

Public Economics

Lec 5: Taxation (I): equity

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- **Link to group schedule**
- **Essay instructions online**
 - **Deadline** is March the 6th, 24:00.
 - Groups set before February the 22nd
 - Papers **in pdf format** at alessandro.martinello@nek.lu.se
 - Email object as **NEKG51 topicY_groupX**
 - Name of the attachment as **topicY_groupX.pdf**
- **HA, L4**
 - **RG, ch.5, ex 6**
 - **RG, ch.5, ex 9** (14)

Today's reading list

- **Rosen & Gayer ch. 14** (if time, 15)
 - **No time to cover all in chapters in class**
 - **All is exam material** (e.g. capitalization, monopoly)
 - Less weight to US-specific rules (much of ch.17)

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

*B. Franklin, 1789
...but also N. Martinello, 20th c*

Tax: monetary or in-kind claim to private wealth

- Income tax, VAT, fat-tax, revenues from lotteries. . .
- Inheritance taxation
- Military draft

Government: monopoly on force

- **Right to confiscate**

Purpose of taxation

- **Financing government activities**
 - **Raise revenues:** how to do it in the best way? (efficient taxation)
- **Redistribution**
 - Tax the rich to give to the poor...
- **Influence incentives**
 - Alcohol, tobacco
 - Theory of second best
- **Stabilization policies**
 - Taxes to deflate bubbles (**housing**)
 - Politically expensive \implies expansions

Taxes in Sweden, 2010

	Billions SEK	% of total taxes	% of GDP
Taxes on labor	877	58%	26.3%
Taxes on capital	191	13%	5.7%
Taxes on consumption	451	30%	13.5%
Total	1520	100%	45.6%
of which			
EU taxes	7	0.5%	
Local income tax	523	34.4%	
Taxes for pensions	183	12.1%	
State taxes	807	53.1%%	

Desiderable features of a tax system

- **Efficiency**

- Taxing while doing the least amount of damage

- **Equity**

- Contribute equally?
- Contribute according to each own's ability?

- **Simplicity**

- Transparency = easier administration \implies \searrow costs for state
- Complications \implies taxpayer's insufferance & tax avoidance

Equity: characterizing a tax

T = total tax paid; Y = taxable amount

① **Average** tax rate

- $\frac{T}{Y}$

② **Marginal** tax rate

- $\frac{\partial T}{\partial Y}$: amount taxed for the next unit of Y I earn/consume/save

Equity: characterizing a tax

T = total tax paid; Y = taxable amount

① **Average** tax rate

- $\frac{T}{Y}$

② **Marginal** tax rate

- $\frac{\partial T}{\partial Y}$: amount taxed for the next unit of Y I earn/consume/save

- **Proportional tax**

- **Average** tax rate is constant over Y

- **Progressive (regressive) tax**

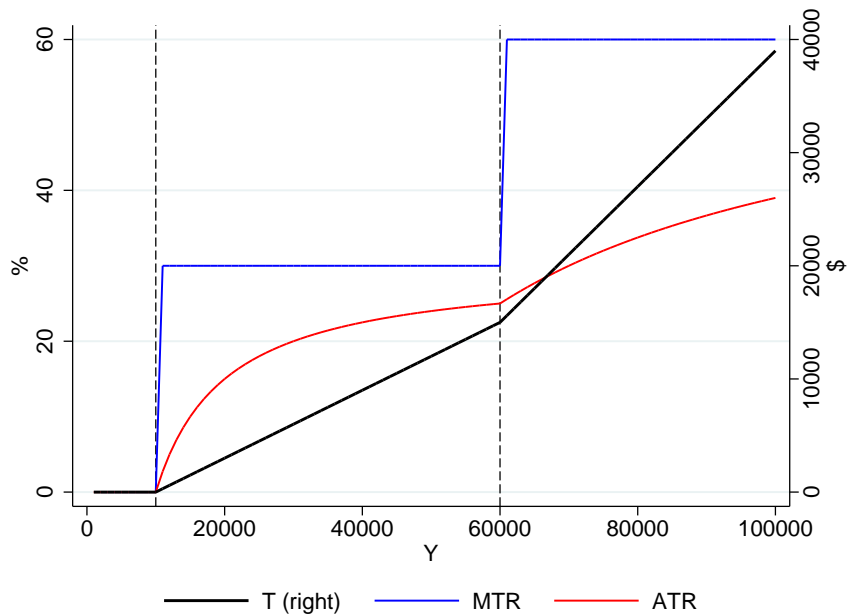
- **Average** tax rate is increasing (decreasing) over Y

Measure of progressivity?

