PRACTICE CLASS Nr 5

Taxes (Cap. 7)

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Classroom exercises

AP5-1-

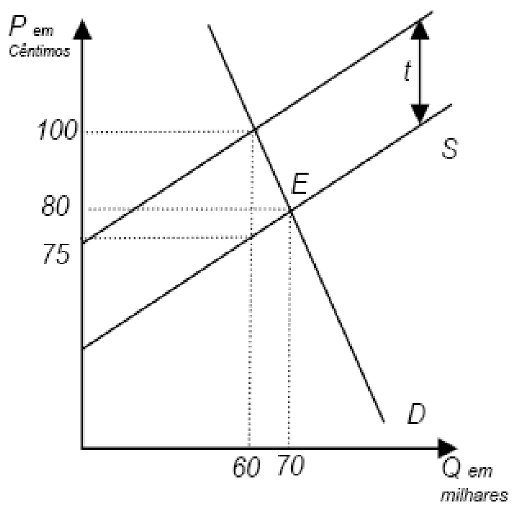
The figure shows the sugar market, and Government plans to levy a tax of t cents per kilo of sugar.

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."



(Intermediate test 6/12/2006, Q.1)

AP5-2-

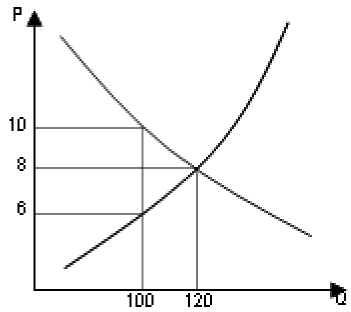
The introduction of a tax on the consumption of a good reduces welfare (causes a deadweight loss) because

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.

(Final Exam 6/09/2007, Q.9)

AP5-3-

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.

AP5-4-

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.

(Intermediate test C 27/28-10-2008, Q.11, Q.12)

AP5-5-

The 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.

(Final Exam 06-01-2009, Q.4)

AP5-6-

Suppose in a certain market quantity demanded is given by the equation: $Q^d = 500 - 20\,p$ and quantity supplied is given by the equation: $Q^s = 100 + 20\,p$

a) Graph the above information, 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.

(Final exam 11/01/2007, Q.1)

AP5-7-

Consider that the market where the good *Alpha* is traded has 5 consumers (C1 to C5) and 5 producers (P1 to P5). Each consumer is willing to consume one unit of the good at most and each producer is willing to sell one unit, at most. Additionally, we know the following information.

Consumers	Maximum price that the consumers are willing to pay for a unit of the good (monetary units)	**Producers**	Production cost of one unit of the good (monetary units)
C_1	27	P_1	13
C_2	25	P_2	13
C_3	21	P_3	18
C_4	20	P_4	19
C_5	18	P_5	22

Suppose that the government launches an excise tax. The equilibrium quantity after the launch of the tax is 3 units of the good. Find out:

a) The price paid by the consumers, the price received by the producers and the tax rate (the value of the tax *per* traded unit).

b) The total surplus in the situation with tax.

c) The deadweight loss, considering that before the tax was launched the quantity traded was 4 units, at a price of 20 m.u., the consumer surplus was 13 m.u. and the producer surplus was 17 m.u..

(Intermediate test, 09/11/2017)

AP5-8-

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) Calculate 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.

(Final exam09/01/2012, B.3)

Home exercises:

AP5-9- Check Your Understanding 7-1, 1, 2 e 5 (pg. 194, 4th ed.)

AP5-10- Check Your Understanding 7-2, 1. (pg. 203, 4th ed.)

AP5-11-

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

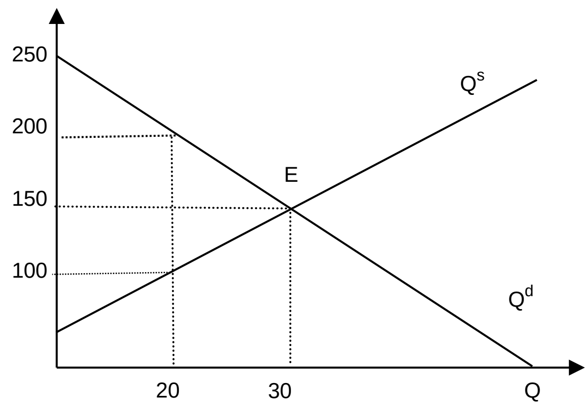
a) The market price to fall and consumer surplus to stay the same.
b) The market price to stay the same and consumer surplus to fall.
c) The market price to rise and the consumer surplus to fall.
d) The market price to rise, but we cannot tell what will happen to the consumer surplus as we do not know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

(Intermediate test24-25/11/2008, prova B – Q.5)

AP5-12-

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

a) 1250 m.u.
b) 250 m.u.
c) 500 m.u.
d) 2500 m.u.



(Intermediate test24-25/11/2008, prova C – Q.6)

AP5-13-

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

The loss of producer surplus minus the loss of consumer surplus.

(Intermediate test06/12/2010,prova A – Q.2)

AP5-14-

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 traded quantity is:

a) 200 units.

b) 150 units.

c) 300 units.

d) 250 units.

(Intermediate test11/11/2013,prova A – Q.14)

AP5-15-

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

Price (€/ton)	**Quantity Demanded** (tons)	**QuantitySupplied** (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.

(Final exam 05/09/2014- Q.4)

AP5-16-

Consider the following demand and supply curves:

$$Q^d = 2000 - 10p \quad \text{and} \quad Q^s = 130 + 7p$$

a) Find the equilibrium price and quantity.

b) Suppose the Government levies an excise tax to be paid by the consumer, such that the inefficiency created by this tax is equivalent to the inefficiency created by a quota of 830 f.u. Calculate the value of the tax per unit of the good and the value of the fiscal revenue obtained by the Government.

c) Without calculus, comment the following statement: "In the previous case, as well as in all similar cases, the fact that the tax is paid by the consumer does not mean that the incidence of the tax is only borne by consumers. In reality, producers and consumers will split the fiscal burden into equal parts".

(Final exam26/01/2009, Q.3)

AP5-17-

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.

(Intermediate test06/12/2010,prova A – Q.3)

AP5-18-

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?

AP5-19-

The demand and supply functions of a normal good, under perfect competion, are the following:

$$Q^d(p) = 130 - 2p \ , \quad \text{if } p < 65$$

$$Q^S(p) = 4p - 20 \ , \quad \text{if } p > 5$$

a) Determine the market equilibrium before and after the introduction of an excise tax of um 9 m.u. per each traded unit, when the tax is levied on the producers. Using the equilibrium after tx, identify the price paid by the consumers, the price received by producers liquid of tax and the quantity that is traded. Draw the diagrams corresponding to both situations.

b) Determine the tax revenue and the deadweight loss imposed by the tax.

c) Who is more affected by the tax, consumers or producers? Explain and quantify.

d) Would the incidence of the tax be different from the previous situation if the tax was levied only after a paralel shift of the demand curve to the right (as a result, for example, of a change in tastes)? Justify.

(Final exam29/06/2016, B.1)