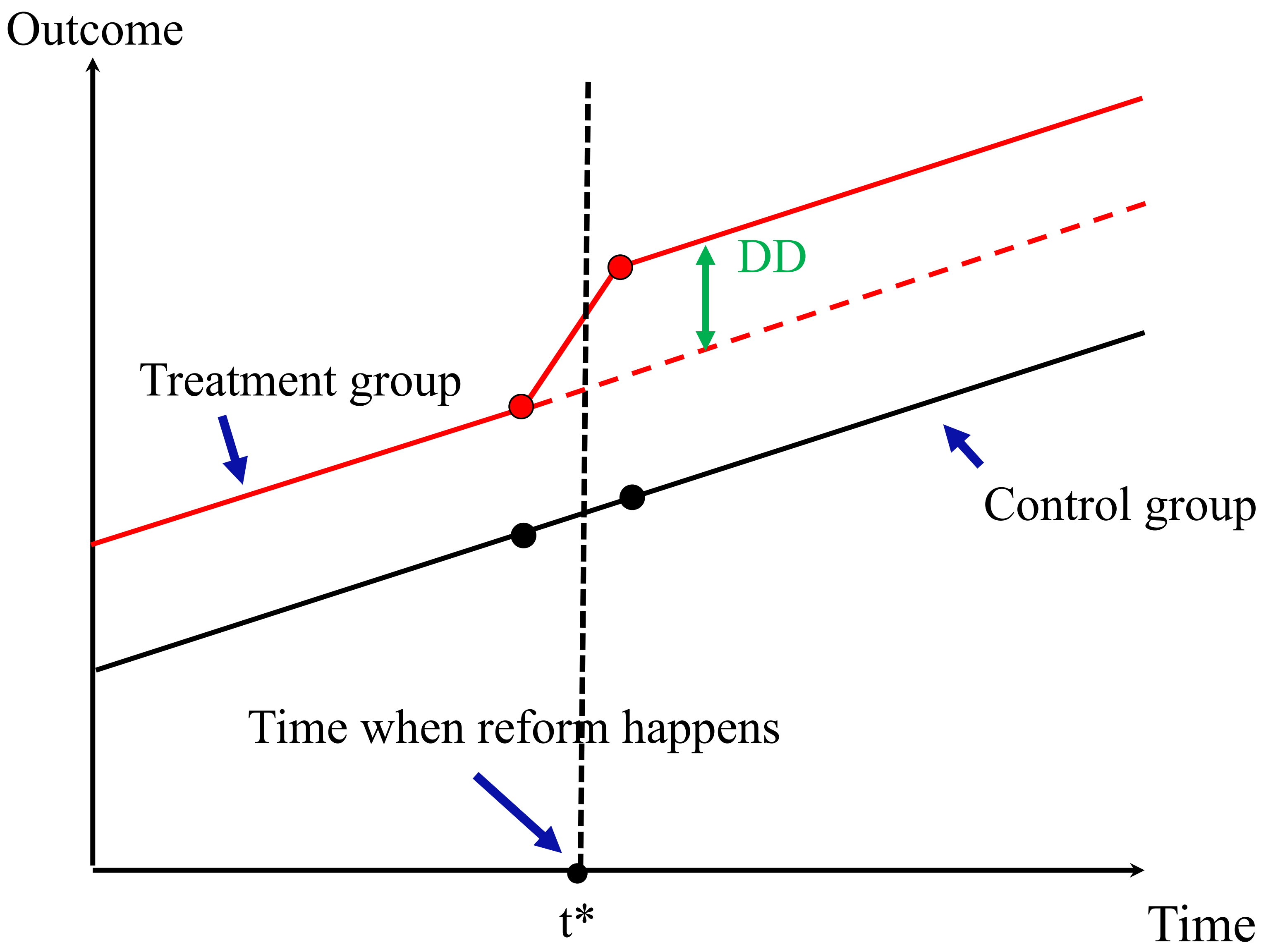
Average tax rate of the top 0.1% (% of pre-tax income)
60%
50%
40%
30%
20%
10%
0%
Estate taxes
Individual income taxes
Corporate taxes
Sales and property taxes
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020


