

### Excise Taxes

Table 2-6.1 and Figure 2-6.1 show the current supply of Greebes.

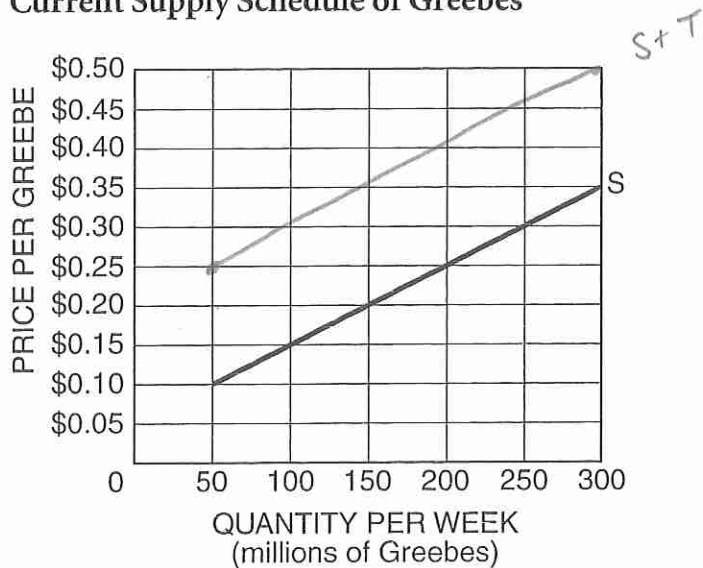


Table 2-6.1  
Supply Schedule of Greebes

Quantity (millions)	Supply price before tax (per Greebe)	Supply price after tax (per Greebe)
50	\$0.10	.25
100	\$0.15	.30
150	\$0.20	.35
200	\$0.25	.40
250	\$0.30	.45
300	\$0.35	.50



Figure 2-6.1  
Current Supply Schedule of Greebes



Now, suppose that in order to raise revenue for higher education, the government enacts an excise (sales) tax on sellers of \$0.15 per Greebe. *This tax will result in a new supply curve for Greebes.* Since sellers will view this tax as an additional cost to them, there will be a decrease in supply. To determine where this new supply curve lies, reason as follows. Firms will try to pass the tax on to consumers through a higher price. If before the tax, firms were willing to supply 50 million Greebes at a price of \$0.10, they would now be willing to

supply 50 million Greebes only if the price were \$0.25. (Remember: \$0.15 of the price of each Greebe sold is now going to go to the government. So, if the price is \$0.25 and the government is getting \$0.15 of this price, then the seller is receiving the remaining \$0.10.)

1. Fill in the blank spaces in Table 2-6.1. In Figure 2-6.1 draw the new supply curve that results from the tax. Label the new supply curve  $S_T$ .

What will be the result of this excise tax on the equilibrium quantity of Greebes? On the equilibrium price paid by buyers? On the equilibrium price received by sellers? On the tax revenue received by the government? On the revenue kept by sellers after they give the government its tax revenue?

The answers to these important questions will depend on the price elasticity of demand for Greebes. The next section of this activity will help you determine the effects of a \$0.15 per unit excise tax on Greebes under four different demand conditions.

### Part A: Relatively Elastic and Relatively Inelastic Demand

Compare the demand curves in Figures 2-6.2 and 2-6.3. Demand curve  $D_1$  is relatively more inelastic than demand curve  $D_2$ . Put another way,  $D_2$  is relatively more elastic than  $D_1$ .

