


N. Gregory Mankiw

Principles of
Macroeconomics
 Sixth Edition



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Application:
 The Costs of Taxation

Premium
 PowerPoint
 Slides by
 Ron Cronovich

*In this chapter,
 look for the answers to these questions:*

- How does a tax affect consumer surplus, producer surplus, and total surplus?
- What is the *deadweight loss* of a tax?
- What factors determine the size of this deadweight loss?
- How does tax revenue depend on the size of the tax?

1

Review from Chapter 6

§ A tax

§

§ raises the price buyers pay and lowers the price sellers receive.

§ reduces the quantity bought & sold.

§ These effects are the same whether the tax is imposed on buyers or sellers, so we do not make this distinction in this chapter.

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The Effects of a Tax

Eq'm with no tax:

Price = P_E

Quantity = Q_E

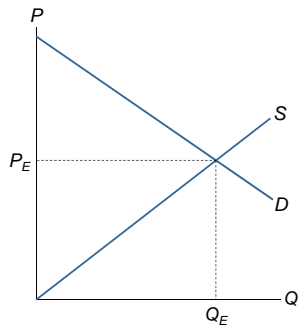
Eq'm with

tax = \$ T per unit:

Buyers pay P_B

Sellers receive P_S

Quantity = Q_T

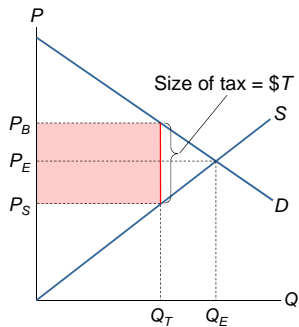


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The Effects of a Tax

Revenue from tax:

$\$T \times Q_T$



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The Effects of a Tax

§ Next, we apply welfare economics to measure the gains and losses from a tax.

§ We determine consumer surplus (CS), producer surplus (PS), tax revenue, and total surplus with and without the tax.

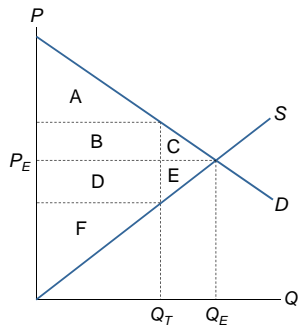
§ Tax revenue can fund beneficial services (e.g., education, roads, police), so

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The Effects of a Tax

Without a tax,

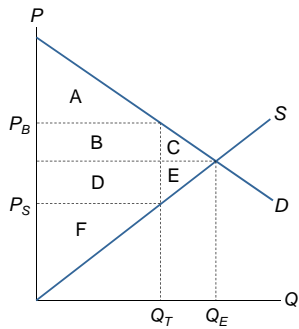
Total surplus =



6

The Effects of a Tax

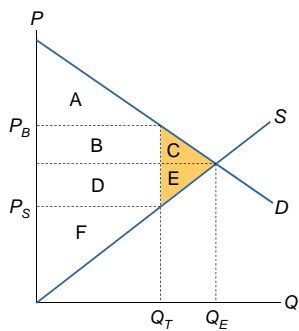
With the tax,



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The Effects of a Tax

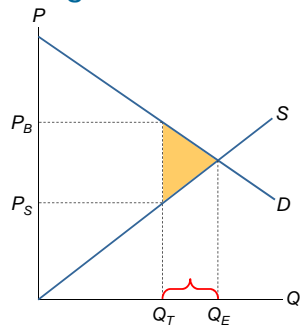
C + E is called the



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About the Deadweight Loss

Because of the tax, the units between Q_T and Q_E are not sold.



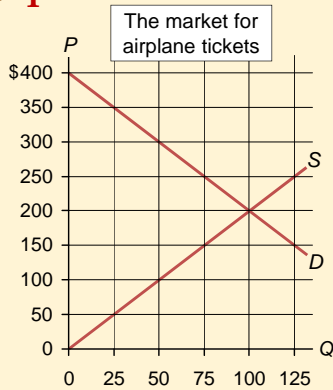
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ACTIVE LEARNING 1

Analysis of tax

A. Compute CS, PS, and total surplus without a tax.

B. If \$100 tax per ticket, compute CS, PS, tax revenue, total surplus, and DWL.



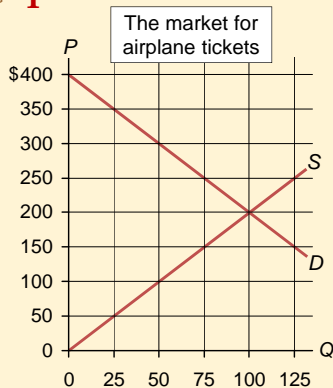
ACTIVE LEARNING 1

Answers to A

CS

PS

Total surplus



ACTIVE LEARNING 1

Answers to B

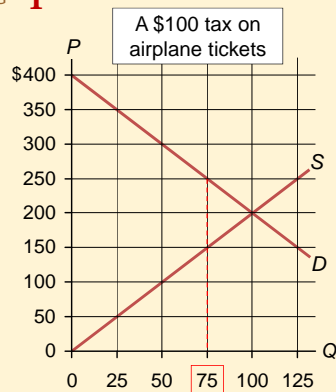
CS

PS

Tax revenue

Total surplus

DWL



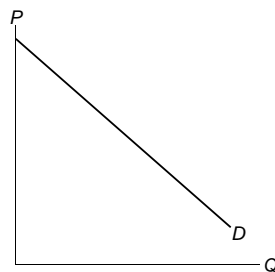
What Determines the Size of the DWL?

