Chapter 18

Public Choice, Taxes, and the Distribution of Income

Chapter Summary

You learned in Chapter 2 that government plays an important role in a market system by providing secure property rights and a legal system that enforces private contracts. In Chapter 5, you learned that the government sometimes supplies public goods that private firms cannot supply. In this chapter, you learn how the government decides which policies to adopt and the principles governments use to create tax policy.

Economists use the public choice model to analyze how government policymakers arrive at their decisions. The model assumes that policymakers will likely pursue their own self-interest, even if their self-interest conflicts with the public interest.

Governments must raise the revenue needed to pay for the services they provide, including public schools, highways, and homeland security. The purpose of most taxes is to raise revenue, but some taxes are used to discourage undesirable behavior such as smoking. The federal government in the United States raises most of its revenue through income and social insurance taxes. The largest source of revenue for state and local governments is grants from the federal government. Most states also raise substantial amounts of revenue from sales taxes. Many local governments depend heavily on property taxes to fund public schools.

While income in the United States is unequally distributed, there have been no dramatic changes in the distribution of income over time. The federal government defines the **poverty line** as an income level three times the amount needed to purchase the minimum amount of food required for adequate nutrition. Given this definition, the percentage of the U.S. population that was poor fell between 1960 and 1973 from 22 percent to 11 percent. The federal government defines the **poverty rate** as the percentage of the population that is poor according to the federal government's definition. Since 1973, the poverty rate has shown little change.

Two factors that have increased inequality are technological change and expanding international trade. Development of new technology has led to the relative decline in wages of unskilled workers. Expanding trade has put more U.S. workers in competition with foreign workers and the relative wages of unskilled workers have declined as a result.

Income data do not account for the effects of government programs designed to reduce poverty. Transfer payments received by individuals, such as Social Security payments, are not included in income data used to measure poverty. Individuals with low incomes also receive noncash benefits such as food stamps, free school lunches, and rent subsidies. In other countries, progress in reducing poverty is mixed. In China and other parts of Asia and in Latin America, the poverty rate fell significantly from 1970 to 2000. But in Sub-Saharan Africa, the poverty rate increased.

Learning Objectives

When you finish this chapter, you should be able to:

1. **Define the public choice model and explain how it is used to analyze government decision making.** The public choice model applies economic analysis to government decision making. A key insight of the model is that policymakers are no different from consumers or managers of firms in that they pursue their own self-interest; in particular, we expect that public officials will take actions that are likely to result in their being re-elected.

2. **Understand the tax system in the United States, including the principles that governments use to create tax policy.** The federal government raises more than 80 percent of its revenue from the individual income tax and social security taxes. The largest source of revenue for state and local governments is federal government grants. Most states raise substantial revenue from sales taxes. Local governments rely heavily on property taxes. In selecting which taxes to impose, governments take into account the following principles: the goal of economic efficiency, the ability-to-pay principle, the horizontal equity principle, the benefits received principle, and the goal of attaining social objectives.

3. **Understand the effect of price elasticity on tax incidence.** When a tax is imposed on the sale of a good or service, the incidence of the tax is the division of the burden of the tax between buyers and sellers. When the demand for a product is less elastic than the supply, consumers pay the majority of the tax. When the demand for a product is more elastic than the supply, firms pay the majority of the tax on the product.

4. **Discuss the distribution of income in the United States and understand the extent of income mobility.** In 2005, the 20 percent of Americans with the lowest incomes received only about 3.4 percent of all income, while the 20 percent with the highest incomes received 50.4 percent of all income. There was a decline in income inequality from 1936 to 1980, but an increase in inequality during the 1990s and early 2000s. One study has shown that of the people who were in poverty in 1996, 50.5 percent remained in poverty in 1999.

Chapter Review

Chapter Opener: Should the Government Use the Tax System to Reduce Inequality? (pages 598-599)

Tax laws affect economic incentives and can also affect perceptions of fairness. The debate over the tax system was an important part of the 2008 presidential campaign. The design of the tax system and the criteria to use in evaluating it are important questions.

Helpful Study Hint

An ***Inside Look*** at this chapter's end features an analysis of income inequality in the United States by Ben Bernanke, the Chairman of the Federal Reserve Board. He cites several causes of rising inequality, including:

1. Technological change that has reduced demand for unskilled labor and increased the demand for skilled labor
2. Increased trade
3. Increased immigration
4. New technologies, like computers, have increased the demand—and thus the relative pay—for educated workers.

You receive benefits from the government, but someone has to pay for these benefits. ***Economics in YOUR Life!*** asks you to think about what your fair share of the burden of government taxes should be. Compare your opinions on this issue with the analysis the authors provide at the end of the chapter.

18.1 LEARNING OBJECTIVE

18.1 Public Choice (pages 600-604)

Learning Objective 1 Define the public choice model and explain how it is used to analyze government decision making.

The **public choice model** applies economic analysis to government decision making. The model assumes that policymakers are likely to pursue their own self-interest, even if this conflicts with the public interest. We expect public officials to take actions that are likely to result in their re-election.

The **voting paradox**, which is the failure of majority voting to always result in consistent choices, demonstrates that politicians do not simply represent the views of voters. The **median voter theorem** is the proposition that the outcome of a majority vote is likely to represent the preferences of the voter who is in the political middle.

The public choice model assumes policymakers behave in their own self-interest. There are three reasons for this behavior:

1. Renting seeking, which refers to attempts by individuals and firms to use government action to make themselves better off at the expense of others. Because firms can benefit from government intervention in the economy, they are willing to make campaign contributions to politicians who vote for special interest legislation the firms will benefit from.
2. Logrolling, which refers to the situation where a member of Congress votes to approve a bill in exchange for favorable votes from other members on other bills.
3. Rational ignorance, which means that voters often lack an economic incentive to become informed about legislation because the cost of the time and effort required to do so exceeds the benefit.

The government sometimes intervenes in the economy by establishing a regulatory agency or commission with authority over a particular industry or product. When this happens, the affected firms have an incentive to try to influence the agency's actions. In extreme cases, this may lead to the agency making decisions that benefit the regulated firms, even if these actions are not in the public interest. In these cases, the agency is said to be subject to regulatory capture.

Public choice analysis indicates that government failure can occur where government intervention reduces economic efficiency rather than increases it.

Extra Solved Problem 18-1

Chapter 18 includes two Solved Problems. Here is an extra Solved Problem to help you build your skills solving economic problems.

Supports Learning Objective 1: Define the public choice model and explain how it is used to analyze government decision making.

The Public Choice Model

Traditional political theory holds that government agents (elected politicians, appointed bureaucrats, and other government employees) put aside their private interests and attempt to achieve goals that are in the general public's interest. Alternatively, public choice theory uses the same assumption that economists make about people's actions in private markets and applies them to collective, or government, decision making; namely, people are motivated mainly by self-interest. Self-interest is also assumed to motivate voters, who are largely ignorant about political issues, including those involving taxes. This ignorance is rational because the impact of a well-informed vote on an election is essentially nil. Even if the voter's preferred candidate is elected, the candidate cannot bring about policy changes without the support of other elected officials. Elected officials are also assumed to act in their own interest. These officials make decisions to use other people's resources to promote the "public interest." But interest groups that benefit from government programs have strong incentives to provide campaign funds to those politicians who agree with, and vote for, these programs. As a result, public officials often support special interest programs that are costly for taxpayers. Public choice economists point to "logrolling" or vote trading as an important example of political self-interest that can result in inefficient legislation. Logrolling refers to politicians voting for special interest legislation that favors interests in other legislative districts in order to win the votes of politicians in those districts for their own special interest legislation. Public choice economists recognize that government regulation or provision of services is necessary in some cases. If government action is required, they prefer that it take place at the local level whenever possible. This provides an opportunity for competition and experimentation among local governments. Citizens can move to areas that provide superior public services and governments have incentives to provide services efficiently.

