Exercises 5

Taxes (chap. 7)

Classroom exercises: Exercises 5.1 to 5.8

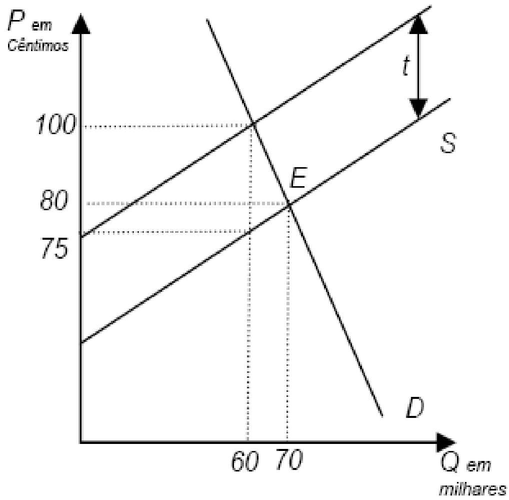
Home exercises: Exercises 5.9 to 5.18

Classroom exercises

Exercise 5.1 (In-term test 6/12/2006 Problem 1)

The figure shows the sugar market, and Government plans to levy a tax of t cents per kilo of sugar.

a) What is the quantity of sugar traded after the tax has been levied? What is the price paid by consumers? And the price received by the sellers?
b) How much is the tax revenue and the deadweight loss caused by the tax?
c) What is the price-elasticity of demand, as computed by the midpoint method, when the price increases from 80 to 100 cents? How do you classify demand for this good?
d) Comment the following statement. "Even though sellers are the ones handing in the tax money to the government, consumers are bearing most of the tax burden, because of the difference between price elasticities of demand and supply."



Exercise 5.2 (Exam 6/09/2007 Problem 9)

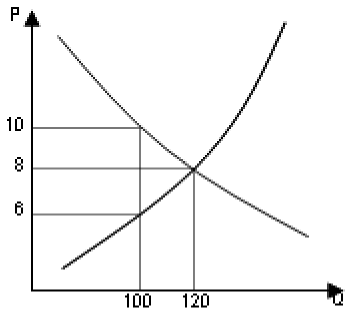
The introduction of a tax on the consumption of a good reduces welfare (causes a deadweight loss) because

a) Consumer surplus decreases.
b) Producers surplus decreases.
c) Tax revenue is lower than the combined reduction of consumer and producer surpluses.
d) Consumer and producer surpluses will decrease simultaneously.

Exercise 5.3

The figure shows a market where a government-imposed quota limits sales to 100 units of the good. Before the quota was introduced the market was in equilibrium. The introduction of the quota causes the price paid by consumers:

a) To increase from 6 to 10.
b) To increase from 8 to 10.
c) To fall from 8 to 6.
d) To fall from 10 to 6.



Exercise 5.4 (In-term test C 27/28-10-2008 Problem 11 and12)

Consider again the figure in the previous question. Suppose that instead of a quota government levies a tax that has the same effect on the quantity traded as the quota. Tax per unit and tax revenue will respectively be:

a) 4 and 400.
b) 2 and 200.
c) 4 and 480.
d) 2 and 220.

Exercise 5.5 (Exam 06-01-2009 Problem EM4)

Government levies a tax on the quantity purchased of a good. This has the following consequence:

a) Some consumers' surplus falls because they will consume less of the good, whereas other (richer) consumers' surplus will not change as they will keep buying the same quantity of the good.
b) Producers' surplus will not change, because consumers are the ones paying the tax.
c) All consumers will see their surplus fall.
d) None of the remaining answers is correct.

Exercise 5.6 (Exam 11/01/2007 Problem 1)

Suppose in a certain market quantity demanded is given by the equation: D = 500 – 20P, and Quantity supplied is given by the equation: S = 100 + 20P.

a) Show the above information in a diagram, and indicate the market equilibrium.
b) Suppose government introduces a heavy tax of 5 per unit sold in this market. Find the new market equilibrium, and show it in the diagram you made for the previous part.
c) Find the revenue raised with the tax in part b). Show all your calculations.
d) The tax in part b) is paid by the sellers. How is the tax burden shared between consumers and sellers? Explain and give precise numbers.

Exercise 5.7 (Exam 12/01/2011, A EM4)

An excise tax of €3 per unit is levied on a good. The tax raises €60 in revenue. Then:

a) The consumer price does not change, as the tax is paid by firms.
b) The consumer price will be the same it would be if a 20-unit quota were introduced instead of the tax.
c) The tax revenue is less than the revenue the Government would raise with a 20-unit quota instead of the tax.
d) The tax revenue is less than the revenue the Government would raise with a €20-price ceiling instead of the tax.

