

chapter

# 1

## An Introduction to Tax

### Learning Objectives

Upon completing this chapter, you should be able to:

- LO 1-1** Demonstrate how taxes influence basic business, investment, personal, and political decisions.  
\_\_\_\_\_ ■ \_\_\_\_\_
- LO 1-2** Discuss what constitutes a tax and the general objectives of taxes.  
\_\_\_\_\_ ■ \_\_\_\_\_
- LO 1-3** Describe the different tax rate structures and calculate a tax.  
\_\_\_\_\_ ■ \_\_\_\_\_
- LO 1-4** Identify the various federal, state, and local taxes.  
\_\_\_\_\_ ■ \_\_\_\_\_
- LO 1-5** Apply appropriate criteria to evaluate alternate tax systems.

**M**

argaret is a junior beginning her first tax course. She is excited about her career prospects as an accounting major but hasn't had much exposure to taxes. On her way to campus she runs into an old friend, Eddy, who is going to Washington, DC, to protest recent proposed changes to the U.S. tax system. Eddy is convinced the IRS is evil and that the current tax system is blatantly unfair and corrupt. He advocates a simpler, fairer way of taxation. Margaret is intrigued by Eddy's passion but questions whether he has a complete understanding of the U.S. tax system. She decides to withhold all judgments about it (or about pursuing a career in taxation) until the end of her tax course. ■



#### Storyline Summary

<i>Taxpayer:</i>	Margaret
<i>Employment status:</i>	Margaret is a full-time student at the University of Georgia.
<i>Current situation:</i>	She is beginning her first tax class.

## LO 1-1

**WHO CARES ABOUT TAXES AND WHY?**

A clear understanding of the role of taxes in everyday decisions will help you make an informed decision about the value of studying taxation or pursuing a career in taxation. One view of taxation is that it represents an inconvenience every April 15th (the annual due date for filing federal individual tax returns without extensions). However, the role of taxation is much more pervasive than this view suggests. Your study of this subject will provide you a unique opportunity to develop an informed opinion about taxation. As a business student, you can overcome the mystery that encompasses popular impressions of the tax system and perhaps, one day, share your expertise with friends or clients.

What are some common decisions you face that taxes may influence? In this course, we alert you to situations in which you can increase your return on investments by up to one third! Even the best lessons in finance courses can't approach the increase in risk-adjusted return that smart tax planning provides. Would you like to own your home someday? Tax deductions for home mortgage interest and real estate taxes can reduce the after-tax costs of owning a home relative to renting. Thus, when you face the decision to buy or rent, you can make an informed choice if you understand the relative tax advantages of home ownership. Would you like to retire someday? Understanding the tax-advantaged methods of saving for retirement can increase the after-tax value of your retirement nest egg—and thus increase the likelihood that you can afford to retire, and do so in style. Other common personal financial decisions that taxes influence include: choosing investments, evaluating alternative job offers, saving for education expenses, and doing gift or estate planning. Indeed, taxes are a part of everyday life and have a significant effect on many of the personal financial decisions all of us face.

The role of taxes is not limited to personal finance. Taxes play an equally important role in fundamental business decisions such as the following:

- What organizational form should a business use?
- Where should the business locate?
- How should business acquisitions be structured?
- How should the business compensate employees?
- What is the appropriate mix of debt and equity for the business?
- Should the business rent or own its equipment and property?
- How should the business distribute profits to its owners?

Savvy business decisions require owners and managers to consider all costs and benefits in order to evaluate the merits of a transaction. Although taxes don't necessarily dominate these decisions, they do represent large transaction costs that businesses should factor into the financial decision-making process.

Taxes also play a major part in the political process. U.S. presidential candidates often distinguish themselves from their opponents based upon their tax rhetoric. Indeed, the major political parties generally have very diverse views of the appropriate way to tax the public.<sup>1</sup> Determining who is taxed, what is taxed, and how much is taxed are tough questions with nontrivial answers. Voters must have a basic understanding of taxes to evaluate the merits of alternative tax proposals. Later in this chapter, we'll introduce criteria you can use to evaluate alternative tax proposals.

<sup>1</sup>The U.S. Department of the Treasury provides a "history of taxation" on its website ([www.treasury.gov/resource-center/faqs/Taxes/Pages/historyrooseveltmessage.aspx](http://www.treasury.gov/resource-center/faqs/Taxes/Pages/historyrooseveltmessage.aspx)). You may find it interesting to read this history in light of the various political parties in office at the time.

## Taxes in the Real World *Republicans vs. Democrats*

We often boil down the tax policy of our major political parties into its simplest form: Democrats raise taxes to fund social programs, and Republicans lower taxes to benefit big businesses and the wealthy. Both ideas simplify the policy of each party, yet both ideas are essentially true.

Whether you agree with more government spending or tax breaks for corporations, each party's agenda will affect your taxes.

### Political Ideology: Republican

"We believe government should tax only to raise money for its essential functions." The Republicans state their case plainly on the Republican National Convention website. That is, Republicans believe government should spend money only to enforce contracts, maintain basic infrastructure and national security, and protect citizens against criminals.

The literature of the House Republican Conference goes on to illuminate the role of the government and how tax policies affect individuals: "The money the government spends does not belong to the government; it belongs to the taxpayers who earned it. Republicans believe Americans deserve to keep more of their own money to save and invest for the future, and low tax policies help drive a strong and healthy economy."

Tax relief is the Republican route to growing the economy. A Republican government would reduce taxes for businesses to allow businesses to grow and thus hire more employees. Republicans also

seek to limit income taxes for individuals so that people can hold on to more disposable income, which they can then spend, save, or invest.

### Political Ideology: Democrat

The tax policy for the Democratic Party calls for raising certain taxes to provide money for government spending, which in turn generates business. The party platform asserts that government spending provides "good jobs and will help the economy today."