Source: Jane S. Shaw, "Public Choice Theory," *The Concise Encyclopedia of Economics*, http://www.econlib.org/Library/Enc/PublicChoiceTheory.html

Citizens Against Government Waste (CAGW) is a private non-profit organization founded in 1984 to "eliminate waste, fraud, abuse and mismanagement in the federal government." Each year CAGW publishes the *Congressional Pig Book*, which lists federal government spending projects the organization believes are of questionable value to taxpayers. The 2007 *Pig Book* found 2,658 questionable projects in just one piece of legislation, the Defense and Homeland Security Appropriations Act. The projects have a total cost of over $13 billion. Since 2000, Alaska and Hawaii received the greatest amount of pork spending per capita from these sources. CAGW claims that Senators Ted Stevens (R-Alaska) and Daniel Inouye (D-Hawaii), among the longest serving members of the Senate, served their states "more than their fair share of bacon."

a. How would the public choice model explain the large amount of pork spending in federal government's budget?

b. Why would Alaska and Hawaii top other states in per capita pork spending?

Source: Citizens Against Government Waste. http://www.cagw.org/site/PageServer

SOLVING THE PROBLEM

Step 1: Review the chapter material.
This problem is about public choice, so you may want to review the section "Public Choice," which begins on page 600 of the textbook.

Step 2: Answer question (a) by using the public choice model to explain the large amount of pork spending in the federal government's budget.
The public choice model would claim that pork spending is a result of (1) The self-interest of voters; because each taxpayer pays a small fraction of any program, he or she has little incentive to become well-informed or to vote for or against a candidate who supports these programs. (2) A bias in favor of special interest projects; the money spent for government projects is concentrated so that the recipients have a strong incentive to lobby and provide financial support for politicians who vote in favor of their projects.

Step 3: Answer question (b) by explaining why Alaska and Hawaii top other states in per capita pork spending.
Even though these states have small populations, they have Congressional Representatives and Senators who have a great deal of seniority. More senior politicians often have a greater ability to push special interest legislation through Congress. Politicians commonly use logrolling to garner support from colleagues for programs that benefit their states, even if these programs produce benefits that do not exceed their costs.

18.2 LEARNING OBJECTIVE

18.2 The Tax System (pages 604-612)

Learning Objective 2 Understand the tax system in the United States, including the principles that governments use to create tax policy.

Taxes are necessary to raise the funds required to provide public goods and various government activities at the federal, state, and local levels. Taxes are also used to discourage what society views as undesirable behavior. In the United States, the federal government, most state governments, and some local governments tax the incomes of households and the profits of firms. This individual income tax is the largest source of revenue for the federal government. The federal government taxes wages and salaries to raise revenue for the Social Security and Medicare programs. The federal and state governments also tax wages and salaries to fund unemployment insurance programs.

Most state and local governments tax retail sales of most products. Most local governments use property taxes – taxes on homes, offices, and factories and the land they are built on – to fund public schools. Excise taxes are levied by the federal government and some state governments on the sale of specific goods. The federal government raises more than 80 percent of its revenue through individual income and social insurance taxes. Over the past 40 years, federal revenues as a share of gross domestic product have ranged between 17 and 23 percent.

Economists categorize taxes based on how much people with different levels of income pay relative to their incomes. A **regressive tax** is a tax for which people with lower incomes pay a higher percentage of their income in tax than do people with higher incomes. A **progressive tax** is a tax for which people with lower incomes pay a lower percentage of their income in tax than do people with higher incomes. The federal income tax is a progressive tax. Every taxpayer is allowed to exclude from taxation a certain amount of income, called the personal exemption. Deductions are used to reduce the amount of income subject to tax.

The fraction of each additional dollar of income that must be paid in taxes is the **marginal tax rate**. The **average tax rate** is the total tax paid divided by total income. When a tax is progressive, the marginal and average tax rates will differ. Economists focus on the marginal tax rate when considering a change in tax policy. The marginal tax rate tells economists how a tax change will affect people's willingness to work, save, and invest.

The federal government taxes the profits earned by corporations with the corporate income tax. Some economists argue that if the purpose of the tax is to tax the owners of corporations, it would be better to do this directly by taxing owners' incomes rather than indirectly through the corporate income tax.

In selecting which taxes to use, governments take into account several goals and principles:

- The goal of economic efficiency
- The ability-to-pay principle
- The horizontal-equity principle
- The benefits-received principle
- The goal of attaining social objectives

The **excess burden** of a tax is the efficiency loss to the economy that results from a tax causing a reduction in the quantity of a good produced. This is also known as the deadweight loss from a tax. A tax is efficient if it imposes a small excess burden relative to the revenue it raises. Taxation can have substantial effects on economic efficiency by altering the incentives to work, save, and invest.

Although tax simplification would reduce the administrative burden and deadweight loss from taxation, complicated tax loopholes benefit certain taxpayers who would oppose simplification. Taxes are sometimes used to attain social objectives, such as to discourage smoking or drinking alcohol.

Helpful Study Hint

The ***Making the Connection*** on page 607 of the textbook provides statistics on which income groups pay the most in federal taxes. Review the table on that page and notice that the 20 percent of taxpayers with the highest incomes pay more than 86 percent of federal income taxes. The ***Making the Connection*** on page 611 discusses a proposed shift from an income tax to a consumption tax. Some economists oppose this shift because they believe a consumption tax will be more regressive than an income tax and would impose a burden on people with very low incomes.

Work through related end-of-chapter problems 2.9 and 2.11 to test your understanding of the concepts in these features.

Extra Solved Problem **18-2**

Supports Learning Objective 2: Understand the tax system in the United States, including the principles that governments use to create tax policy.

The Evolution of the Income Tax System

The United States did not have an income tax prior to the Civil War. Before then, the federal government's revenue came from such sources as excise taxes, customs duties, and the sale of public lands. The demands placed on government because of the war forced Congress to pass a law in 1862 that raised excise taxes and imposed a 3 percent tax on incomes up to $10,000. Higher incomes were taxed at 5 percent. As the war ended, the government's revenue needs waned. The income tax was abolished in 1872, and until 1913 the federal government derived most of its revenue from excise taxes and tariffs. By the early 1900s, the nation was becoming increasingly aware that tariffs and excise taxes were neither efficient nor fair as they fell disproportionately on lower income citizens. Proposals for a new income tax were championed by Congressional representatives from agricultural states who feared the possibility of a tax on land. By 1913, 36 states had ratified the 16th Amendment to the Constitution, which allowed Congress to impose a new income tax. In October, Congress passed a law that levied a tax beginning at 1 percent on incomes between $3,000 and $20,000 (which was a very large income in 1913), with a top rate of 7 percent on incomes above $500,000. Because most people had incomes of less than $3,000 in 1913, less than 1 percent of the population paid any income tax.

The entry of the United States into World War I increased the revenue needed by the federal government. The Revenue Act of 1916 raised the lowest tax rate to 2 percent and the top rate to 15 percent for incomes in excess of $1.5 million. Other revenue acts followed. Still, in 1918 only 5 percent of the population paid income taxes. As the economy boomed in the 1920s, Congress cut tax rates five times. But after the economy plunged into the Great Depression, tax receipts fell. Congress raised tax rates by passing the Tax Act of 1932. Another tax hike followed in 1936. The lowest tax rate was 4 percent and the top rate reached 79 percent. Individual and corporate taxes were raised in 1940 and 1941. Once again, wartime spending led to greater demands for tax revenues. By the end of the war, taxpayers with taxable incomes of only $500 were subject to a tax rate of 23 percent, while taxpayers with incomes over $1 million faced a top rate of 94 percent. Federal taxes as a share of national income rose from 7.6 percent in 1941 to 20.4 percent in 1945.

Source: Fact Sheets: *Taxes. History of the U.S. Tax System.* United States Treasury.
http://www.treas.gov/education/fact-sheets/taxes/ustax.shtml

a. Why did the United States first institute an income tax system?

b. Use one goal or principle of taxation to evaluate the decision to pass the 16th Amendment to the U.S. Constitution.