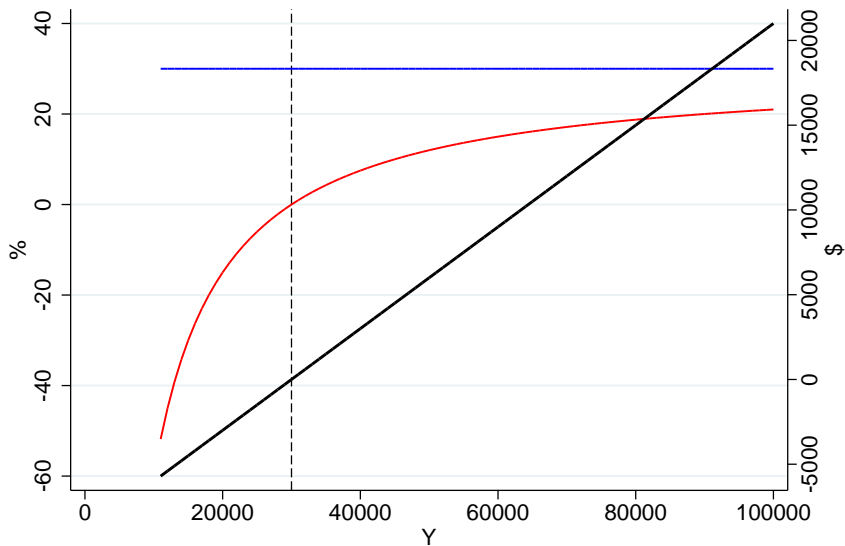
$$\nu_1 = \frac{\frac{T_1}{Y_1} - \frac{T_0}{Y_0}}{Y_1 - Y_0}$$