Many Democrats are adherents to Keynesian economics, or aggregate demand, which holds that when the government funds programs, those programs pump new money into the economy. Keynesians believe that prices tend to stay relatively stable and therefore any kind of spending, whether by consumers or the government, will grow the economy.

Like the Republicans, Democrats believe the government should subsidize vital services that keep cities, states, and the country running: infrastructure such as road and bridge maintenance and repairs for schools. Democrats also call for tax cuts for the middle class. But who benefits most under each platform? The conventional wisdom is that corporations and the wealthy will benefit more with a Republican tax policy, while small businesses and middle-class households will benefit from a Democratic tax policy.

<http://www.investopedia.com/articles/economics/09/us-parties-republican-democrat-taxes.asp#axzz2A39IKvln>.

In summary, taxes affect many aspects of personal, business, and political decisions. Developing a solid understanding of taxation should allow you to make informed decisions in these areas. Thus, Margaret can take comfort that her semester will likely prove useful to her personally. Who knows? Depending on her interest in business, investment, retirement planning, and the like, she may ultimately decide to pursue a career in taxation.

## WHAT QUALIFIES AS A TAX?

"Taxes are the price we pay for a civilized society."—Oliver Wendell Holmes Jr.

Taxes have been described in many terms: some positive, some negative, some printable, some not. Let's go directly to a formal definition of a tax, which should prove useful in identifying alternative taxes and discussing alternative tax systems.

A **tax** is a payment required by a government that is unrelated to any specific benefit or service received from the government. The general purpose of a tax is to fund the operations of the government (to raise revenue). Taxes differ from fines and penalties in that taxes are not intended to punish or prevent illegal behavior. Nonetheless, by allowing deductions from income, our federal tax system does

### THE KEY FACTS

#### What Qualifies as a Tax?

- The general purpose of taxes is to fund government agencies.
- Unlike fines or penalties, taxes are not meant to punish or prevent illegal behavior; but "sin taxes" are meant to discourage some behaviors.
- The three criteria necessary to be a tax are that the payment is
  - required
  - imposed by a government
  - and not tied directly to the benefit received by the taxpayer.

### LO 1-2

encourage certain behaviors like charitable contributions, retirement savings, and research and development. Thus, we can view it as discouraging other legal behavior. For example, **sin taxes** impose relatively high surcharges on alcohol and tobacco products.<sup>2</sup>

Key components of the definition of a tax are that:

- the payment is required (it is not voluntary),
- the payment is imposed by a government agency (federal, state, or local), and
- the payment is not tied directly to the benefit received by the taxpayer.

This last point is not to say that taxpayers receive no benefits from the taxes they pay. They benefit from national defense, a judicial system, law enforcement, government-sponsored social programs, an interstate highway system, public schools, and many other government-provided programs and services. The distinction is that taxes paid are not *directly* related to any specific benefit received by the taxpayer. For example, the price of admission to Yellowstone National Park is a fee rather than a tax because a specific benefit is received.

Can taxes be assessed for special purposes, such as a 1 percent sales tax for education? Yes. Why is an **earmarked tax**, a tax that *is* assessed for a specific purpose, still considered a tax? Because the payment made by the taxpayer does not directly relate to the specific benefit *received by the taxpayer*.

### Example 1-1

Margaret travels to Birmingham, Alabama, where she rents a hotel room and dines at several restaurants. The price she pays for her hotel room and meals includes an additional 2 percent city surcharge to fund roadway construction in Birmingham. Is this a tax?

**Answer:** Yes. The payment is required by a local government and does not directly relate to a specific benefit that Margaret receives.

### Example 1-2

Margaret's parents, Bill and Mercedes, recently built a house and were assessed \$1,000 by their county government to connect to the county sewer system. Is this a tax?

**Answer:** No. The assessment was mandatory and it was paid to a local government. However, the third criterion was not met since the payment directly relates to a specific benefit (sewer service) received by the payees. For the same reason, tolls, parking meter fees, and annual licensing fees are also not considered taxes.

### LO 1-3

## HOW TO CALCULATE A TAX

In its simplest form, the amount of tax equals the tax base multiplied by the tax rate:

$$\text{Tax} = \text{Tax Base} \times \text{Tax Rate} \quad \text{Eq. 1-1}$$

The **tax base** defines what is actually taxed and is usually expressed in monetary terms, whereas the **tax rate** determines the level of taxes imposed on the tax base and is usually expressed as a percentage. For example, a sales tax rate of 6 percent on a purchase of \$30 yields a tax of \$1.80 ( $\$1.80 = \$30 \times .06$ ).

Federal, state, and local jurisdictions use a large variety of tax bases to collect tax. Some common tax bases (and related taxes) include taxable income (federal and

<sup>2</sup>Sin taxes represent an interesting confluence of incentives. On the one hand, demand for such products as alcohol, tobacco, and gambling is often relatively inelastic because of their addictive quality. Thus, taxing such a product can raise substantial revenues. On the other hand, one of the arguments for sin taxes is frequently the social goal of *reducing* demand for such products.

state income taxes), purchases (sales tax), real estate values (real estate tax), and personal property values (personal property tax).

Different portions of a tax base may be taxed at different rates. A single tax applied to an entire base constitutes a **flat tax**. In the case of **graduated taxes**, the base is divided into a series of monetary amounts, or **brackets**, and each successive bracket is taxed at a different (gradually higher or gradually lower) percentage rate.

Calculating some taxes—income taxes for individuals or corporations, for example—can be quite complex. Advocates of flat taxes argue that the process should be simpler. But as we’ll see throughout the text, most of the difficulty in calculating a tax rests in determining the tax *base*, not the tax rate. Indeed, there are only three basic tax rate structures (proportional, progressive, and regressive), and each can be mastered without much difficulty.

## DIFFERENT WAYS TO MEASURE TAX RATES

Before we discuss the alternative tax rate structures, let’s first define three different tax rates that will be useful in contrasting the different tax rate structures: the marginal, average, and effective tax rates.