SOLVING THE PROBLEM

Step 1: Review the chapter material.
This problem is about the tax system, so you may want to review the section "The Tax System," which begins on page 604 of the textbook.

Step 2: Answer question (a) by explaining why the federal government instituted an income tax.

Prior to the Civil War, federal government spending was a relatively small percentage of national income. The government's revenue needs could be met through excise taxes, tariffs and sales of public land. Many people paid little or no taxes. But wartime spending required much more revenue. The government needed a broader tax base; that is, a tax or taxes that would affect many more people.

Step 3: (b).

Even before the 16th Amendment was passed, income taxes were progressive, because people with lower incomes paid a lower percentage of their income in taxes than people with higher incomes. Since the Amendment was passed, progressive tax rates have always been a characteristic of the income tax system. This is a response to the ability-to-pay principle. One could also argue that an income tax scores higher on the benefits-received principle than the alternatives of a land tax, excise tax, or tariff. As government spending grew, especially during times of war, the benefits of government programs and services were broadly spread across the population. Hence, a broader tax was justified.

18.3 LEARNING OBJECTIVE

18.3 Tax Incidence Revisited: The Effect of Price Elasticity (pages 612-615)

Learning Objective 3 Understand the effect of price elasticity on tax incidence.

Tax incidence is the actual division of the burden of a tax between buyers and sellers in a market. When a tax is imposed on the sale of a product, consumers pay the majority of the tax when the price elasticity of demand is smaller than the price elasticity of supply. When the elasticity of demand for a product is larger than the elasticity of supply, firms pay the majority of the tax.

Helpful Study Hint

Don't Let This Happen to YOU! cautions you not to confuse the burden of tax with who pays it. Although your receipt for a product tells you the amount of sales tax you paid, the seller also shares the burden of that tax. Review Figure 18-4 on page 613 of the textbook and the figure caption in the margin to understand this point.

Making the Connection describes the consequences of the imposition of a corporate income tax and explains why some economists have called for the reform of this tax. Most economists agree that some of the burden of the corporate income tax is passed on to consumers in the form of higher prices. Review Table 18-4 on page 609 for a comparison of corporate income taxes in nine countries. Notice that Ireland has a corporate tax rate of 13 percent, while the United States has a corporate tax rate of 40 percent.

Solved Problem 18-3 examines how the burden of a tax is dependent on the elasticities of demand and supply of the good that is taxed.

Complete related end-of-chapter problems 3.5, 3.6, 3.7, and 3.9 to increase your understanding of these topics.

18.4 LEARNING OBJECTIVE

18.4 Income Distribution and Poverty (pages 615-623)

Learning Objective 4 Discuss the distribution of income in the United States and understand the extent of income mobility.

The distribution of income in the United States is unequal, and there have been no dramatic changes in the distribution of income over time. According to the federal government's definition, a family is poor if it is below the poverty line. The **poverty line** is a level of annual income equal to three times the amount of income necessary to purchase the minimal quantity of food required for adequate nutrition. The **poverty rate** is the percentage of the population that is poor according to the federal government's definition. Between 1960 and 1973, the poverty rate declined from 22 percent to 11 percent, but since 1973, the poverty rate has shown little change. Figure 18-5 on page 617 in the textbook shows the poverty rate over time.

For most people, the most important factor of production they own is their labor. The income they earn depends on how productive they are and on the prices of the goods and services their labor helps to produce. Therefore, the distribution of income is related to the productivity of labor and ownership of other productive resources.

Income inequality has increased in the United States over the past 25 years. Rapid technological change contributed to this trend as computers and other machines were substituted for labor. Another contributing factor has been the expansion of international trade, which has put more U.S. workers in competition with foreign workers. As a result, the wages of unskilled workers have been reduced relative to the wages of other workers.

A **Lorenz curve** is a curve that shows the distribution of income by arraying incomes from lowest to highest on the horizontal axis and indicating the cumulative fraction of income earned by each fraction of households on the vertical axis. The Gini coefficient is a way to summarize the information provided by the Lorenz curve. If the income distribution were completely equal, the Gini coefficient would equal 0. If the income distribution were completely unequal, the Gini coefficient would equal 1.

Measures of poverty and the distribution of income are misleading. These measures do not account for income mobility. For example, a family below the poverty line one year may be above the line the next year. One study showed that only 50.5 percent of people who were in poverty in 1996 remained in poverty in 1999. Also, measures of poverty and income distribution ignore the effect of government programs meant to reduce poverty. Conventional statistics do not include transfer payments such as Social Security payments and noncash benefits, such as food stamps. Because the income tax system is progressive, income after taxes is more equally distributed than is income before taxes.

Although poverty remains a problem in high-income countries such as Australia, Canada, and Japan, it is a much larger problem in poor countries. The percentage of the population in poverty in countries in Sub-Saharan Africa was over 35 percent in 1970 and has risen since. Poverty reduction occurred in Asia and Latin America between 1970 and 2000 due to relatively rapid rates of economic growth.

Helpful Study Hint

Although the poverty rate in the United States has not fallen below 10 percent in any year, ***Solved Problem 18-4*** explains that the percentage of the population who remain in poverty for many years is smaller than 10 percent.

After reading this chapter you should have a better understanding of how governments raise revenue to provide the public with goods and service. At the beginning of this chapter, ***Economics in YOUR Life***! asked you to think about what your fair share of the tax burden is. For many teenagers, their first experience with this question occurs when they receive their first paycheck and realize that deductions have been made for income and payroll taxes. But you also pay taxes whenever you buy an item subject to sales tax. Because income taxes in the United States are progressive, the percentage of your income that will be taxed will rise as your income rises.

Key Terms

Arrow impossibility theorem. A mathematical theorem that holds that no system of voting can be devised that will consistently represent the underlying preferences of voters.

Average tax rate. Total tax paid divided by total income.

Excess burden. The efficiency loss to the economy that results from a tax causing a reduction in the quantity of a good produced; also known as the deadweight loss.

Lorenz curve. A curve that shows the distribution of income by arraying incomes from lowest to highest on the horizontal axis and indicating the cumulative fraction of income earned by each fraction of households on the vertical axis.

Marginal tax rate. The fraction of each additional dollar of income that must be paid in taxes.

Median voter theorem. The proposition that the outcome of a majority vote is likely to represent the preferences of the voter who is in the political middle.

Poverty line. A level of annual income equal to three times the amount necessary to purchase the minimal quantity of food required for adequate nutrition.

Poverty rate. The percentage of the population that is poor according to the federal government's definition.

Progressive tax. A tax for which people with lower incomes pay a lower percentage of their income in tax than do people with higher incomes.

Public choice model. A model that applies economic analysis to government decision making.

Regressive tax. A tax for which people with lower incomes pay a higher percentage of their income in tax than do people with higher incomes.

Rent seeking. The attempts by individuals and firms to use government action to make themselves better off at the expense of others.

Tax incidence. The actual division of the burden of a tax between buyers and sellers in a market.

Voting paradox. The failure of majority voting to always result in consistent choices.

Self-Test

(Answers are provided at the end of the Self-Test.)

Multiple-Choice Questions

1. A key insight of the public choice model is that
   a. most politicians are dishonest.
   b. majority voting will fail to result in policies that represent the median voter.
   c. majority voting may result in inconsistent policy choices.
   d. votes in the U.S. Senate will result in more consistent policy choices than votes taken in the House of Representatives because the Senate has fewer voting members.

2. The voting paradox refers to the proposition that the outcome of a majority vote
   a. will not represent the preferences of the voter who is in the political middle.
   b. will result in consistent choices, but the choices will result turn out not to be transitive.
   c. will result in rent seeking behavior.
   d. will fail to always result in consistent choices.