Average tax rates by income group in 2018
(% of pre-tax income)
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Estate tax
Individual income taxes
Payroll taxes
Corporate & property taxes
Consumption taxes
P0-10
P10-20
P20-30
P30-40
P40-50
P50-60
P60-70
P70-80
P80-90
P90-95
P95-99
P99-99.9
P99.9-99.99
P99.99-top 400
Top 400

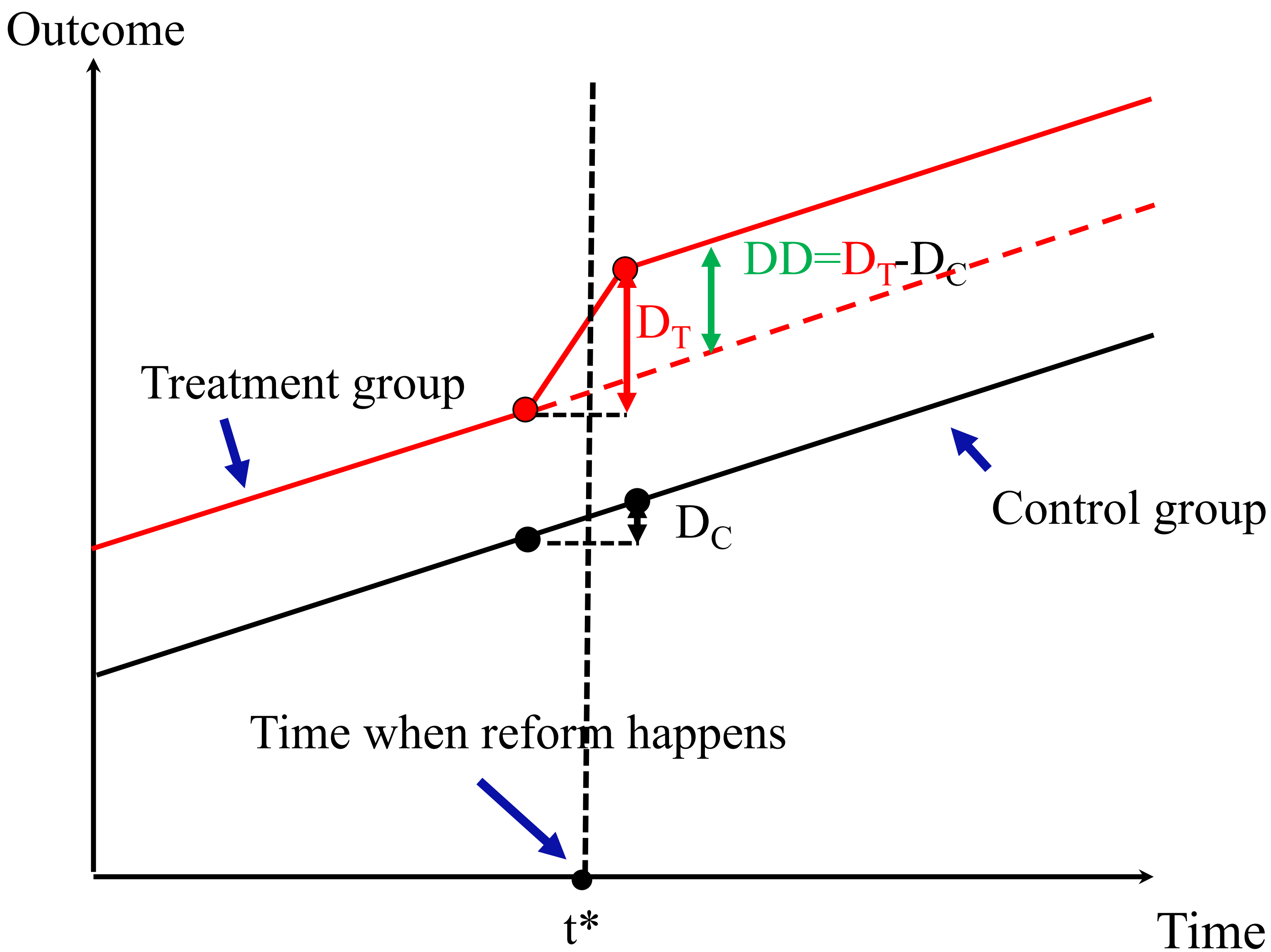
Difference-in-Difference Econometric Method