The **marginal tax rate** is the tax rate that applies to the *next additional increment* of a taxpayer’s taxable income (or deductions). Specifically,

$$\text{Marginal Tax Rate} = \frac{\Delta \text{Tax}^*}{\Delta \text{Taxable Income}} = \frac{(\text{New Total Tax} - \text{Old Total Tax})}{(\text{New Taxable Income} - \text{Old Taxable Income})}$$

Eq. 1-2

\*Δ means *change in*.

where “old” refers to the current tax and “new” refers to the revised tax after incorporating the additional income (or deductions) in question. In graduated income tax systems, additional income (deductions) can push a taxpayer into a higher (lower) tax bracket, thus changing the marginal tax rate.

### THE KEY FACTS

#### How to Calculate a Tax

■  $\text{Tax} = \text{Tax Base} \times \text{Tax Rate}$

■ The tax base defines what is actually taxed and is usually expressed in monetary terms.

■ The tax rate determines the level of taxes imposed on the tax base and is usually expressed as a percentage.

■ Different portions of a tax base may be taxed at different rates.

### Example 1-3

Margaret’s parents, Bill and Mercedes, file a joint tax return. They have \$160,000 of taxable income this year (after all tax deductions). Assuming the following federal tax rate schedule applies, how much federal income tax will they owe this year?<sup>3</sup>

#### 2013 Federal Married Filing Jointly Tax Rate Schedule

If taxable income is over-	But not over	The tax is:
\$ 0	\$ 17,850	10% of the amount over \$0
17,850	72,500	\$1,785 plus 15% of the excess over \$17,850
72,500	146,400	\$9,982.50 plus 25% of the excess over \$72,500
146,400	223,050	\$28,457.50 plus 28% of the excess over \$146,400
223,050	398,350	\$49,919.50 plus 33% of the excess over \$223,050
398,350	450,000	\$107,768 plus 35% of the excess over \$398,350
450,000	no limit	\$125,846 plus 39.6 of the excess over \$450,000

**Answer:** Bill and Mercedes will owe \$32,265.50 computed as follows:

$$\$32,265.50 = \$28,457.50 + 28\% (\$160,000 - \$146,400)$$

<sup>3</sup>The tax rate schedules for single, married filing jointly, married filing separately, and head of household are included inside the back cover of the text.

Note that in this graduated tax rate structure, the first \$17,850 of taxable income is taxed at 10 percent, the next \$54,650 of taxable income (between \$17,850 and \$72,500) is taxed at 15 percent, the next \$73,900 of taxable income (between \$72,500 and \$146,400) is taxed at 25 percent. Bill and Mercedes' last \$13,600 of taxable income (between \$146,400 and \$160,000) is taxed at 28 percent.

Many taxpayers incorrectly believe that all their income is taxed at their marginal rate. This mistake leads people to say, "I don't want to earn any additional money because it will put me in a higher tax bracket." Bill and Mercedes are currently in the 28 percent marginal tax rate bracket, but notice that *not* all their income is taxed at this rate. Their *marginal* tax rate is 28 percent. This means that small increases in income will be taxed at 28 percent, and small increases in tax deductions will generate tax *savings* of 28 percent. If Bill and Mercedes receive a large increase in income (or in deductions) such that they would change tax rate brackets, we cannot identify their marginal tax rate by simply identifying their current tax bracket.

### Example 1-4

Bill, a well-known economics professor, signs a publishing contract with an \$80,000 royalty advance. Using the rate schedule from Example 1-3, what would Bill and Mercedes' marginal tax rate be on this additional \$80,000 of taxable income?

**Answer:** 29.06 percent, computed as follows:

Description	Amount	Explanation
(1) Taxable income with additional \$80,000 of taxable income	\$ 240,000	\$80,000 plus \$160,000 taxable income stated in Example 1-3.
(2) Tax on \$240,000 taxable income	\$ 55,513	Using the rate schedule in Example 1-3. \$55,513 = \$49,919.50 + 33% × (\$240,000 - \$223,050).
(3) Taxable income before additional \$80,000 of taxable income	\$ 160,000	Example 1-3.
(4) Tax on \$160,000 taxable income	\$32,265.50	Example 1-3.
Marginal tax rate on additional	29.06%	$\frac{\Delta \text{Tax}}{\Delta \text{Taxable Income}} = [(2) - (4)] / [(1) - (3)]$

Note that Bill and Mercedes' marginal tax rate on the \$80,000 increase in taxable income rests *between* the 28 percent and 33 percent bracket rates because a portion of the additional income (\$223,050 - \$160,000 = \$63,050) is taxed at 28 percent with the remaining income (\$240,000 - \$223,050 = \$16,950) taxed at 33 percent.

### Example 1-5

Assume now that, instead of receiving a book advance, Bill and Mercedes start a new business that *loses* \$80,000 this year (it results in \$80,000 of additional tax deductions). What would be their marginal tax rate for these deductions?

**Answer:** 25.51 percent, computed as follows:

Description	Amount	Explanation
(1) Taxable income with additional \$80,000 of tax deductions	\$ 80,000	\$160,000 taxable income stated in Example 1-3 less \$80,000.
(2) Tax on \$80,000 taxable income	\$11,857.50	Using the rate schedule in Example 1-3. \$11,857.50 = \$9,982.50 + 25% × (80,000 - \$72,500).



Description	Amount	Explanation
(3) Taxable income before additional \$80,000 of tax deductions	\$ 160,000	Example 1-3.
(4) Tax on \$160,000 taxable income	\$32,265.50	Example 1-3.
Marginal tax rate on additional \$80,000 of tax deductions	25.51%	$\frac{\Delta \text{Tax}}{\Delta \text{Taxable Income}} = [(2) - (4)] / [(1) - (3)]$

Bill and Mercedes' marginal tax rate on \$80,000 of additional deductions (25.51 percent) differs from their marginal tax rate on \$80,000 of additional taxable income (29.06 percent) in these scenarios because of the relatively large increase in income and deductions. Taxpayers often will face the same marginal tax rates for small changes in income and deductions.