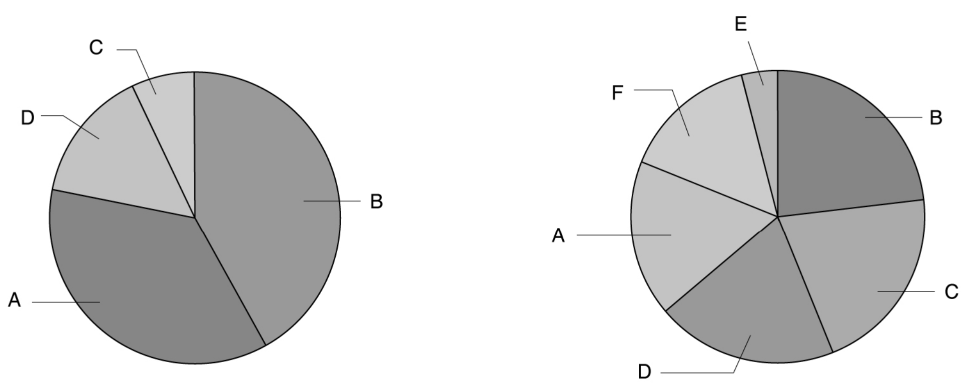
3. Kenneth Arrow developed a theorem stating that no system of voting can be devised that will consistently represent the underlying preferences of voters. This is called the Arrow
   a. voting paradox.
   b. median voter theorem.
   c. inconsistency theorem.
   d. impossibility theorem.

4. One way in which the government intervenes in the economy is by establishing a regulatory agency or commission that has authority over a particular industry or product. Because the firms that are regulated have an incentive to influence those actions, regulation may lead to
   a. logrolling, where regulators will support legislation that increases the power of the agency or commission.
   b. rational ignorance, where voters do not have an incentive to become informed about how the agency or commission reaches its regulatory decisions.
   c. the voting paradox.
   d. regulatory capture.

5. Which of the following is an example of logrolling?
   a. Congressman Hacker votes for an increase in the defense budget even though he knows that a majority of other representatives will vote against the increase. Hacker's vote demonstrates to his constituents that he supports national defense.
   b. Congressman Hacker votes in favor of funding for a national park in Congresswoman Sleet's district because Sleet has promised to vote in favor of funding for a new highway in Hacker's district.
   c. Congressman Hacker supports funding in his district for a bridge despite several analyses that show the cost of the bridge is far in excess of the benefits the bridge will provide.
   d. Congressman Hacker votes in favor of a government subsidy program that will benefit farmers because of a strong lobbying effort by farmers in his district.

6. Which of the following statements is correct about the U.S. tax system?
   a. Most taxes are intended to discourage behavior rather than to raise revenue.
   b. The largest source of revenue for the federal government is the corporate income tax.
   c. "Payroll taxes" include Social Security and Medicare taxes.
   d. The sales tax is the largest source of funds for public schools.

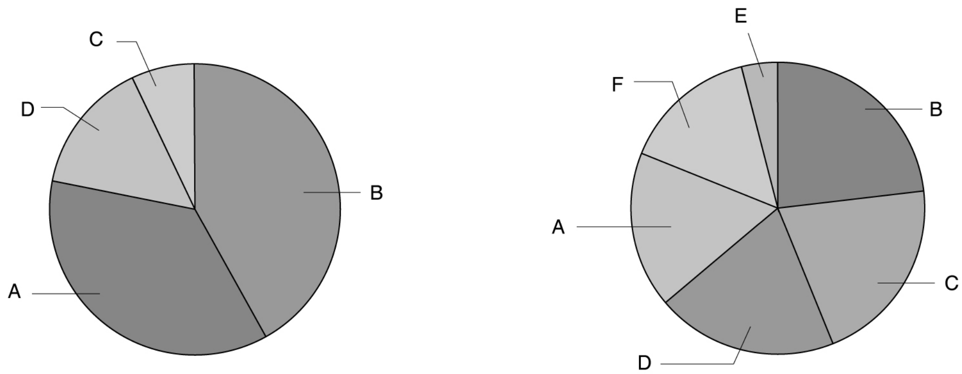
7. Refer to the figure below. The figure shows the sources of government revenue. Which segments correspond to corporate income taxes on these pies?



(a) Sources of federal govenment revenue, 2007 (b) Sources of state and local government revenue, 2007

   a. A on the left and B on the right
   b. C on the left and C on the right
   c. D on the left and E on the right
   d. B on the left and D on the right

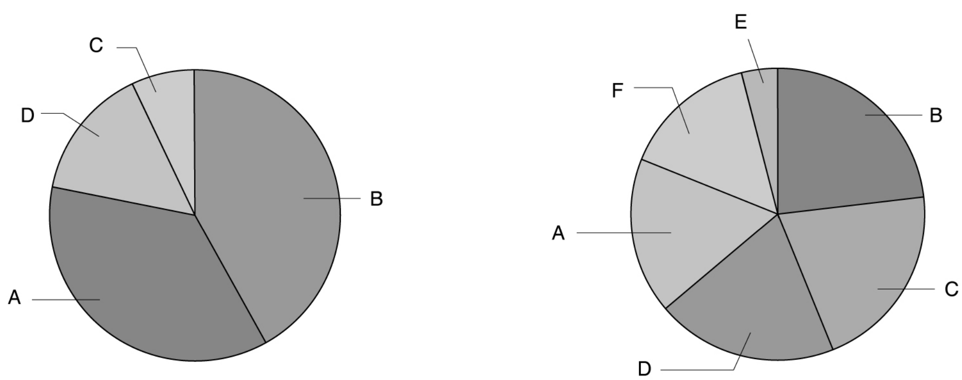
8. Refer to the figure below. Which letter corresponds to the segment of a pie chart that shows sales taxes?



(a) Sources of federal govenment revenue, 2007 (b) Sources of state and local government revenue, 2007

a. A on the right
b. B on the right
c. E on the right
d. D on the left and E on the right

9. Refer to the figure below. Which letter corresponds to the segment of a pie chart that shows social insurance taxes?



(a) Sources of federal govenment revenue, 2007 (b) Sources of state and local government revenue, 2007

a. A on the left
b. C on the right
c. D on the left
d. E on the right

10. Which of the following statements about U.S. government revenues is correct?
a. In 2006, federal revenues amounted to about $2.5 trillion, or $8,400 per person.
b. Federal revenues as a share of Gross Domestic Product have ranged between 17 and 23 percent for a long time.
c. The largest source of revenue for state and local government is grants from the federal government intended to pay for *federal mandates*.
d. All of the above.

11. When is a tax *regressive*?
    a. When people with lower incomes pay a higher percentage of their income in tax than do people with higher incomes.
    b. When people with lower incomes pay a lower percentage of their income in tax than do people with higher incomes.
    c. When people with lower incomes pay the same percentage of their income in tax as do people with higher incomes.
    d. When people who are poorer pay lower taxes and people who are richer pay higher taxes.

12. When is a tax *progressive*?
    a. When people with lower incomes pay a higher percentage of their income in tax than do people with higher incomes.
    b. When people with lower incomes pay a lower percentage of their income in tax than do people with higher incomes.
    c. When people with lower incomes pay the same percentage of their income in tax as do people with higher incomes.
    d. When people who are poorer pay lower taxes and people who are richer pay higher taxes.

13. Which of the following types of tax is the federal income tax?
    a. A progressive tax
    b. A regressive tax
    c. A proportional tax
    d. None of the above

14. Which of the following does a *tax rate* refer to?
    a. A percentage of income
    b. A range of income
    c. An income group
    d. The portion of income earned that is exempt from taxes

15. As presented in the text, how is the federal income tax structured?
    a. All taxpayers pay the same tax rate. The dollar amount of the tax is equal to this tax rate times their taxable income.
    b. The rate at which income is taxed increases as income increases. Additional amounts of income are taxed at ever greater rates.
    c. The rate at which income is taxed decreases as income increases. Additional amounts of income are taxed at ever lower rates.
    d. Most taxpayers pay taxes only on a portion of their incomes, not on their entire incomes.