$$\nu_2 = \frac{\frac{\Delta T}{T_0}}{\frac{\Delta Y}{Y_0}}$$

Tax systems

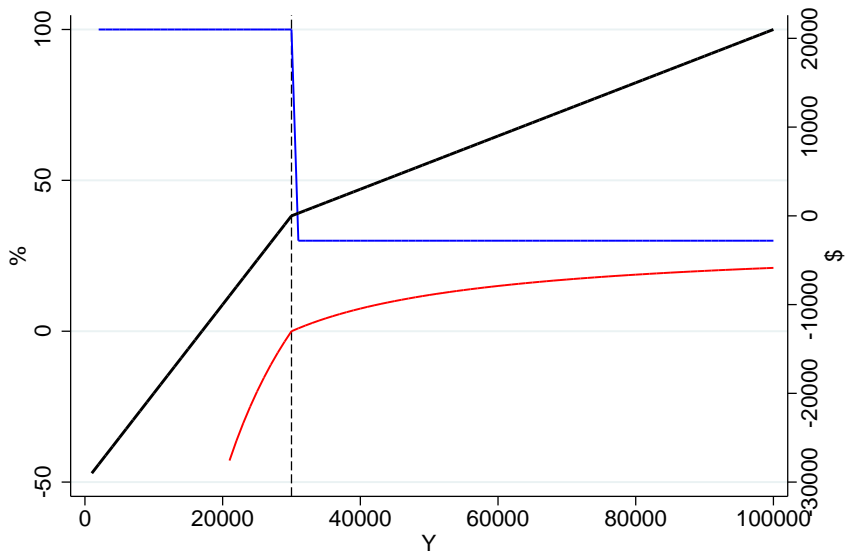


Tax systems



— T (right) — MTR — ATR

Tax systems

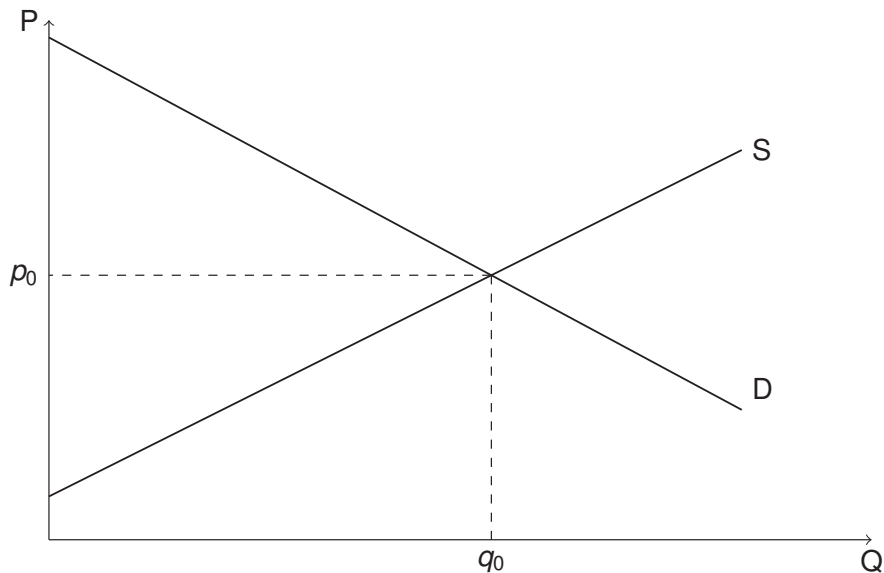


— T (right) — MTR — ATR

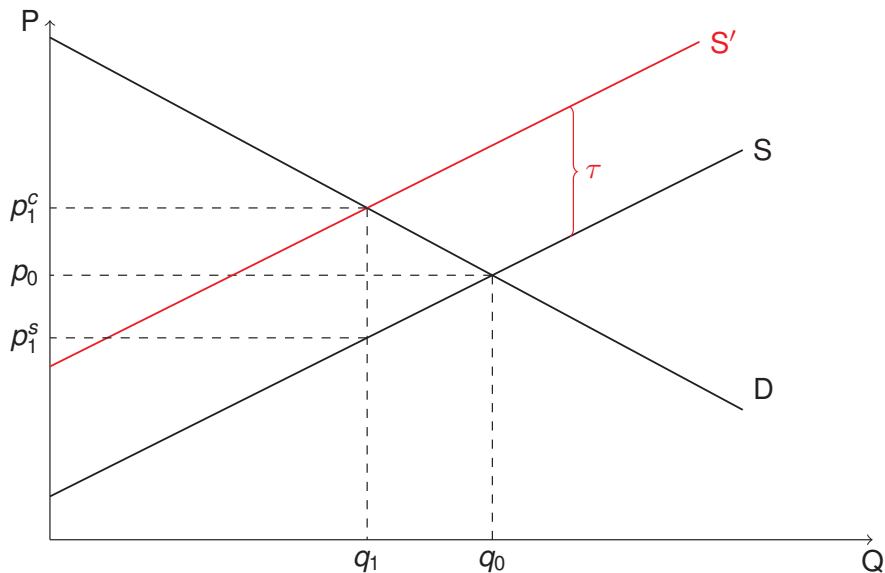
Tax incidence

- **Statutory** incidence \neq **economic** incidence
 - **Tax shifting**
- **Only people can bear taxes**

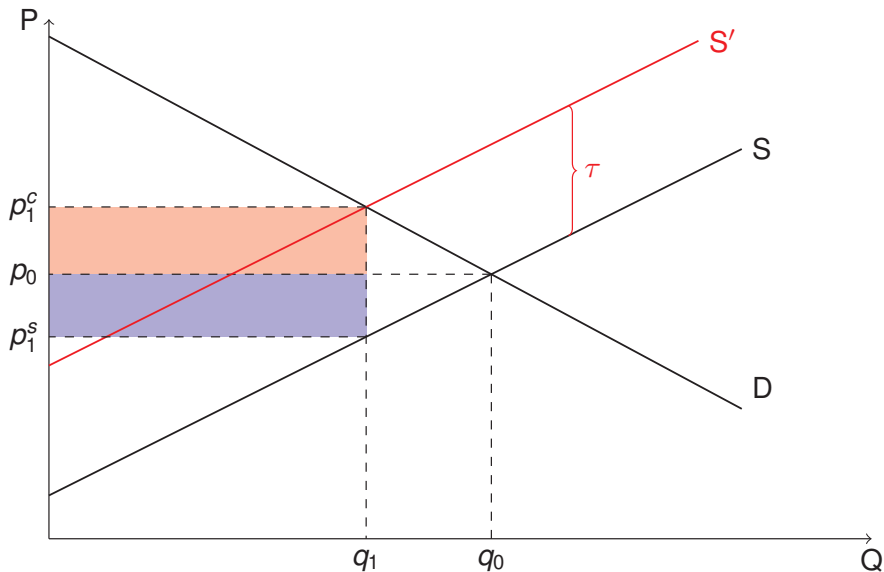
Economic inc. – unit tax imposed on supply