- § Which goods or services should govt tax to raise the revenue it needs?
- § One answer:
- § When is the DWL small vs. large?
Turns out it depends on
- § Recall:
The price elasticity of demand (or supply) measures

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DWL and the Elasticity of Supply

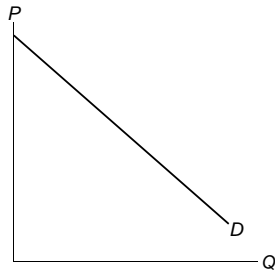
When supply is inelastic,



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DWL and the Elasticity of Supply

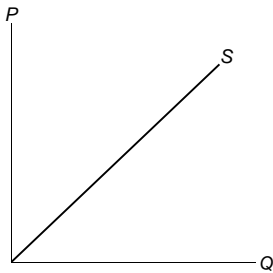
The more elastic is supply,



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DWL and the Elasticity of Demand

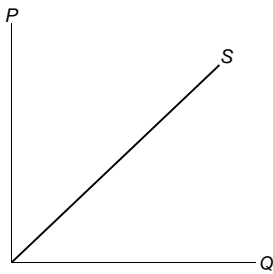
When demand is inelastic,



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DWL and the Elasticity of Demand

The more elastic is demand,



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ACTIVE LEARNING **2**
Elasticity and the DWL of a tax

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ACTIVE LEARNING **2**
Answers

A. Breakfast cereal or sunscreen

ACTIVE LEARNING **2**
Answers

B. Hotel rooms in the short run or long run

ACTIVE LEARNING **2**

Answers

- C.** Groceries or meals at fancy restaurants

ACTIVE LEARNING **3**

Discussion question

- § The government must raise tax revenue to pay for schools, police, etc. To do this, it can either tax groceries or meals at fancy restaurants.
- § Which should it tax?

How Big Should the Government Be?

- § A bigger government provides more services, but requires higher taxes, which cause DWLs.
- § The larger the DWL from taxation, the greater the argument for smaller government.
- § The tax on labor income is especially important; it's the biggest source of govt revenue.
- § For the typical worker,
- § How big is the DWL from this tax?
It depends on elasticity....

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How Big Should the Government Be?

§ If labor supply is inelastic,

§ Some economists believe labor supply is inelastic, arguing that

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How Big Should the Government Be?

Other economists believe labor taxes are highly distorting because

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The Effects of Changing the Size of the Tax

§ Policymakers often change taxes, raising some and lowering others.

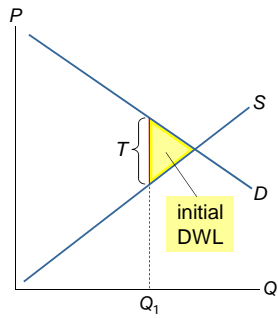
§ What happens to DWL and tax revenue when taxes change? We explore this next....

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DWL and the Size of the Tax

Initially, the tax is T per unit.

Doubling the tax

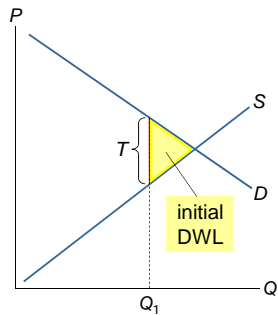


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DWL and the Size of the Tax

Initially, the tax is T per unit.

Tripling the tax



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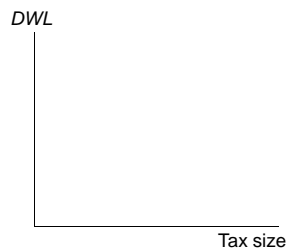
DWL and the Size of the Tax

Implication

When tax rates are low, raising them doesn't cause much harm, and lowering them doesn't bring much benefit.

When tax rates are high, raising them is very harmful, and cutting them is very beneficial.

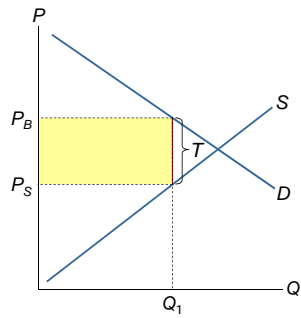
Summary



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Revenue and the Size of the Tax

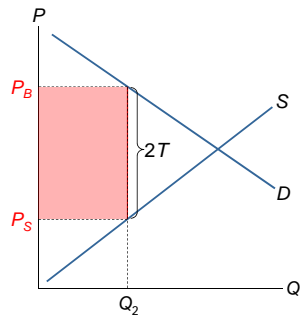
When the tax is small,



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Revenue and the Size of the Tax

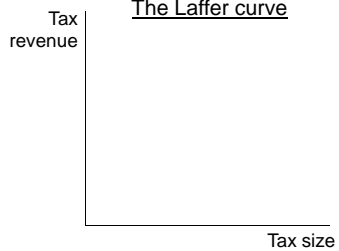
When the tax is larger,



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Revenue and the Size of the Tax

The **Laffer curve**



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