16. Refer to the table below. Based on the information on the table, how much in federal income taxes will someone owe who earns $150,000?

INCOME	TAX RATE
$0–$7,82	10%
$7,826–$31,850	15
$31,851–$77,100	25
$77,101–$160,850	28
$160,851–$349,700	33
Over $349,70	35

a. $36,507
b. $42,000
c. $49,500
d. $14,653

17. Which of the following groups pays the most in federal taxes?
a. The lowest 20 percent of income earners
b. The third highest 20 percent of income earners
c. The fourth highest 20 percent of income earners
d. The top 20 percent of income earners

18. Which of the following groups bears a greater share of all the federal taxes paid?
a. The 40 percent of taxpayers with the lowest incomes
b. The 20 percent of taxpayers with the lowest incomes
c. The 20 percent of taxpayers with the highest incomes
d. None of the above; in the United States, everyone pays the same portion of the total taxes paid.

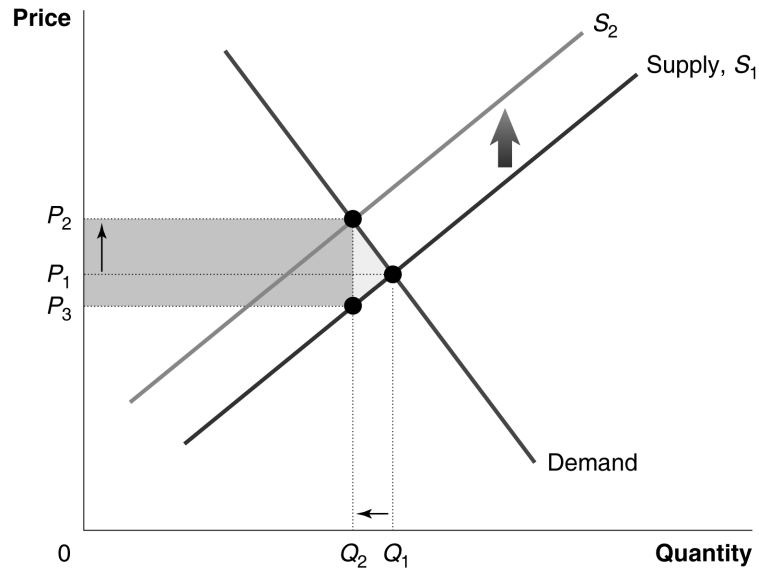
19. Which of the following is the *average tax rate*?
a. The fraction of each additional dollar of income that must be paid in taxes
b. The total tax paid divided by total income
c. The income range within which a tax rate applies
d. The tax rate paid by the average taxpayer

20. If the last dollar of income earned by individuals with the highest incomes is taxed at a rate that is less than the average tax rate which of the following is correct?
a. The marginal tax rate is equal to the average tax rate.
b. The income tax is a progressive income tax.
c. The income tax is a regressive income tax.
d. The individuals with the highest incomes will pay less in taxes than those with the lowest incomes.

21. Which of the following tax rates is a better indicator of people's willingness to work, save, and invest?
a. The average tax rate
b. The marginal tax rate
c. The average and the marginal tax rates are equally good indicators
d. Neither the average tax rate nor the marginal tax rate affects those decisions.

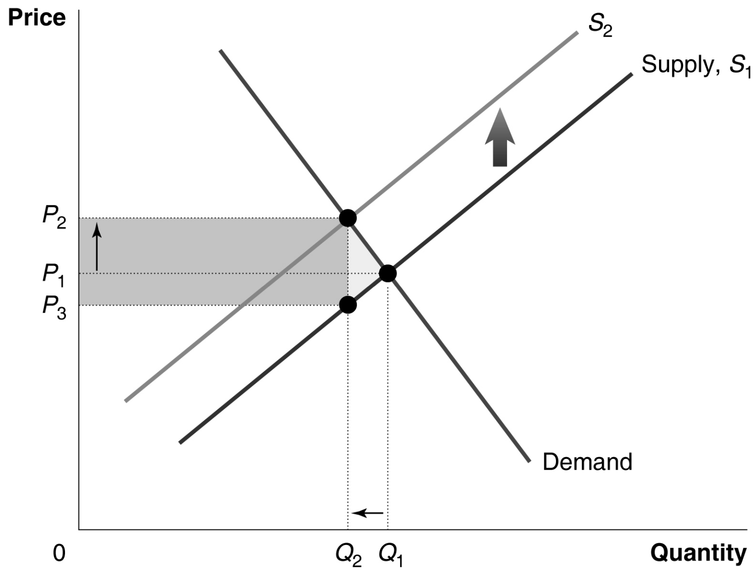
22. Which of the following statements is correct?
    a. The individual income tax is progressive but the corporate income tax is regressive.
    b. Most corporations are taxed at the highest tax rate of 35 percent.
    c. The corporate income tax eliminates the double taxation of dividends.
    d. All of the above

23. Refer to the graph below. Which of the following represents the government's revenue from a tax?



    a. The triangular area to the right of the shaded rectangle
    b. The shaded rectangle
    c. The arrow showing an increase in price, from P_1 to P_2
    d. The arrow showing a decrease in quantity, from Q_1 to Q_2

24. Refer to the graph below. Which of the following represents the excess burden of the tax?



a. The triangular area to the right of the shaded rectangle
b. The shaded rectangle
c. The arrow showing an increase in price, from P_1 to P_2
d. The arrow showing a decrease in quantity, from Q_1 to Q_2

25. Which term is given to a tax that imposes a small excess burden relative to the revenue it raises?
a. Fair
b. Efficient
c. Vertically equitable
d. Horizontally equitable

26. Which of the following is a tax associated with a high deadweight loss?
a. A tax on leisure
b. A tax on cigarettes
c. A tax on interest earned from saving
d. All of the above

27. If a CD offers a 3 percent interest rate and the interest is subject to a tax rate of 33 percent, what is the after-tax return on the investment in the CD?
a. 1 percent
b. 2 percent
c. 4 percent
d. −30 percent

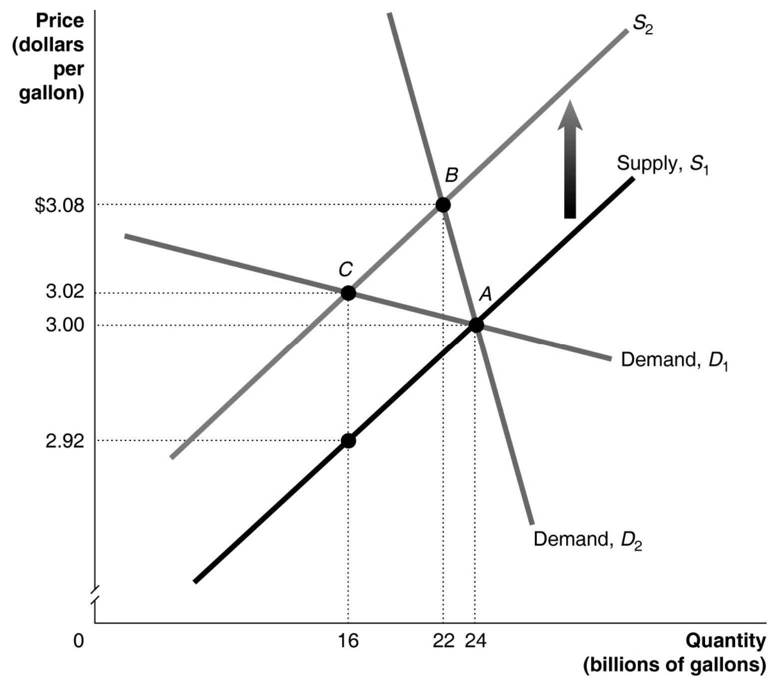
28. Which of the following is an accurate statement associated with the debate over whether the United States should switch from an income tax to a consumption tax?
    a. Under a consumption tax, present consumption would be taxed more favorably than future consumption.
    b. A better measure of well-being is income rather than consumption.
    c. Individuals whose savings are mainly in IRAs or 401(k) plans are already in effect paying consumption taxes rather than income taxes.
    d. All of the above

29. Which term below is associated with raising more taxes from people with high incomes than from people with low incomes?
    a. Horizontal equity
    b. Vertical equity
    c. Benefits received principle
    d. Tax incidence

30. Which of the following represents the *horizontal equity* principle of taxation?
    a. People in the same economic situation should be treated equally.
    b. Two people with the same income receive equal utility from consumption.
    c. A greater share of the tax burden should be borne by people who have a greater ability to pay.
    d. People who receive the benefits from a government program should pay the taxes that support that program.