 Figure 2-6.2  
Relatively Inelastic Demand for Greebes

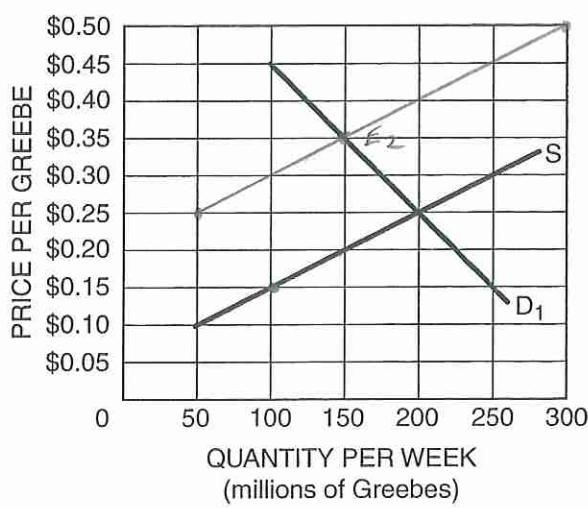
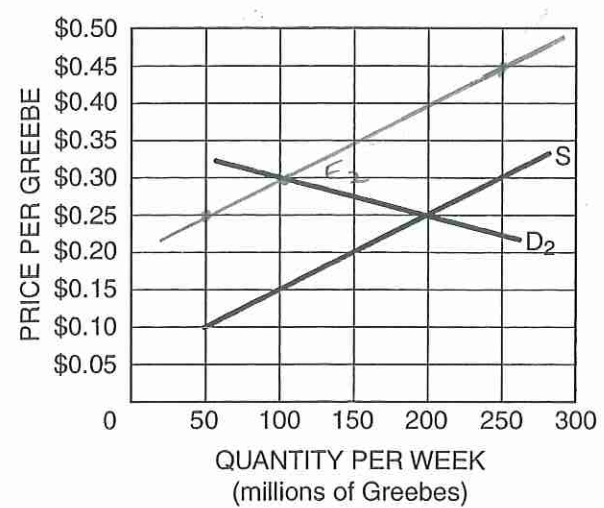


Figure 2-6.3  
Relatively Elastic Demand for Greebes



2. Complete Table 2-6.2, which compares conditions before the tax and after the tax based on demand curves  $D_1$  and  $D_2$ . Remember, the government is placing a \$0.15 per unit excise tax on the sellers of the good. You will need to add the new supply curve  $S_T$  to Figures 2-6.2 and 2-6.3.



Table 2-6.2

Comparing Effects of Tax Based on Price Elasticity of Demand

	Relatively inelastic demand $D_1$ Figure 2-6.2		Relatively elastic demand $D_2$ Figure 2-6.3	
	Before tax	After tax	Before tax	After tax
Equilibrium quantity	200 million	150	200	100 million
Equilibrium price	\$0.25	.35	.25	\$0.30
Total expenditure by consumers	50.00	\$52.5 million	\$50.0 million	30
Total revenue sellers get to keep	\$50.0 million	$.20 \times 150$ 30	50.00	\$15.0 million
Total tax revenue to government	\$0.0 million	$.15 \times 150$ 22.5	\$0.0 million	15.0

The incidence or burden of the excise tax refers to how the \$0.15 per unit excise tax is shared between the buyers and the sellers. The incidence on the consumer is the increase in the equilibrium price resulting from the tax. The seller's incidence is that part of the tax not paid by consumers.

3. Under demand curve  $D_1$ , the incidence of the tax is \$ .10 per unit on consumers and \$ .05 per unit on sellers. Remember, these two values must add up to the per unit excise tax of \$0.15.
4. Under demand curve  $D_2$ , the incidence of the tax is \$ .05 per unit on consumers and \$ .10 per unit on sellers. Remember, these two values must add up to the per unit excise tax of \$0.15.
5. The incidence of the tax is greater on buyers if demand is relatively (more / less) inelastic.
6. The incidence of the tax is greater on sellers if demand is relatively (more / less) inelastic.