The marginal tax rate is particularly useful in tax planning because it represents the rate of taxation or savings that would apply to additional taxable income (or tax deductions). In Chapter 3, we discuss basic tax planning strategies that use the marginal tax rate.

The **average tax rate** represents a taxpayer's average level of taxation on each dollar of taxable income. Specifically,

$$\text{Average Tax Rate} = \frac{\text{Total Tax}}{\text{Taxable Income}} \quad \text{Eq. 1-3}$$

The average tax rate is often used in budgeting tax expense as a portion of income (what percent of taxable income earned is paid in tax).

The **effective tax rate** represents the taxpayer's average rate of taxation on each dollar of total income (sometimes referred to as economic income), including taxable *and* nontaxable income. Specifically,

$$\text{Effective Tax Rate} = \frac{\text{Total Tax}}{\text{Total Income}} \quad \text{Eq. 1-4}$$

Relative to the average tax rate, the effective tax rate provides a better depiction of a taxpayer's tax burden because it depicts the taxpayer's total tax paid as a ratio of the sum of both taxable and nontaxable income earned.

**THE KEY FACTS**

**Different Ways to Measure Tax Rates**

■ **Marginal tax rate**

- The tax that applies to next increment of income or deduction.
- $= \frac{\Delta \text{Tax}}{\Delta \text{Taxable Income}}$
- Useful in tax planning.

■ **Average tax rate**

- A taxpayer's average level of taxation on each dollar of *taxable* income.
- $= \frac{\text{Total Tax}}{\text{Taxable Income}}$
- Useful in budgeting tax expense.

■ **Effective tax rate**

- A taxpayer's average rate of taxation on each dollar of *total* income (taxable *and* nontaxable income).
- $= \frac{\text{Total Tax}}{\text{Total Income}}$
- Useful in comparing the relative tax burdens of taxpayers.

**Example 1-6**

Assuming Bill and Mercedes have \$160,000 of taxable income and \$10,000 of nontaxable income, what is their average tax rate?

**Answer:** 20.17 percent, computed as follows:

Description	Amount	Explanation
(1) Taxable income	\$ 160,000	
(2) Tax on \$160,000 taxable income	\$32,265.50	Example 1-3.
Average tax rate	20.17%	$\frac{\text{Total Tax}}{\text{Taxable Income}} = (2)/(1)$

We should not be surprised that Bill and Mercedes' average tax rate is lower than their marginal tax rate because, although they are currently in the 28 percent tax rate bracket, not all of their taxable income is subject to tax at 28 percent. The first



\$17,850 of their taxable income is taxed at 10 percent, their next \$54,650 is taxed at 15 percent, their next \$73,900 is taxed at 25 percent, and only their last \$13,600 of taxable income is taxed at 28 percent. Thus, their average tax rate is considerably lower than their marginal tax rate.

**Example 1-7**

Again, given the same income figures as in Example 1-6 (\$160,000 of taxable income and \$10,000 of nontaxable income), what is Bill and Mercedes' effective tax rate?

**Answer:** 18.98 percent, computed as follows:

Description	Amount	Explanation
(1) Total income	\$ 170,000	\$160,000 taxable income plus \$10,000 in nontaxable income (Example 1-6).
(2) Tax on \$160,000 taxable income	\$32,265.50	Example 1-3.
Effective tax rate	18.98%	$\frac{\text{Total Tax}}{\text{Total Income}} = (2)/(1)$

Should we be surprised that the effective tax rate is lower than the *average* tax rate? No, because except when the taxpayer has more nondeductible expenses (such as fines or penalties) than nontaxable income (such as tax-exempt interest), the effective tax rate will be equal to or less than the average tax rate.

**TAX RATE STRUCTURES**

There are three basic tax rate structures used to determine a tax: proportional, progressive, and regressive.

**Proportional Tax Rate Structure**

A **proportional tax rate structure**, also known as a flat tax, imposes a constant tax rate throughout the tax base. As the tax base increases, the taxes paid increase proportionally. Because this rate stays the same throughout all levels of the tax base, the marginal tax rate remains constant and, in fact, equals the average tax rate (see Exhibit 1-1). The most common example of a proportional tax is a sales tax, although Steve Forbes proposed a flat income tax as part of his 1996 and 2000 presidential campaigns.

To calculate the tax owed for a proportional tax, simply use Equation 1-1 to multiply the tax base by the tax rate.

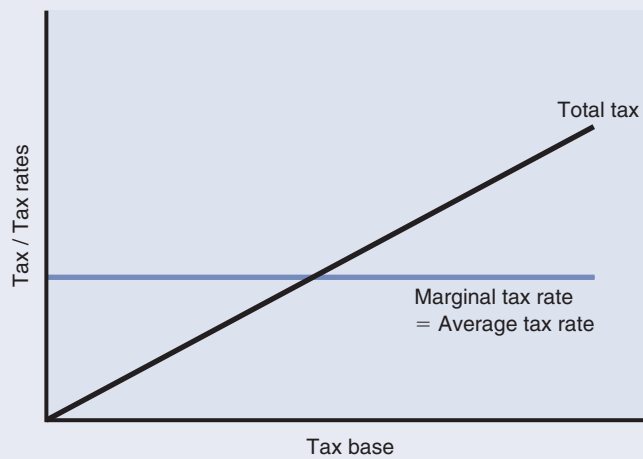
$$\text{Proportional Tax} = \text{Tax Base} \times \text{Tax Rate}$$

**Example 1-8**

Knowing her dad is a serious Bulldog fan, Margaret buys a \$100 sweatshirt in downtown Athens. The city of Athens imposes a sales tax rate of 7 percent. How much tax does Margaret pay on the purchase?