31. Why is a sales tax inconsistent with the *ability to pay* principle?
    a. Because a sales tax does not treat two people who are in the same economic situation equally
    b. Because the revenue from a sales tax is used to benefit people who don't pay the tax
    c. Because poorer people tend to spend a larger fraction of their income than do richer people
    d. Because sales taxes are progressive

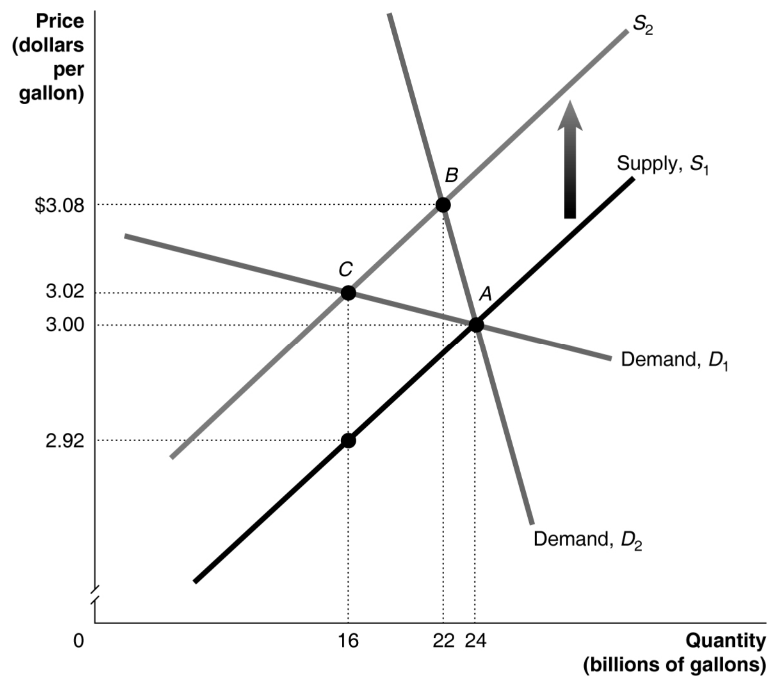
32. Refer to the graph below. When do consumers bear more of the burden of a tax?



a. When demand is D_1
b. When demand is D_2
c. The tax burden to consumers is identical for both demand curves.
d. When the elasticity of supply is very small

33. What name is given to the actual division of the burden of a tax between buyers and sellers in a market?
a. Horizontal equity
b. Vertical equity
c. Tax incidence
d. The benefits-received principle

34. Refer to the graph below. In which case do firms end up paying the majority of the tax?



a. When demand is D_1
b. When demand is D_2
c. When supply is S_1
d. When the excess burden is small

35. Which of the following is true about the distribution of income in the United States over time?
   a. Over time, there has been a dramatic decline in income inequality.
   b. Over time, there has been a dramatic increase in income inequality.
   c. Over time, there have been no dramatic changes in the distribution of income.
   d. Over time, the distribution of income has been very volatile, with both large increases and large declines in income equality.

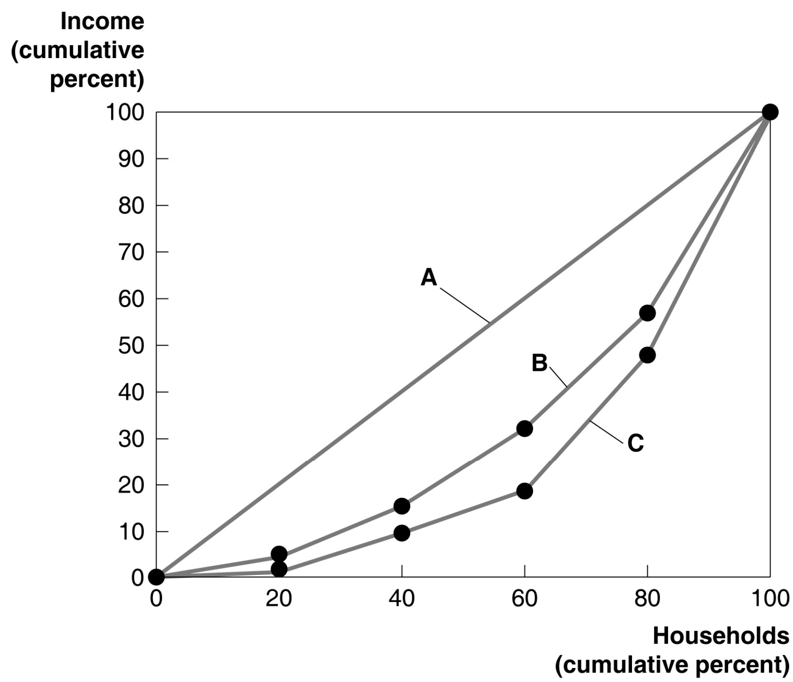
36. What do you call the level of annual income equal to three times the amount necessary to purchase the minimal quantity of food required for adequate nutrition?
   a. The poverty rate
   b. The poverty line
   c. The Lorenz curve
   d. The Gini coefficient

37. Which of the following is a true statement about the poverty rate in the United States?
   a. Over the last 30 years, the poverty rate has fluctuated between 11 and 15 percent of the population.
   b. Over the last 30 years, the poverty rate declined substantially, from 35 percent to 9 percent.
   c. The poverty rate increased, from 16 percent in 1970 to over 23 percent in 2003.
   d. Over the last 30 years, the poverty rate has remained constant at about 4 percent of the population.

38. Which of the following statements about poverty in the United States is correct?
    a. Individuals who are less productive or who help to produce goods and services that can be sold for only a low price will earn lower incomes.
    b. Ownership of capital is more equally distributed than income earned from labor.
    c. Poverty in the United States has increased dramatically in the last 20 years.
    d. All of the above

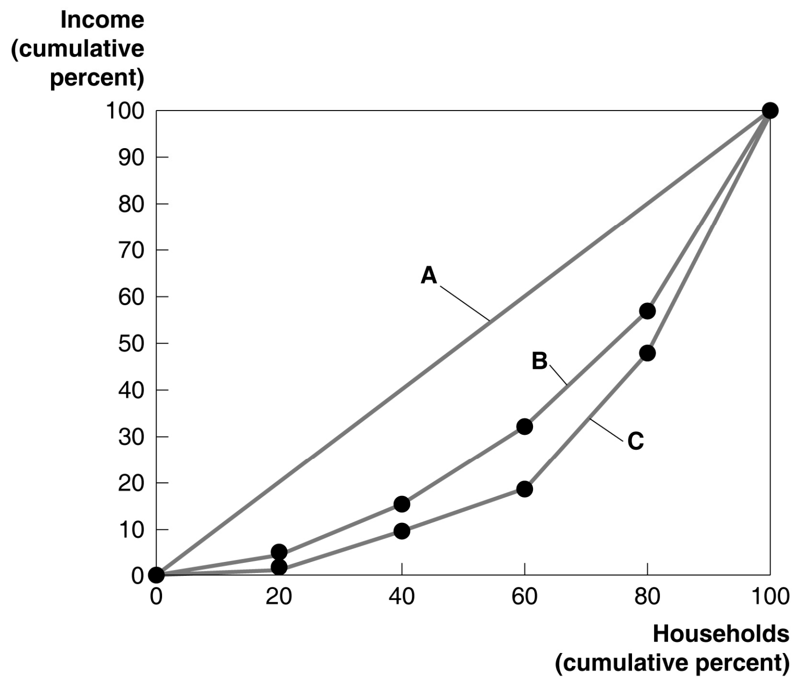
39. One of the following factors *does not* appear to contribute to income inequality. Which one?
    a. Expanding international trade
    b. Technological change
    c. Changes in tax rates
    d. None of the above; all of the above factors contribute to income inequality.