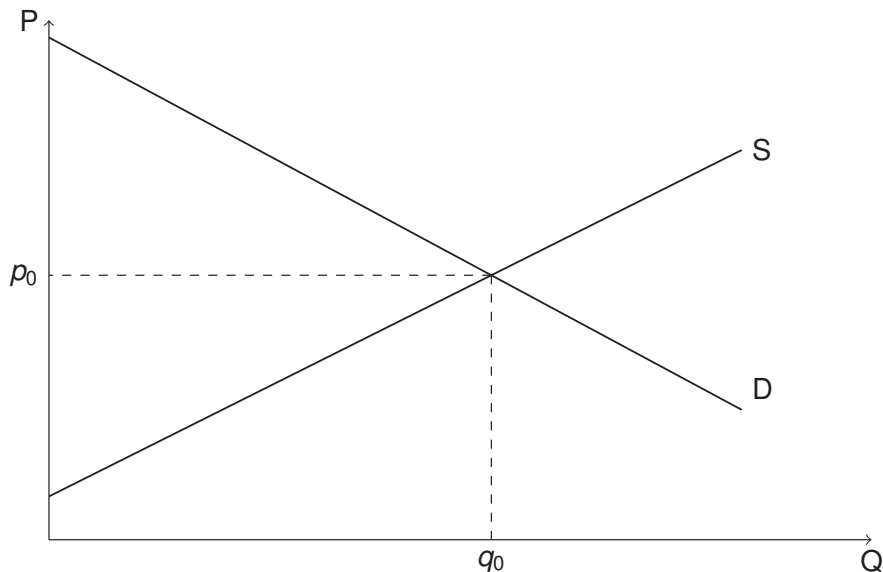
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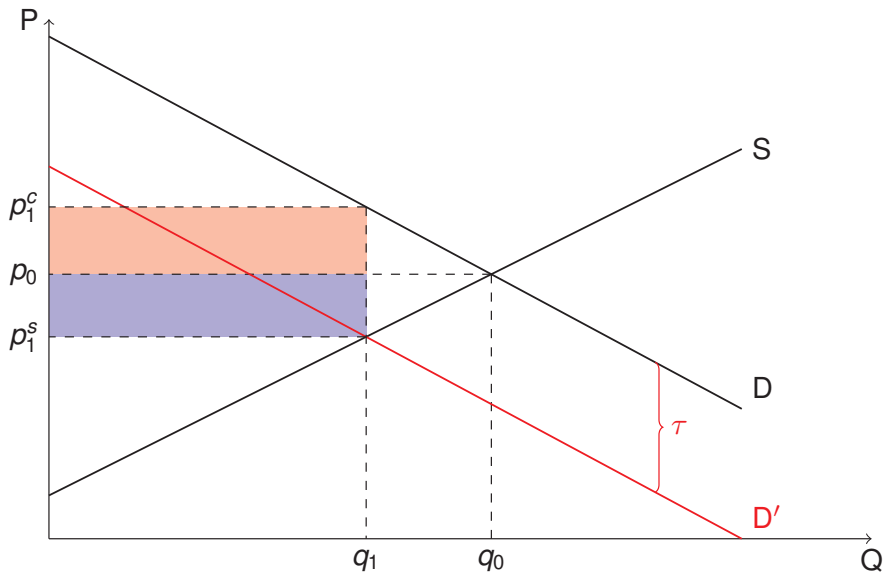
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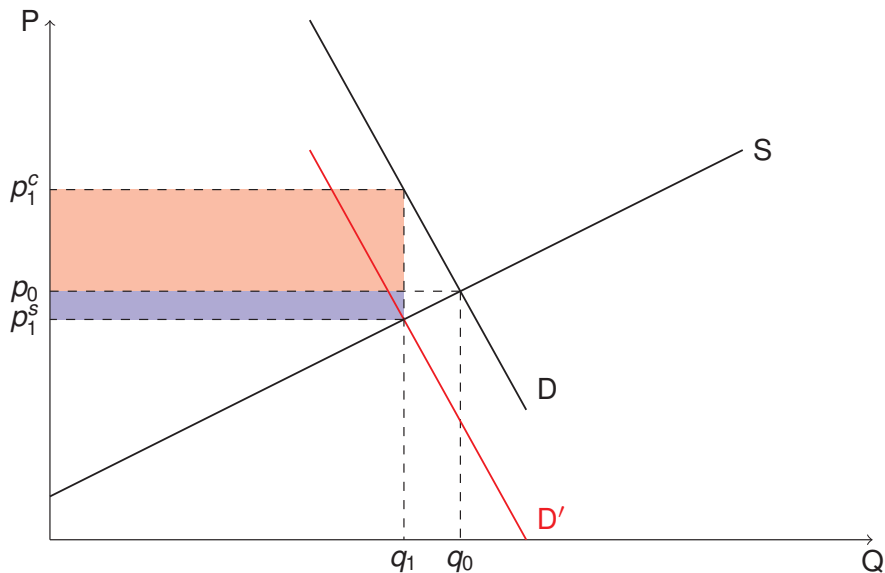
Economic inc. – unit tax imposed on demand