Difference-in-Difference Econometric Method



Difference-in-Difference Econometric Method

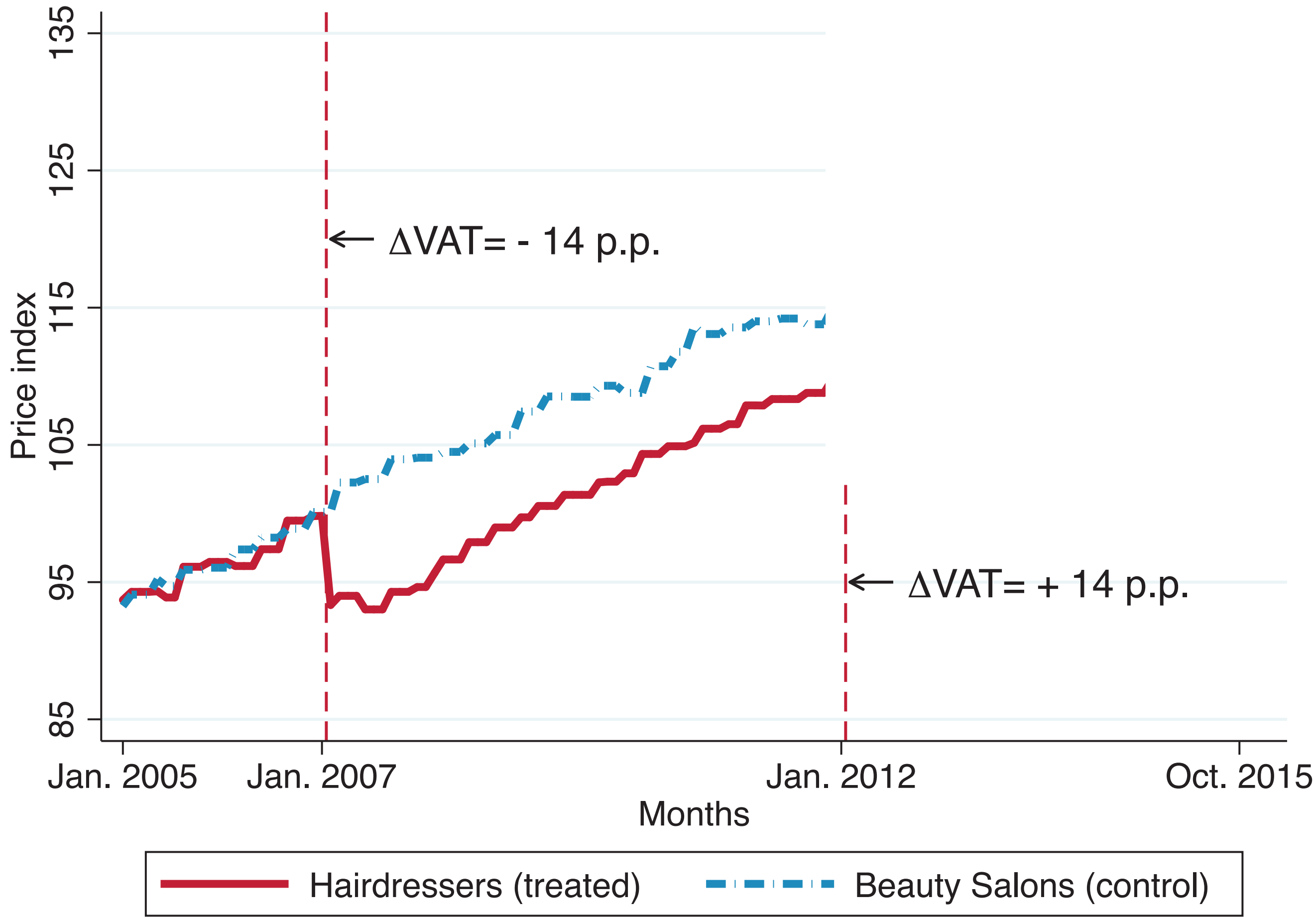



PORTLAND STREET

BRIGHTON
STREET

Figure 1: Finnish Hairdressing Sector VAT Reforms

Source: Benzarti et al. (2017)



Notes: This figure shows the price of hairdressing services and beauty salons before and after the 14 percentage point hairdressing services VAT cut in January 2007 and the 14 percentage point VAT hairdressing services hike in January 2012.