40. Refer to the graph below. Which of these curves shows a more unequal distribution of income?



    a. A
    b. B
    c. C
    d. None of the above; the distribution of income is the same along all three curves.

41. Refer to the graph below. When the income distribution is described by the line labeled A, what is the value of the Gini coefficient?



a. Zero
b. One
c. A value between zero and one
d. 45

42. What do statistics on income mobility in the United States show?
   a. Over time, there is very little income mobility.
   b. Over time, there is significant income mobility.
   c. Over time, income mobility has varied. Sometimes income mobility is significant and other times it is almost nonexistent.
   d. There are no studies on income mobility because income mobility is impossible to measure.

43. Which of the following statements about poverty in the United States is correct?
   a. The people who fall into poverty in any one year are likely to remain in poverty for many years.
   b. If 10 percent of the population is in poverty in a given year, the same 10 percent is likely to be in poverty in the next ten years.
   c. The number of people who remain in poverty for many years is much smaller than the number who are in poverty during any one year.
   d. None of the above

44. Which of the following statements about the effect of taxes and transfers on income distribution is correct?
    a. The Social Security system has failed to reduce poverty among people older than 65.
    b. The distribution of income worsens when we take transfer payments into account.
    c. Income after taxes is more equally distributed than income before taxes.
    d. All of the above

45. Which of the following statements about the distribution of income around the world is correct?
    a. The distribution of income in the United States is more equal than in some moderate-income countries, such as Brazil and Chile.
    b. The United States has the most unequal distribution of income of any high-income country in the world.
    c. The U.S. distribution of income is significantly less equal than some high-income countries, such as Norway and Japan.
    d. All of the above

Short Answer Questions

1. In the song "Taxman," George Harrison of The Beatles wrote this line:

   Let me tell you how it will be;
   There's one for you, nineteen for me

   What marginal tax rate does this imply? What percentage of George Harrison's total income would be paid in taxes at this tax rate?

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2. U.S. taxpayers may reduce their federal income tax liability by deducting the amount they pay for mortgage interest and real estate taxes on their homes. If these deductions were eliminated, how would this affect the housing market?

3. Investment in research and capital are important means for less developed countries to increase their rates of economic growth. In order to encourage saving and investment, should a less developed country use a consumption tax rather than an income tax to raise revenue needed for government expenditures?

4. If the current federal income tax system was replaced by a consumption tax, what impact would this have on the demand for accountants and lawyers and firms who assist taxpayers to complete their tax forms?

5. A 2001 study of the impact of cigarette prices on smoking found that the price elasticity of demand for high school smokers was about −1.0. This compares to an estimated price elasticity of demand for adults of about −0.4. Assume that the overall elasticity is −0.8. Who would bear the greater burden—consumers or producers—of a 10 percent increase in the price of cigarettes as a result of a federal excise tax increase?

   Source: H. Ross and F. Chaloupka, "The Effect of Cigarette Prices on Youth Smoking," http://repositories.cdlib.org/tc/reports/YO4.

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True/False Questions

T F 1. In the United States, income after taxes is more equally distributed than income before taxes.

T F 2. From 1970 to 2000, the poverty rate in Sub-Saharan Africa and south Asia declined but rose in Latin America.

T F 3. The closer the value of the Gini coefficient is to 1, the more unequal the distribution of income.

T F 4. Reductions in marginal tax rates in the United States from the 1950s to the 1990s have led to an increase in the degree of income inequality.

T F 5. Most economists favor increasing the corporate income tax because it is the most efficient tax imposed by the federal government.

T F 6. A consumption tax imposes the same tax rate on income spent and saved.

T F 7. The ability-to-pay principle states that people who receive benefits from a particular government program should pay for that program.

T F 8. Differences in tax rates on work explain much of the difference in the average annual number of hours worked in Europe and the United States.

T F 9. A progressive income tax system is consistent with the ability-to-pay principle of taxation.

T F 10. An excise tax is a tax imposed on the sale of a specific good.

T F 11. In the United States, sales taxes and excise taxes are the main source of funds for public schools.

T F 12. Medicaid is a federally funded program that provides medical assistance to the elderly.

T F 13. The public choice model can be used to conclude that Congress should abolish the Food and Drug Administration and the Federal Trade Commission.

T F 14. The Arrow impossibility theorem is used to explain why logrolling and rational ignorance help explain why rent-seeking makes efficient government regulation impossible.

T F 15. In a regressive income tax system, the marginal tax rate rises as income rises.

Answers to the Self-Test

Multiple-Choice Questions

Question	Response	Explanation
1	c	This result is known as the voting paradox. See pages 600-601 of the textbook.
2	c	The voting paradox refers to the failure of majority voting to always result in consistent choices.
3	d	See the discussion of the Arrow impossibility theorem on page 601 of the textbook.
4	d	Regulatory capture occurs in extreme cases where the influence of regulated firms leads the agency to make decisions that are not in the public interest. Some economists use the now-abolished Interstate Commerce Commission as an example of regulatory capture.
5	b	Logrolling occurs when a member of Congress votes to approve a bill in exchange for favorable votes from other members of Congress on other bills.
6	c	See the section "The Tax System," which begins on page 604.
7	c	Corporate income taxes amount to 15 percent of federal tax receipts and 4 percent of state tax receipts in 2006. Refer to Figure 18-2 in the textbook.
8	b	Sales taxes are collected only by state and local governments. They are the largest source of revenue for state and local governments.
9	a	Social insurance taxes comprised 36 percent of federal government revenue in 2006.
10	d	Over the past 40 years, federal revenues as a share of Gross Domestic Product have remained in a fairly narrow range between 17 and 23 percent. The largest source of revenue for state and local government is grants from the federal government. These grants are intended in part to pay for programs that the federal government requires states and local governments to carry out. These programs are often called *federal mandates*.
11	a	A tax is regressive if people with lower incomes pay a higher percentage of their income in tax than do people with higher incomes.
12	b	A tax is progressive if people with lower incomes pay a lower percentage of their income in tax than do people with higher incomes.
13	a	As income rises, tax rates on additional income also rise.
14	a	A *tax rate* is the percentage of income paid in taxes. A *tax bracket* refers to the income range within which a tax rate applies.
15	b	Federal income taxes are paid according to predetermined tax brackets, or income ranges. The rate at which income is taxed increases as additional income moves taxpayers into higher brackets.
16	a	Her first $7,825 of income is in the 10 percent bracket, so she pays $782.50 on this income. Her next $24,025 of income is in the 15 percent bracket, so she pays $3,603.75 on this income. Her next $45,250 of income is in the 25 percent bracket, so she pays $11,312.50 on this income. Her last $72,900 of income is in the 28 percent bracket, so she pays $20,412, which brings her total federal income tax bill to $36,110.75.
17	d	The highest 20 percent of income earners pay over 85 percent of the total federal individual income taxes and more than 70 percent of the total federal taxes. Refer to *Making the Connection* "Which Groups Pay the Most In Federal Taxes?" on pages 607-608.