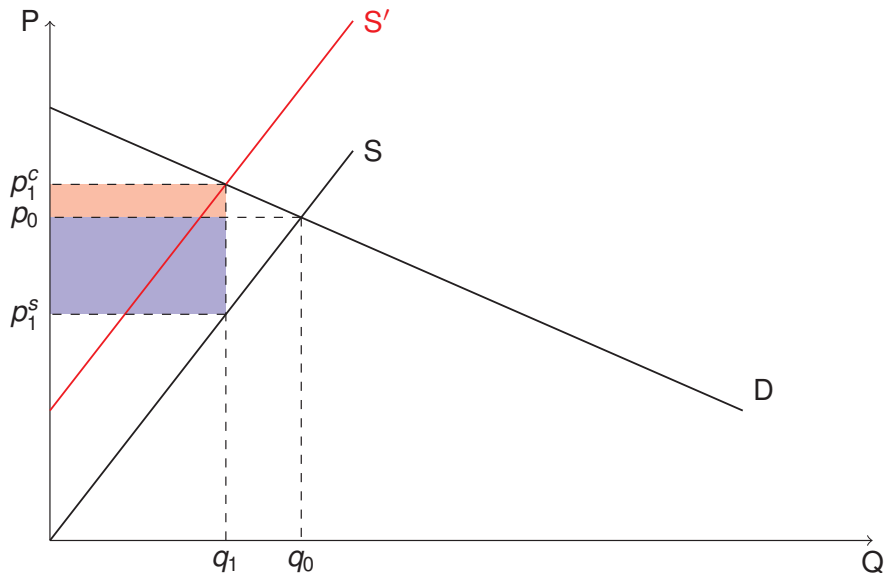
Economic inc. – unit tax imposed on demand



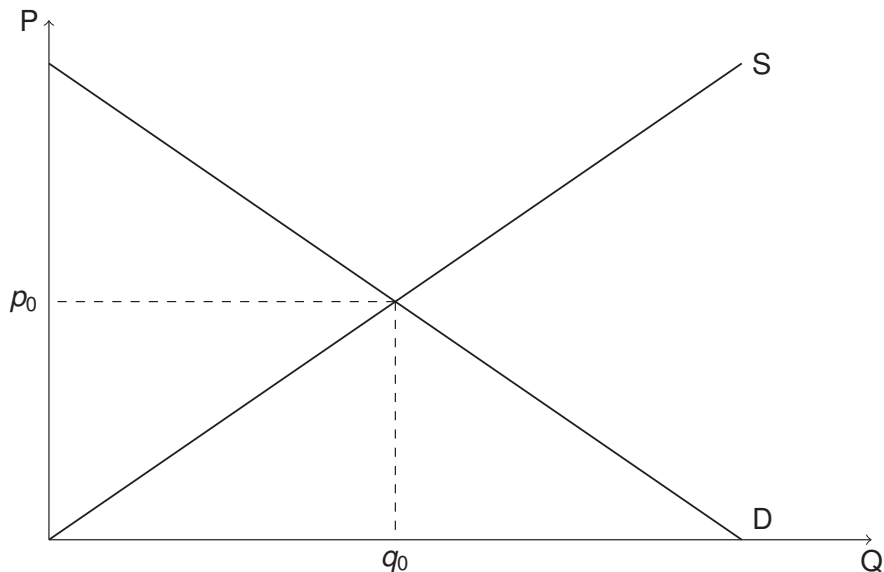
Economic inc. – unit tax, inelastic demand