**Answer:** \$100 purchase (tax base) × 7% (tax rate) = \$7

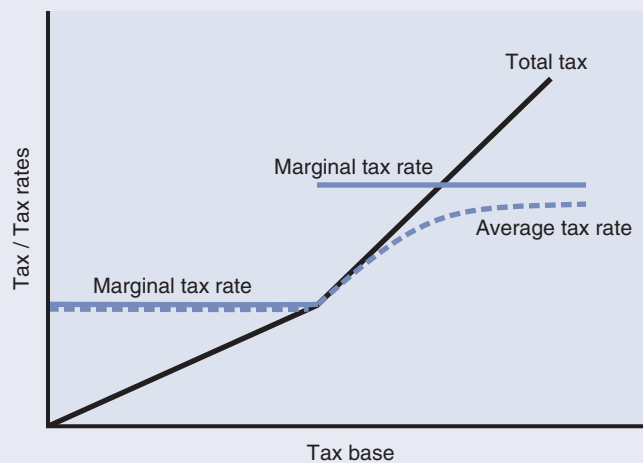
**EXHIBIT 1-1** Proportional Tax Rate



**Progressive Tax Rate Structure**

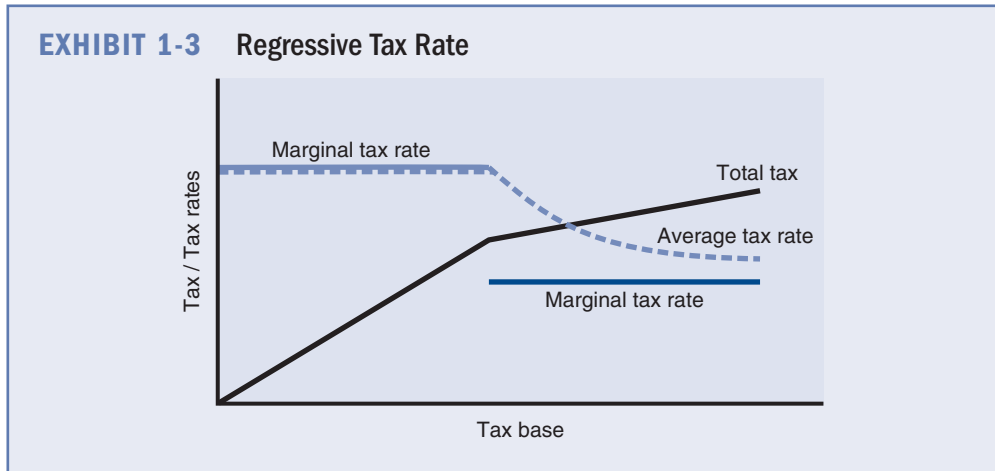
A **progressive tax rate structure** imposes an increasing marginal tax rate as the tax base increases. Thus as the tax base increases, both the marginal tax rate and the taxes paid increase. Common examples of progressive tax rate structures include federal and most state income taxes. The tax rate schedule in Example 1-3 is a progressive tax rate structure. As illustrated in Exhibit 1-2, the average tax rate in a progressive tax rate structure will always be less than or equal to the marginal tax rate.

**EXHIBIT 1-2** Progressive Tax Rate



**Regressive Tax Rate Structure**

A **regressive tax rate structure** imposes a decreasing marginal tax rate as the tax base increases (see Exhibit 1-3). As the tax base increases, the taxes paid increases, but the marginal tax rate decreases. Regressive tax rate structures are not common.



In the United States, the Social Security tax and federal and state unemployment taxes employ a regressive tax rate structure.<sup>4</sup>

However, some taxes are regressive when viewed in terms of effective tax rates. For example, a sales tax is a proportional tax by definition, because as taxable purchases increase, the sales tax rate remains constant.<sup>5</sup> Nonetheless, when you consider that the proportion of your total income spent on taxable purchases likely decreases as your total income increases, you can see the sales tax as a regressive tax.

**Example 1-9**

Bill and Mercedes have two single friends, Elizabeth and Marc, over for dinner. Elizabeth earns \$300,000 as CFO of a company and spends \$70,000 for purchases subject to the 7 percent sales tax. Marc, who earns \$75,000 as a real estate agent, spends \$30,000 of his income for taxable purchases. Let's compare their marginal, average, and effective tax rates for the sales tax with Bill and Mercedes, who spend \$50,000 of their income for taxable purchases:

**THE KEY FACTS**

**Tax Rate Structures**

- **Proportional tax rate structure**
  - Imposes a constant tax rate throughout the tax base.
  - As a taxpayer's tax base increases, the taxpayer's taxes increase proportionally.
  - The marginal tax rate remains constant and always equals the average tax rate.
- **Progressive tax rate structure**
  - Imposes an increasing marginal tax rate as the tax base increases.
  - As a taxpayer's tax base increases, both the marginal tax rate and the taxes paid increase.

	<b>Elizabeth</b>	<b>Bill and Mercedes</b>	<b>Marc</b>
Total income (1)	\$300,000	\$170,000	\$75,000
Total purchases subject to 7% sales tax (2)	\$ 70,000	\$ 50,000	\$30,000
Sales tax paid (3)	\$ 4,900	\$ 3,500	\$ 2,100
Marginal tax rate	7%	7%	7%
Average tax rate (3)/(2)	7%	7%	7%
Effective tax rate (3)/(1)	1.6%	2.1%	2.8%

Is the sales tax regressive?  
**Answer:** Yes. In terms of *effective* tax rates.

<sup>4</sup>Wages subject to the Social Security tax (6.2 percent in 2013) are capped each year (\$113,700 in 2013). Wages in excess of the cap are not subject to the tax. As might be expected, the maximum Social Security retirement benefit is capped as a function of the maximum wage base. Likewise, the federal and state unemployment tax bases and related unemployment benefits are capped.

<sup>5</sup>For example, a destitute taxpayer likely spends all he makes on food and other items subject to the sales tax; thus, all of his income is subject to a sales tax. In contrast, a wealthy taxpayer likely spends only a small fraction of his income on items subject to sales tax (while saving the rest). Thus, less of wealthy taxpayers' total income is subject to the sales tax, which ultimately results in a lower effective tax rate.

