

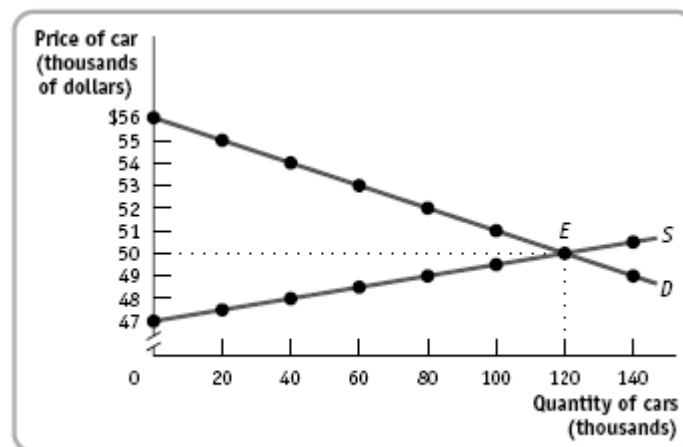
1. What three factors determine the size of the elasticity of demand for a particular commodity?
2. Elasticity Questions:
  - a) In August, 1990, East German taxicab drivers were on strike demanding lower cab fares. What must the drivers have believed about the price elasticity of demand for taxi rides?
  - b) In 1977 Brazil was supplying about one-third of the world's coffee exports. When a frost wiped out about 75 percent of Brazil's 1976-77 crop, the price of green (unroasted) coffee rose 400 percent. What was the approximate price elasticity of demand for coffee? Why was it so low?
  - c) An athletic director at a college recently raised ticket prices from \$8 to \$10 per game. Sales went down 10 percent. The director said "... with the 25 percent increase in ticket prices, dollar volume has increased about 12 percent." Is this claim consistent with what you know about demand elasticity? Find the elasticity of demand in this case, assuming the demand schedule is stable.
  - d) According to recent studies at M.I.T. and the University of Michigan, a 10 percent increase in the price of cigarettes leads to a 14 percent drop in sales to teenagers. What is the elasticity of demand for cigarettes among teenagers? Would you expect it to be this high for older smokers? Explain your answers.
  - e) Suppose the price elasticity of demand for rental housing is 0.60 and the average rent increases from \$275 per month to \$325 per month. At \$275 per month, 100,000 rental units are rented. What percentage decrease in quantity demanded would you predict from this information. Approximately how many units would be rented at \$325 per month?
  - f) Using the midpoint elasticity of demand formula, find the price elasticity of demand for the following situation: When the price of cellular phones was \$200, total sales in Ohio were 3500. When the price fell to \$180, sales rose to 3800.
3. In Marietta, the price elasticity of demand for bus rides is -0.5, the income elasticity of demand for bus rides is -0.1, and the cross elasticity of demand for bus rides with respect to gasoline is 0.2.
  - a) Is the demand for bus rides elastic or inelastic with respect to the price of a bus ride? Why?
  - b) Would an increase in bus fares increase the bus company's total revenue? Explain your answer.
  - c) Describe the relationship between bus rides and gasoline. Explain your answer.
  - d) If the price of gasoline increases by 10 percent with no change in the price of a bus ride, how will the number of bus rides change?
  - e) If incomes in Marietta increase by 5 percent with no change in the price of a bus ride, how will the number of bus rides change?
  - f) In Marietta, is a bus ride a normal good or an inferior good? Why?
4. Assume that the demand for heroin is inelastic, and assume further that users get the funds to pay for heroin by stealing. Suppose the government increases penalties on heroin suppliers and thereby reduces supply. What will happen to the price of heroin? What will happen to the amount of crime committed by heroin users?
5. If I buy a soda at the movies, I have to pay \$2.75. If I buy a soda at a gas station, I only have to pay about \$1. Use the idea of elasticity and the factors that determine elasticity of demand to explain why the movie theater can charge so much higher of a price. Use the idea of elasticity and total revenue to explain why the movie theater doesn't raise the price even higher, like to \$4.
6. After graduating, you land a plush job advising the president on economic matters. One day the president asks you for your suggestions about products to tax.
  - a) The president asks you to produce a list of items to be taxed that will yield substantial tax revenue to the government and for which consumers pay a large amount of the tax. Without trying to name specific products, what are the general characteristics of the demand for the products that you will suggest be taxed? Why?
  - b) After you discuss this first list with the president, the president realizes that this is an election year. As a result, the president changes your assignment a bit. Now the president asks you for a list of products that will still yield a lot of revenue for the government, but whose tax will fall more heavily on producers. Again, without trying to name specific products, what is the general characteristics of the supply of the product that would comprise your second list? Why?
7. Assess the following four tax policies in terms of the benefits principle versus the ability-to-pay principle.
  - a) A tax on gasoline that finances maintenance of state roads.
  - b) An 8% tax on imported goods valued in excess of \$800 per household brought in on passenger flights.
  - c) Airline-flight landing fees that pay for air traffic control.
  - d) A reduction in the amount of income paid based on the number of dependent children in the household.
8. You are advising the government on how to pay for national defense. There are two proposals for a tax system to fund national defense. Under both proposals, the tax base in an individual's income. Under proposal A, all citizens pay exactly the same lump-sum tax, regardless of income. Under proposal B, individuals with higher incomes pay a greater proportion of their income in taxes.
  - a) Is the tax in proposal A progressive, proportional, or regressive? What about the tax in proposal B?
  - b) Is the tax in proposal A based on the ability-to-pay principle or on the benefits principle? What about the tax in proposal B?
  - c) In terms of efficiency, which tax is better? Explain.