Part B: Perfectly Elastic and Perfectly Inelastic Demand



Figure 2-6.4  
Perfectly Inelastic Demand for Greebes

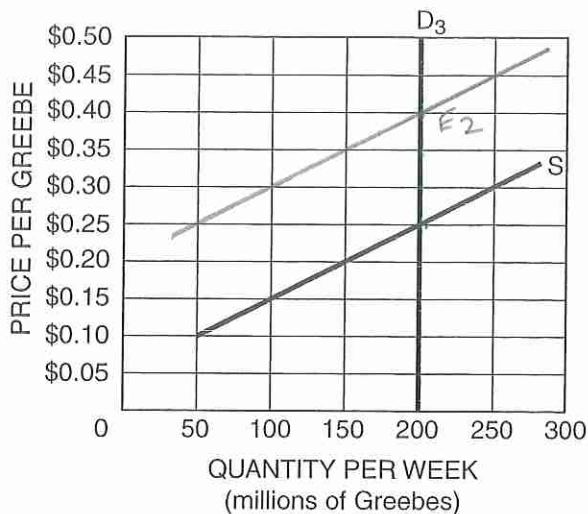
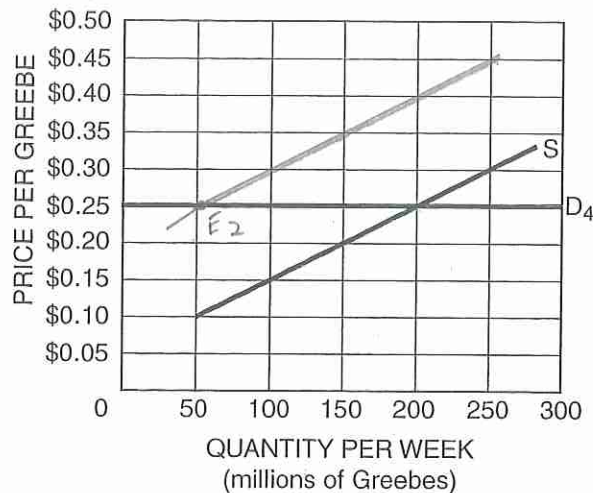


Figure 2-6.5  
Perfectly Elastic Demand for Greebes



7. In the extreme cases of perfectly inelastic or perfectly elastic demand, the burden of the excise tax is not shared by consumers and sellers—one party will pay the entire tax. Compare Figures 2-6.4 and 2-6.5 and complete Table 2-6.3. Then answer the questions following the table. Remember, the government is placing a \$0.15 per unit excise tax on the sellers of the good. You will need to add the new supply curve  $S_T$  to Figures 2-6.4 and 2-6.5.



Table 2-6.3  
Comparing Effects of Tax Based on Perfectly Inelastic or Perfectly Elastic Demand

	Perfectly inelastic demand $D_3$ Figure 2-6.4		Perfectly elastic demand $D_4$ Figure 2-6.5	
	Before tax	After tax	Before tax	After tax
Equilibrium quantity	200 million	200	200	50 million
Equilibrium price	\$0.25	.40	.25	\$0.25
Total expenditure by consumers	50.00	\$80.0 million	\$50.0 million	.25 x 50 12.5
Total revenue sellers get to keep	\$50.0 million	50.00	50.00	\$5.0 million
Total tax revenue to government	\$0.0 million	200 x .15 30	\$0.0 million	.15 x 50 7.5

8. Under demand curve  $D_3$ , the incidence of the tax is \$ 0.15 per unit on consumers and \$ 0 per unit on sellers. Remember, these two values must add up to the per unit excise tax of \$0.15.
9. Under demand curve  $D_4$ , the incidence of the tax is \$ 0 per unit on consumers and \$ 0.15 per unit on sellers. Remember, these two values must add up to the per unit excise tax of \$0.15.
10. The incidence of the tax is totally on buyers if demand is perfectly (*elastic* / inelastic).
11. The incidence of the tax is totally on sellers if demand is perfectly (elastic / *inelastic*).

### Part C: Excise Tax Examples

12. A famous Supreme Court justice once said, "The power to tax is the power to destroy." This is more likely to be true regarding sellers if the demand for the product taxed is relatively (elastic / *inelastic*).

*PED elastic means that the consumer would change QD greatly so the firm absorbs the tax incidence*

13. If you were a government revenue agent interested in getting the most tax revenue possible, you would suggest putting excise taxes on goods whose demand is (*elastic* / unit elastic / inelastic).

*such as cigarettes → creates greatest revenue*

14. Think of some real-world goods on which the government places excise taxes: liquor, cigarettes, gasoline. Do you think that the demand for these goods is relatively elastic or relatively inelastic? How does this affect the amount of tax revenue the government receives from taxes on these goods?

*more inelastic → ↑ revenue as well as  
↓ negative externalities.*