When we consider the marginal and average tax rates in Example 1-9, the sales tax has a proportional tax rate structure. But when we look at the *effective* tax rates, the sales tax is a regressive tax. Indeed, Marc, who has the smallest total income, bears the highest effective tax rate, despite all three taxpayers being subject to the same marginal and average tax rates. Why do we see such a different picture when considering the effective tax rate? Because unlike the marginal and average tax rates, the effective tax rate captures the *incidence* of taxation, which relates to the ultimate economic burden of a tax. Thus, a comparison of effective tax rates is more informative about taxpayers' relative tax burdens.

#### ■ Regressive tax rate structure

- Imposes a decreasing marginal tax rate as the tax base increases.
- As a taxpayer's tax base increases, the marginal tax rate decreases while the total taxes paid increases.

## TYPES OF TAXES

“You can't live with 'em. You can't live without 'em.” This statement has often been used in reference to bosses, parents, spouses, and significant others. To some degree, it applies equally as well to taxes. Although we all benefit in multiple ways from tax revenues, and all civilized nations impose them, it would be hard to find someone who *enjoys* paying them. Most people don't object to the idea of paying taxes. Instead, it's the way taxes are levied that many people, like Margaret's friend Eddy, dislike. Hence, the search for the “perfect” tax can be elusive. The following paragraphs describe the major types of taxes currently used by federal, state, and local governments. After this discussion, we describe the criteria for evaluating alternative tax systems.

### Federal Taxes

The federal government imposes a variety of taxes to fund federal programs such as national defense, Social Security, an interstate highway system, educational programs, and Medicare. Major federal taxes include the individual and corporate income taxes, employment taxes, estate and gift taxes, and excise taxes (each discussed in detail in the following paragraphs). Noticeably absent from this list are a sales tax (a common tax for most state and local governments) and a **value-added tax** (a type of sales tax also commonly referred to as a VAT). Value-added taxes are imposed on the producers of goods and services based on the value added to the goods and services at each stage of production. They are quite common in Europe.

**Income Tax** The most significant tax assessed by the U.S. government is the **income tax**, representing approximately 47.4 percent of all tax revenues collected in the United States in 2011. Despite the magnitude and importance of the federal income tax, its history is relatively short. Congress enacted the first U.S. personal income tax in 1861 to help fund the Civil War. This relatively minor tax (maximum tax rate of 5 percent) was allowed to expire in 1872. In 1892, Congress resurrected the income tax, but not without dissension among the states. In 1895, the income tax was challenged in *Pollock v. Farmers' Loan and Trust Company*, 157 U.S. 429 (1895). The U.S. Supreme Court ruled that the income tax was unconstitutional because direct taxes were prohibited by the Constitution unless the taxes were apportioned across states based upon their populations. This ruling, however, did not deter Congress. In July 1909, Congress sent a proposed constitutional amendment to the states to remove any doubt as to whether income taxes were allowed by the Constitution—and in February 1913, the 16th Amendment was ratified.

Congress then enacted the Revenue Act of 1913, which included a graduated income tax structure with a maximum rate of 7 percent. The income tax has been an important source of tax revenues for the U.S. government ever since. Today, income taxes are levied on individuals (maximum rate of 35 percent), corporations (maximum rate of 39 percent), estates (maximum rate of 35 percent), and trusts (maximum rate of 35 percent). As Exhibit 1-4 illustrates, the individual income tax and employment

### LO 1-4

#### THE KEY FACTS

##### Federal Taxes

#### ■ Income taxes

- The most significant tax assessed by the U.S. government is the income tax, representing approximately 60 percent of all tax revenues collected in the United States.
- Levied on individuals, corporations, estates, and trusts.

#### ■ Employment and unemployment taxes

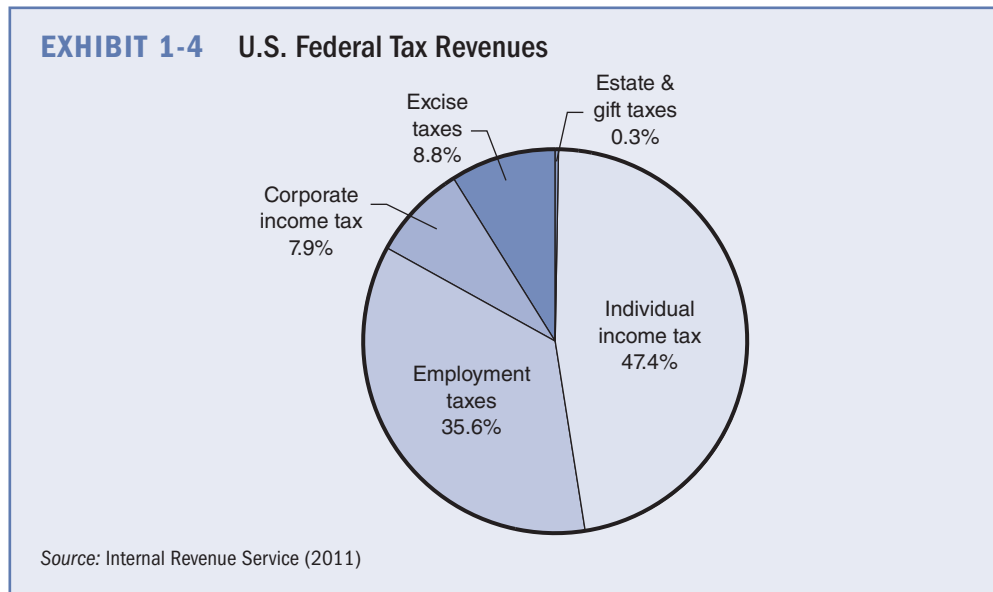
- Second largest group of taxes imposed by the U.S. government.
- Employment taxes consist of the Old Age, Survivors, and Disability Insurance (OASDI) tax, commonly called the Social Security tax, and the Medical Health Insurance (MHI) tax known as the Medicare tax.
- Unemployment taxes fund temporary unemployment benefits for individuals terminated from their jobs without cause.