9. The United States imposes an excise tax on the sale of domestic airline tickets. Let's assume that in 2006 the total excise tax was \$5.80 per airline ticket (consisting of the \$3.30 flight segment tax plus the \$2.50 September 11 fee). According to data from the Bureau of Transportation Statistics, in 2006, 656 million passengers traveled on domestic airline trips at an average price of \$389.08 per trip. The accompanying table shows the supply and demand schedules for airline trips. The quantity demanded at the average price of \$389.08 is actual data; the rest is hypothetical.

Price of trip	Quantity of trips demanded (millions)	Quantity of trips supplied (millions)
\$389.17	655	1,100
389.08	656	1,000
384.00	685	685
383.28	700	656
383.27	701	655

- What is the government tax revenue in 2006 from the excise tax?
- On January 1, 2007, the total excise tax increased to \$5.90 per ticket. What is the equilibrium quantity of tickets transacted now? What is the average ticket price now? What is the 2007 government tax revenue?
- Does this increase in the excise tax increase or decrease government tax revenue?

10. In 1990, the United States began to levy a tax on sales of luxury cars. For simplicity, assume that the tax was an excise tax of \$6,000 per car. The chart below shows the hypothetical demand and supply curves for luxury cars.



- Under the tax, what is the price paid by consumers? What is the price received by producers? What is the government tax revenue from the excise tax?

Over time, the tax on luxury autos was slowly phased out (and completely eliminated in 2002). Suppose that the excise tax falls from \$6,000 per car to \$4,500 per car.

- After the reduction in the excise tax from \$6,000 to \$4,500 per car, what is the price paid by consumers? What is the price received by producers? What is the tax revenue now?
- Compare the tax revenue created by the taxes in parts (a) and (b). What accounts for the change in tax revenue from the reduction in the excise tax?

11. Each of the following tax proposals has income as the tax base. In each case, calculate the marginal tax rate for each level of income. Then calculate the percentage of income paid in taxes for an individual with a pre-tax income of \$5000 and for an individual with a pre-tax income of \$40,000. Classify each tax as being proportional, progressive, or regressive.

- All income is taxed at 20%.
- All income up to \$10,000 is tax-free. All income above \$10,000 is taxed at a constant rate of 20%.
- All income between \$0 and \$10,000 is taxed at 10%. All income between \$10,000 and \$20,000 is taxed at 20%. All income higher than \$20,000 is taxed at 30%.
- Each individual who earns more than \$10,000 pays a lump-sum tax of \$10,000. If the individual's income is less than \$10,000, that individual pays in taxes what his or her income is.
- Of the four tax policies, which is likely to cause the worst incentive problems? Explain.

12. The data in the table below refers to the compact disc market.

Agent Type	Buyer Values	Number in the Market	Agent Type	Seller Costs	Number in the Market
Type A Buyers	\$40	5	Type E Sellers	\$4	5
Type B Buyers	\$25	4	Type F Sellers	\$14	7
Type C Buyers	\$15	6	Type G Sellers	\$19	6

- Plot the supply and demand curves based on this data. [Remember, these are going to be step functions.]
- What is the competitive equilibrium price and quantity?
- Calculate the value of each of the following at the competitive equilibrium: Consumer surplus, Producer surplus, and Social welfare
- Suppose the government imposed a tax of \$10 per unit on the sellers. What is the new equilibrium price and quantity? Recalculate CS and PS. How much tax revenue is generated? What is the new Social Welfare? How does it compare to the original SW?
- Suppose the government imposed a tax of \$10 per unit on the buyers. What is the new equilibrium price and quantity? Recalculate CS and PS. How much tax revenue is generated? What is the new Social Welfare? How does it compare to the original SW?