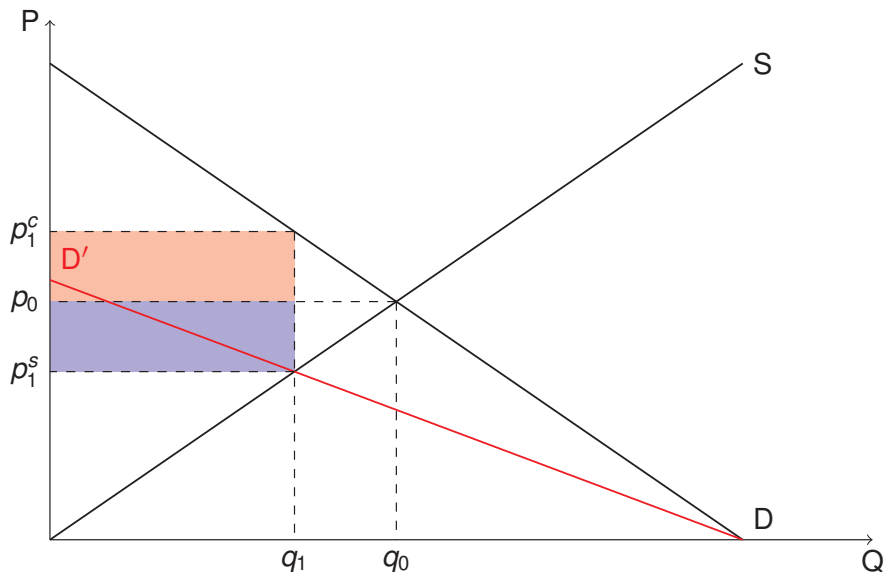
Economic inc. – unit tax, inelastic supply



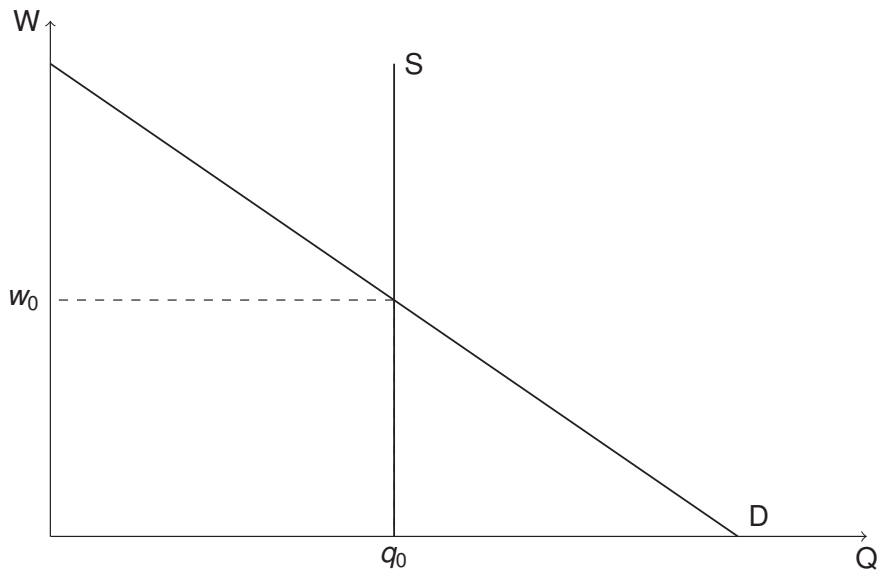
Economic inc. – ad-valorem tax on demand