#### ■ Excise taxes

- Third largest group of taxes imposed by the U.S. government.
- Levied on the *quantity* of products sold.

#### ■ Transfer taxes

- Levied on the fair market values of wealth transfers upon death or by gift.



taxes represent the largest sources of federal tax revenues. We discuss each of these taxes in greater detail later in the text.

**Employment and Unemployment Taxes** Employment and unemployment taxes are the second largest group of taxes imposed by the U.S. government. **Employment taxes** consist of the Old Age, Survivors, and Disability Insurance (OASDI) tax, commonly called the Social Security tax, and the Medical Health Insurance (MHI) tax known as the Medicare tax. The **Social Security tax** pays the monthly retirement, survivor, and disability benefits for qualifying individuals, whereas the **Medicare tax** pays for medical insurance for individuals who are elderly or disabled. The tax base for the Social Security and Medicare taxes is wages or salary, and the rates are 12.4 percent and 2.9 percent, respectively, in 2013. In 2013, the tax base for the Social Security tax is capped at \$113,700. The tax base for the Medicare tax is not capped. Employers and employees split these taxes equally. Self-employed individuals, however, must pay these taxes in their entirety. In this case, the tax is often referred to as the **self-employment tax**. We discuss these taxes in more depth later in the text. Beginning in 2013 there is a 0.9 percent Additional Medicare Tax levied on employees (employers are exempt) on income exceeding the threshold amount (see Chapter 7 for details).

In addition to the Social Security and Medicare taxes, employers are also required to pay federal and state **unemployment taxes**, which fund temporary unemployment benefits for individuals terminated from their jobs without cause. As you might expect, the tax base for the unemployment taxes is also wages or salary. Currently, the Federal Unemployment Tax rate is 6.0 percent. The wage base is the first \$7,000 of wages received during the year. The U.S. government allows a credit for state unemployment taxes paid up to 5.4 percent. Thus, the effective Federal Unemployment Tax rate may be as low as 0.6 percent ( $6.0\% - 5.4\% = 0.6\%$ ).<sup>6</sup>

**Excise Taxes** **Excise taxes** are taxes levied on the retail sale of particular products. They differ from other taxes in that the tax base for an excise tax typically depends on the *quantity* purchased, rather than a monetary amount. The federal government imposes a number of excise taxes on goods such as alcohol, diesel fuel, gasoline, and tobacco products and on services such as telephone use, air transportation, and tanning beds. In addition, states often impose excise taxes on these same items.

<sup>6</sup>Although employers pay both federal and state unemployment taxes, all unemployment benefits actually are administered and paid by state governments.

### Example 1-10

On the drive home from Athens, Georgia, Margaret stops at Gasup-n-Go. On each gallon of gasoline she buys, Margaret pays 18.4 cents of federal excise tax and 7.5 cents of state excise tax (plus 4 percent sales tax). Could Margaret have avoided paying excise tax had she stopped in Florida instead?

**Answer:** No. Had she stopped in Florida instead, Margaret would have paid the same federal excise tax. Additionally, Florida imposes higher state taxes on gas.

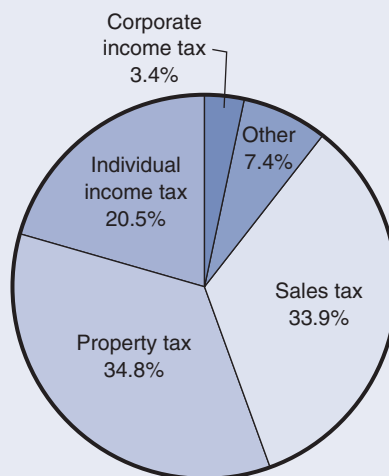
Because the producer of the product pays the government the excise tax, many consumers are not even aware that businesses build these taxes into the prices consumers pay. Nonetheless, consumers bear the incidence of the taxes because of the higher price.

**Transfer Taxes** Although they are a relatively minor tax compared to the income tax in terms of revenues collected, federal **transfer taxes**—estate and gift taxes—can be substantial for certain individual taxpayers and have been the subject of much debate in recent years. The **estate tax** (labeled the “death tax” by its opponents) and **gift taxes** are based on the fair market values of wealth transfers upon death or by gift, respectively. The estate and gift tax rates have traditionally been high (maximum tax rate through 2009 was 45 percent) compared to income tax rates and can be burdensome without proper planning. In 2013, the maximum rate imposed on gifts is 40 percent. Most taxpayers, however, are not subject to estate and gift taxation because of the annual gift exclusion and gift and estate unified tax credits. The annual gift exclusion allows a taxpayer to transfer \$14,000 of gifts per donee (gift recipient) each year without gift taxation. The unified tax credit exempts from taxation up to \$1,000,000 in lifetime gifts and in 2013, up to \$5,250,000 in bequests (transfers upon death) and gifts. Thus, only large transfers are subject to the gift and estate taxes.

### State and Local Taxes

Like the federal government, state and local governments (such as counties, cities, and school districts) use a variety of taxes to generate revenues for their programs (such as education, highways, and police and fire departments). Some of the more common **state** and **local taxes** include income taxes, sales and use taxes, excise taxes, and property taxes. Typically, as shown in Exhibit 1-5, the largest state and local revenues are generated by state sales taxes and local property taxes.

**EXHIBIT 1-5** Average State and Local Tax Revenues



Source: U.S. Bureau of Census (2011)

#### THE KEY FACTS

##### State and Local Taxes

##### ■ Sales and use taxes

- The tax base for a sales tax is the retail sales of goods and some services.
- The tax base for the use tax is the retail price of goods owned, possessed, or consumed within a state that were *not* purchased within the state.