13. Assume Saudi Arabia and the United States face the production possibilities for oil and cars shown in the table below.

Saudi Arabia		United States	
Quantity of oil (millions of barrels)	Quantity of cars (millions)	Quantity of oil (millions of barrels)	Quantity of cars (millions)
0	4	0	10.0
200	3	100	7.5
400	2	200	5.0
600	1	300	2.5
800	0	400	0

- What is the opportunity cost of producing a car in Saudi Arabia? In the United States? What is the opportunity cost of producing a barrel of oil in Saudi Arabia? In the US?
- Which country has the comparative advantage in producing oil? In producing cars?
- Suppose that in autarky, Saudi Arabia produces 200 million barrels of oil and 3 million cars; similarly, that the US produces 300 million barrels of oil and 2.5 million cars. Without trade, can Saudi Arabia produce more oil and more cars? Without trade, can the US produce more oil and more cars?

14. The PPF for the US and Saudi Arabia is given in the table to the previous question. Suppose that each country specializes in the good in which it has the comparative advantage, and the two countries trade. Also assume that for each country the value of imports must equal the value of exports.

- What is the total quantity of oil produced? What is the total quantity of cars produced?
- Is it possible for Saudi Arabia to consume 400 million barrels of oil and 5 million cars and for the US to consume 400 million barrels of oil and 5 million cars?
- Suppose that, in fact, Saudi Arabia consumes 300 million barrels of oil and 4 million cars and the US consumes 500 million barrels of oil and 6 million cars. How many barrels of oil does the US import? How many cars does the US export? Suppose a car costs \$10,000 on the world market. How much, then, does a barrel of oil cost on the world market?

15. Shoes are labor-intensive and satellites are capital-intensive to produce. The US has abundant capital. China has abundant labor. According to the Heckscher-Ohlin model, which good will China export? Which good will the US export? In the US, what will happen to the price of labor (the wage) and to the price of capital?

16. As the US has opened up to trade, it has lost many of its low-skill manufacturing jobs, but it has gained jobs in high-skilled industries, such as the software industry. Explain whether the US as a whole has been made better off by trade.

17. Before the North American Free Trade Agreement (NAFTA) gradually eliminated import tariffs on goods, the autarky price of tomatoes in Mexico was below the world price and in the US was above the world price. Similarly, the autarky price of poultry in Mexico was above the world price and in the US was below the world price. Draw diagrams with domestic supply and demand curves for each country and each of the two goods. As a result of NAFTA, the US now imports tomatoes from Mexico and the US now exports poultry to Mexico. How would you expect the following groups to be affected?

- Mexican and US consumers of tomatoes. Illustrate the effect on consumer surplus in your diagrams.
- Mexican and US producers of tomatoes. Illustrate the effect on producer surplus in your diagrams.
- Mexican and US tomato workers.
- Mexican and US consumers of poultry. Illustrate the effect on consumer surplus in your diagrams.
- Mexican and US producers of poultry. Illustrate the effect on producer surplus in your diagrams.
- Mexican and US poultry workers.

18. The table below indicates the US domestic demand schedule and domestic supply schedule for commercial jet airplanes. Suppose that the world price of a commercial jet airplane is \$100 million.

Price of jet (millions)	Quantity of jets demanded	Quantity of jets supplied
\$120	100	1,000
110	150	900
100	200	800
90	250	700
80	300	600
70	350	500
60	400	400
50	450	300
40	500	200

- In autarky, how many commercial jet airplanes does the US produce, and at what price are they bought and sold?
- With trade, what will the price for commercial jet airplanes be? Will the US import or export airplanes? How many?

19. The table below the US domestic demand schedule and domestic supply schedule for oranges. Suppose the world price of oranges is \$0.30 per orange.

Price of orange	Quantity of oranges demanded (thousands)	Quantity of oranges supplied (thousands)
\$1.00	2	11
0.90	4	10
0.80	6	9
0.70	8	8
0.60	10	7
0.50	12	6
0.40	14	5
0.30	16	4
0.20	18	3

- Draw the US domestic supply and demand curve.
- With free trade, how many oranges will the US import or export?

Suppose that the US government imposes a tariff on oranges of \$0.20 per orange.

- How many oranges will the US import or export after the introduction of the tariff?
- In your diagram, shade the gain or loss to the economy as a whole from the introduction of this tariff.

20. The US domestic demand and supply schedules for oranges is described in the table to the previous question. Suppose the world price of oranges is \$0.30. The US introduces an import quota of 3,000 oranges and assigns the quota rent to foreign orange exporters.

- Draw the domestic demand and supply curves.
- What will the domestic price of oranges be after the introduction of the quota?
- What is the value of the quota rents that foreign exporters of oranges receive?