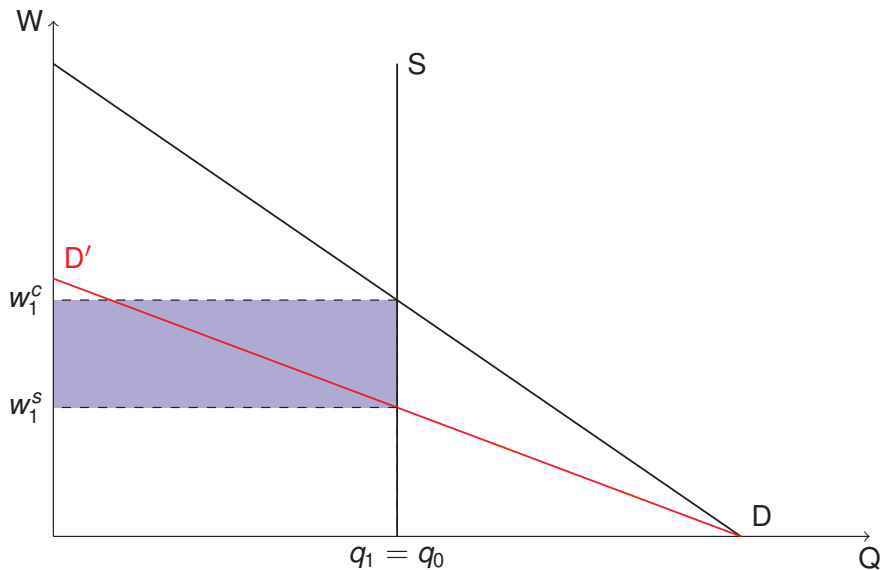
Economic inc. – ad-valorem tax on demand



Economic inc. – payroll tax (inel. labor supply)



Economic inc. – payroll tax (inel. labor supply)



General equilibrium models (Harberger – I)

2 sectors, 2 factors (food/manufacturing, capital/labor)

t_{KF}	+	t_{LF}	=	t_F
+		+		+
t_{KM}	+	t_{LM}	=	t_M
=		=		=
t_K	+	t_L	=	t

- 1 **Fixed technology:** constant return to scale
- 2 **Capital & labor perf. mobile** \implies same marginal returns
- 3 **Flexible prices**, perfect competition
- 4 **Fixed amount of factors**
- 5 **Identical consumer preference**
- 6 **Tax incidence framework:** no income effects

General equilibrium models (Harberger – II)

Who bears burden of tax? (labor/capital)

- ↗ t_F : ↘ $q_F \implies$ ↘ p_K , ↗ p_F
 - **Tax on sector output** \implies ↘ price of intensively used factor
 - **Stolper-Samuelson theorem**: tax on labor intensive good \implies income transfer from labor owners to capital owners
- ↗ t : Production factor fixed \implies factors bear full tax
- ↗ t_L : All uses, no switching \implies labor bears burden
- ↗ t_{KM} :
 - **Output effect**: ↗ $p_M \rightarrow$ ↘ $q_M \implies$ ↗ p_K
 - **Substitution effect**: ↘ p_K

For next time

- **RG, ch.14, ex 1 (11)**
- **RG, ch.14, ex 13**

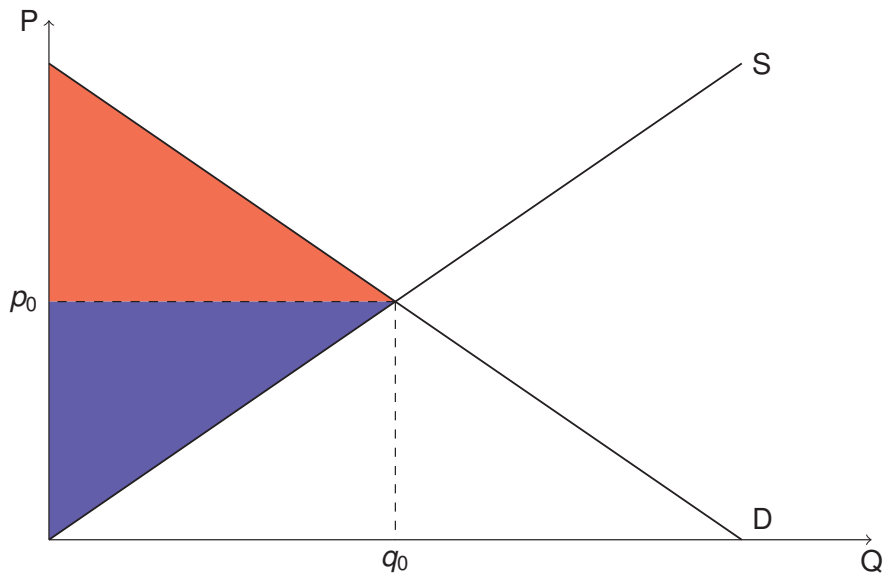
Costs of taxation (efficiency)