18	c	The 40 percent of taxpayers with the lowest incomes pay only about 3 percent of all federal taxes, while the 20 percent with the highest incomes pay more than two-thirds of all federal taxes.
19	b	The fraction of each additional dollar of income that must be paid in taxes is called the marginal tax rate. The average tax rate is the total tax paid divided by total income.
20	c	In a regressive income tax system, people with lower incomes pay a higher percentage of their income in tax than do people with higher incomes. This means that the last dollar earned by people with the highest incomes will be taxed at a lower rate than the average tax rate.
21	b	When policymakers consider a change in tax policy, they should focus on the marginal tax rate rather than the average tax rate, because the marginal tax rate tells them how a change in a tax will affect people's willingness to work, save, and invest.
22	b	Like the individual income tax, the corporate income tax is progressive, with the lowest tax rate being 15 percent and the highest being 35 percent. Unlike the personal income tax, however, most corporations are in the 35 percent tax bracket. The corporate income tax "double taxes" earnings on individual shareholders' investments in corporations.
23	b	The government collects tax revenue equal to the tax per unit multiplied by the number of units sold. The shaded rectangle in the figure represents the government's tax revenue.
24	a	The deadweight loss from the tax is shown in the figure by the triangular area to the right of the shaded rectangle. The deadweight loss from a tax is referred to as the *excess burden* of the tax.
25	b	A tax is efficient if it imposes a small excess burden relative to the tax revenue it raises.
26	c	Economists argue that the government should reduce its reliance on taxes that have a high deadweight loss relative to the revenue raised. Taxes on income from saving are an example of such a reform because savings often come from income already taxed once.
27	b	The after-tax return is 3 percent x (1 – 0.33) = 2 percent.
28	c	Because the income tax taxes interest and other returns to saving, it taxes *future* consumption more heavily than *present* consumption. Individuals whose savings are mainly in retirement accounts are, in effect, already paying a consumption tax rather than an income tax.
29	b	Raising more taxes from people with high incomes than from people with low incomes is sometimes referred to as *vertical equity*.
30	a	Under the horizontal-equity principle, people in the same economic situation should be treated equally.
31	c	The sales tax is not consistent with the ability-to-pay principle because poorer people tend to spend a larger fraction of their income than richer people. As a result, poorer people will pay a greater fraction of their income in sales taxes than will richer people.
32	b	D_2 is a relatively inelastic demand curve. When the elasticity of demand for a product is smaller than the elasticity of supply, consumers pay the majority of the tax on the product.
33	c	The actual division of the burden of a tax between buyers and sellers in a market is referred to as tax incidence.

34	a	When demand is more elastic, as with demand curve D_1, firms end up paying the majority of the tax. When demand is less elastic, as with demand curve D_2, consumers end up paying the majority of the tax.
35	c	Over time there have not been dramatic changes in distribution of income. There was some decline in inequality from 1936 to 1980, followed by some increase in inequality from 1980 to today.
36	b	The poverty line is the level of annual income equal to three times the amount necessary to purchase the minimal quantity of food required for adequate nutrition. The poverty rate is the percentage of the population that is poor, according to the definition of the poverty line.
37	a	Between 1960 and 1973, the poverty rate declined by half, falling from 22 percent of the population to 11 percent. In the past 30 years, however, the poverty rate has declined very little. Over this time, the poverty rate has fluctuated between 11 percent and 15 percent of the population. In 2005, it was actually slightly greater than it was in 1973.
38	a	People who are less productive, or who help to produce goods and services that can be sold only for a low price, will earn lower incomes.
39	c	Tax rates changed dramatically, but the distribution of income has changed relatively little, so it seems unlikely that changes in tax rates have had a large impact on the distribution of income.
40	c	Since this curve is farthest away from the line of perfect equality (*A*), it shows a less equally distributed income than lines *A* or *B*.
41	a	If the income distribution were perfectly equal, the Lorenz curve would be the same as the line of perfect income equality, area *A* would be zero, and so would the Gini coefficient. If the income distribution were perfectly unequal, area *B* would be zero, and the Gini coefficient would equal one. Therefore, the greater the degree of income inequality, the greater the value of the Gini coefficient.
42	b	The study illustrated in the textbook indicates that there is significant income mobility in the United States over time.
43	c	Poverty remains a problem in the United States, but the number of people who remain in poverty for many years is much smaller than the number that are in poverty during any one year.
44	c	We have seen that at the federal level taxes are progressive, meaning that high income people pay a larger share of their incomes in taxes than do low income people. Therefore, income remaining after taxes is more equally distributed than income before taxes.
45	d	The distribution of income in the United States is more equal than some moderate-income countries, such as Brazil and Chile, but less equal than other moderate-income countries, such as Thailand. The United States has the most unequal distribution of income of any high-income country in the world.

Short Answer Responses

1. Harrison's song was a reaction to the marginal tax rates that had been levied on taxpayers in the highest tax brackets (those with the highest incomes) in Great Britain in the 1960s. The song implies that the government's marginal tax rate was 95 percent (£19 of each £20 of income was taxed). Although this rate applies to the next, or last, British pound Harrison earned, one cannot determine the percentage of total income he paid in taxes – his average tax rate – because different marginal tax rates apply to different levels of income.

2. The elimination of these deductions would increase the price of home ownership. The quantity demanded of single family houses would fall as some people who would have purchased a home look for other forms of shelter (for example, an apartment or moving in with relatives). The increase in demand for rental units should raise rents in the short run. In the long run, there will likely be increased construction of rental units and some decline in the construction of new single family homes. Proposals to eliminate these deductions would face strong opposition from home owners and their elected representatives. Those who purchased homes in the past in anticipation of receiving these deductions would argue their elimination would unfairly punish them by increasing their tax liability and reducing the market value of their homes. (Most current proposals for eliminating the mortgage interest deduction include a clause that would allow holders of existing mortgages to continue to deduct the interest.)

3. It is very difficult for people from poor countries to reduce their consumption in order to increase saving. Most of their income is spent on food, clothing, shelter and other necessities. A consumption tax would be more effective in increasing saving among high income earners in developed countries.

4. There would be a large decrease in the demand for tax lawyers and accountants. H&R Block, the largest tax service firm in the United States, had sales of over $4 billion in 2005. Most of Block's employees, along with thousands of others who provide income tax assistance to individuals, would have to find other work to do. Income tax assistance can be considered a "regrettable necessity." Those made unemployed by the elimination of the income tax would be free to produce other goods and services which would (eventually) result in a net benefit to the U.S. economy.

5. The answer to this question depends on the elasticity of supply of cigarettes. Taking the absolute value of the demand elasticity, if the elasticity of supply is less than 0.8, smokers would bear the greater burden of the price increase. If the elasticity of supply is less than 0.8, smokers would bear the greater burden of the price increase. In response to the price increase, teenage smokers would reduce their consumption of cigarettes more than adults; teenagers are less likely to be addicted to nicotine and have lower average incomes than adults.

True/False Answers

1. T This is due to the progressivity of the federal income tax and the income received from Social Security payments and other government transfer payments.
2. F The poverty rate in Asia and Latin America fell, but rose in Sub-Saharan Africa due to differences in rates of economic growth.
3. T See the section "Income Distribution and Poverty" beginning on page 615.
4. F The top marginal tax rate declined from 91 percent in the 1950s to 35 in 2006, but the distribution of income has changed only slightly.
5. F The corporate income tax is one of the least efficient federal taxes. Many economists support corporate income tax reform.

6. F A consumption tax applies only to income spent, not on income saved.
7. F This is a statement of the benefits-received principle.
8. T This is a conclusion reached by Edward Prescott. See the section "Evaluating Taxes" beginning on page 609.
9. T See the section "Evaluating Taxes" beginning on page 609.
10. T See the section "The Tax System" beginning on page 604.
11. F The property tax is the major source of funds for public schools.
12. F Medicaid provides health care to poor people. Medicare helps to pay the medical expenses of people over age 65.
13. F Most economists believe that these agencies can serve a useful purpose, but the public choice model helps us to understand that government regulation imposes costs on consumers as well as providing benefits.
14. F The Arrow impossibility theorem shows how no system of voting can be devised that will consistently represent the underlying preferences of voters.
15. F Marginal tax rates rise with income in a progressive income tax system.