Exercise 5.8 (Exam 12/01/2011, A EM4)

The demand curve for meals is Q^D = 1225 – 100P, where Q^D is the number of meals per day in thousands. The price without tax of a meal is €10. Until yesterday there was a 10% tax on meals. Today the government increased the tax rate to 12.5%. The price without tax of a meal (€10) will not be affected by the tax change.

a) Find the midpoint price-elasticity of demand.
b) Find the tax revenue before and after the change in the tax rate.
c) Given the way price-elasticity changes along the demand curve, discuss the usefulness of the change in the tax rate.

Home exercises:

Exercise 5.9 Check Your Understanding 7-1, 1, 2 e 5 (pg. 194)

Exercise 5.10 Check Your Understanding 7-2, 1. (pg. 203)

Exercise 5.11 (In-term test 24-25/11/2008 B-EM5)

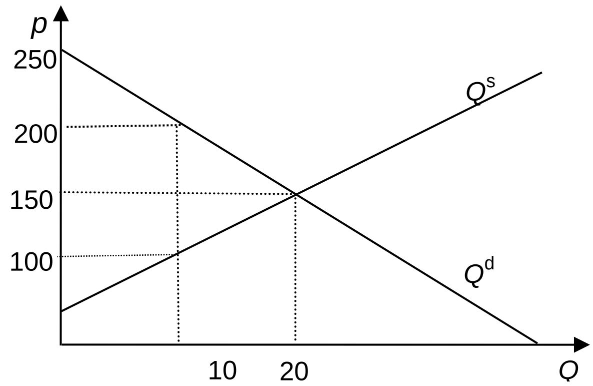
With an elastic demand and an upward-sloping supply curve, the introduction of an excise tax will cause

a) The market price to fall and consumer surplus to stay the same.
b) The market price to stay the same and consumer surplus to fall.
c) The market price to rise and the consumer surplus to fall.
d) The market price to rise, but we cannot tell what will happen to the consumer surplus as we do not know whether supply is elastic or inelastic.

Exercise 5.12(In-term test 24-25/11/2008 B-EM6)

The accompanying figure shows the market for good *A*. An excise tax of €100 per unit will cause a deadweight loss of:

a) €1250.
b) €250.
c) €500
d) €2500.



Exercise 5.13 (In-term test 6/12/2010 A-EM2)

The revenue obtained with an excise tax equals:

a) The combined reductions of the consumers' and producers' surpluses, as the government receives what consumers and producers pay.
b) The new quantity traded times the difference between the price paid by the consumer and the price received by the producer.
c) The loss of consumer surplus minus the loss of producer surplus
d) The loss of producer surplus minus the loss of consumer surplus.

Exercise 5.14 (Midterm test 11/11/2013)

A market was in equilibrium. Then the government levied a tax of €15 per unit sold. This tax raises €3000 in revenue. Then the new quantity traded is:

a) 200 units.
b) 150 units.
c) 300 units.
d) 250 units.

Exercise 5.15 (Exam 05/09/2014)

The table below describes the market for good *X*.

Price, €/ton	Quantity demanded, tons	Quantity supplied, tons
20	**6**	**15**
18	**7**	**13**
16	**8**	**11**
14	**9**	**9**
12	**10**	**7**

What is the excise tax that causes the same level of inefficiency as a quota of 7 tons?

a) €2/ton.
b) €4/ton.
c) €6/ton.
d) None of the other answers is correct.

Exercise 5.16 (EXERC 2008-9 nº6)

Consider the following demand and supply curves:
D = 2000 – 10p
S = 130 + 7p

a) Find the equilibrium price and quantity.
b) Suppose government levies a 17% tax on sellers. Find the new equilibrium.
c) Calculate the tax revenue and show it in a diagram.

Exercise 5.17 (In-term test 24-25/11/2008 B-EM5)

The government levies an excise tax on good *Z*. This reduces the sum of consumers' and producers' surplus in €2 250 and causes a deadweight loss of €750. Then the tax revenue is:

a) €1 500.
b) €3 000.
c) €1 125.
d) €375.

Exercise 5.18

The market for men's trousers is described by $\boldsymbol{Q_d = 16 - 0.2p}$ **and** $\boldsymbol{Q_s = p} - 20$, where Q denotes quantities in thousands, and p is the price in euros.

a) What are the equilibrium price and quantity?
b) The government levies a tax of €6 per pair of trousers. What are the new equilibrium conditions?
c) What are the new equilibrium price and quantity?
d) What is the tax revenue?
e) How is the tax burden shared between consumers and producers?
f) What is the welfare loss generated by the tax?