- Taxes distort economic decisions \implies **excess burden**
- **Key:** Taxes affect relative prices

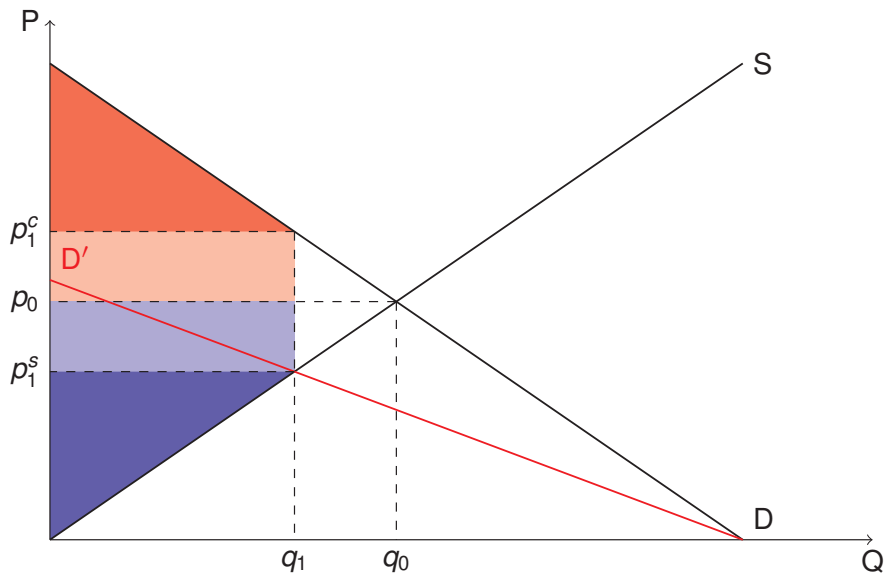
Costs of taxation (efficiency)

- Taxes distort economic decisions \implies **excess burden**
- **Key:** Taxes affect relative prices
 - Efficiency at $MRT = MRS_i \quad \forall i$
 - **Create tax wedge** \implies Optimality condition fails
- **Lump sum tax**
- **Compensated demand:** Identify substitution effect
 - Individual compensated for change in prices
 - Interpreted as lump sum tax taking individual to same utility
- **Tax distortive even if consumption unaffected**

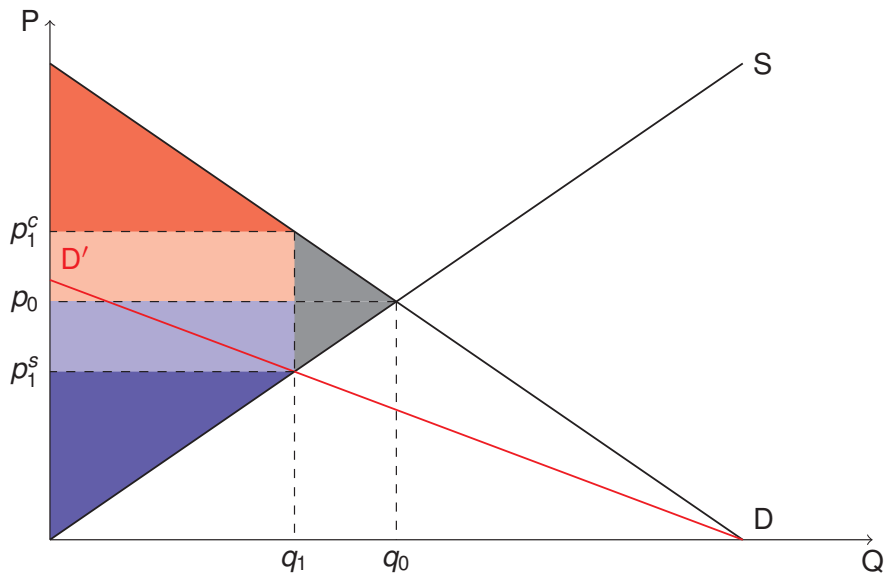
Harberger's triangles



Harberger's triangles



Harberger's triangles



Theory of second best

- **If there's already a distortion**, introducing a second distortion can reduce the overall distortion
 - **E.g.** taxing two substitute goods
⇒ closer to no-price distortion
- **Next time:** how to tax efficiently