##### ■ Property taxes

- Property taxes are ad valorem taxes, meaning that the tax base for each is the fair market value of the property.
- Real property taxes consist of taxes on land, structures, and improvements permanently attached to land.
- Personal property taxes include taxes on all other types of property, both tangible and intangible.

##### ■ Income taxes

- Most state taxable income calculations largely conform to the federal taxable income calculations, with a limited number of modifications.

##### ■ Excise taxes

- States typically impose excise taxes on items subject to federal excise tax.



**Income Taxes** Currently, most states and the District of Columbia impose income taxes on individuals and corporations who either reside in or earn income within the state.<sup>7</sup> Calculations of individual and corporate taxable income vary with state law. Nonetheless, most state taxable income calculations largely conform to the federal taxable income calculations, with a limited number of modifications, although the tax rates are significantly less than the federal rate. The state of California is a notable exception because it has numerous modifications. Certain local governments such as New York City also impose an income tax, and again, the local calculations generally follow the respective state taxable income calculation.

**Sales and Use Taxes** Most states, the District of Columbia, and local governments impose sales and use taxes. The tax base for a **sales tax** is the retail sales of goods and some services, and retailers are responsible for collecting and remitting the tax; typically, sales tax is collected at the point of sale. The tax base for the **use tax** is the retail price of goods owned, possessed, or consumed within a state that were *not* purchased within the state. The purpose of a use tax is to discourage taxpayers from buying goods out of state in order to avoid or minimize the sales tax in their home state. At the same time, by eliminating the incentive to purchase goods out of state, a use tax removes any competitive disadvantage a retailer may incur from operating in a state with a high sales tax. States with a sales tax allow taxpayers to take a use tax credit on goods purchased out of state to mitigate the potential for double taxation on goods subject to sales tax in another state.

### Example 1-11

Margaret buys three new Lands' End shirts for her dad for \$100. Because Lands' End does not have a business presence in Florida, it does not collect Florida sales tax on the \$100 purchase. Does Margaret's purchase escape Florida taxation?

**Answer:** No. Because Florida has a 6 percent use tax, Margaret is liable for \$6 in use tax on the purchase ( $\$6 = \$100 \times .06$ ).

Despite the potential importance of the use tax as a source of state tax revenue, states have only recently begun to enforce it. Poor compliance is therefore not surprising; indeed, many individuals have never heard of the use tax. While it is relatively easy to enforce it on goods obtained out of state if they are subject to a registration requirement, such as automobiles, it is quite difficult for states to tax most other out-of-state purchases. The state of Florida is not likely to search your closet to look for tax-evaded Lands' End shirts. Note, however, that the majority of states have joined together ([www.streamlinedsalestax.org](http://www.streamlinedsalestax.org)) to try to subject all Internet sales to sales taxes.

**Property Taxes** State and local governments commonly use two types of property taxes as sources of revenue: **real property taxes** and **personal property taxes**. Both are **ad valorem** taxes, meaning that the tax base for each is the fair market value of the property, and both are generally collected annually (if imposed at all).

<sup>7</sup>Currently, Alaska, Florida, Nevada, South Dakota, Texas, Washington, and Wyoming have no personal income tax, and New Hampshire and Tennessee only tax individual dividend and interest income. Nevada and Wyoming do not impose taxes on corporate income, and South Dakota only taxes banks. Washington imposes a gross receipts tax instead of a corporate income tax. Texas and Ohio have an activity-based tax that is based on net income or gross receipts.



*Real property* consists of land, structures, and improvements permanently attached to land, whereas *personal property* includes all other types of property, both tangible and intangible. Common examples of tangible personal property potentially subject to state and local taxation include automobiles, boats, private planes, business inventory, equipment, and furniture. Intangible personal property potentially subject to state and local taxation includes stocks, bonds, and intellectual property. Relative to personal property tax, real property taxes are easier to administer because real property is not moveable and purchases often have to be registered with the state, thereby making it easy to identify the tax base and taxpayer. Furthermore, the taxing body can estimate market values for real property without much difficulty. In contrast, personal property is generally mobile (easier to hide) and may be more difficult to value, which make personal property taxes difficult to enforce. Accordingly, whereas all states and the District of Columbia provide for a real property tax, only a majority of states currently impose personal property taxes, most of which are assessed at the time of licensing or registration. However, most states collect personal property taxes on business property.

**Excise Taxes** We've said that the tax base for excise taxes is typically based on the quantity of an item or service purchased. States typically impose excise taxes on items subject to federal excise tax. Transactions subject to state excise tax often include the sale of alcohol, diesel fuel, gasoline, tobacco products, and telephone services.

### Implicit Taxes

All the taxes discussed above are **explicit taxes**; that is, they are taxes directly imposed by a government and are easily quantified. **Implicit taxes**, on the other hand, are indirect taxes—not paid directly to the government—that result from a tax advantage the government grants to certain transactions to satisfy social, economic, or other objectives. Implicit taxes are defined as the reduced before-tax return that a tax-favored asset produces because of its tax-advantaged status. Let's examine this concept more closely.

First of all, what does it mean to be *tax-favored*? An asset is said to be tax-favored when the income the asset produces is either excluded from the tax base or subject to a lower (preferential) tax rate, or if the asset generates some other tax benefit such as large tax deductions. These tax benefits, *all other things equal*, result in higher after-tax profits (or lower after-tax costs) from investing in the tax-advantaged assets.

Why do tax-advantaged assets bear an implicit tax, or a reduced before-tax return as a result of the tax advantage? The answer is simple economics. The tax benefits associated with the tax-favored asset increase the demand for the asset. Increased demand drives up the price of the asset, which in turn, reduces its before-tax return, which is an implicit tax by definition. Consider Example 1-12.

### Example 1-12

Consider two bonds, one issued by the Coca-Cola Co. and the other issued by the state of Georgia. Both bonds have similar nontax characteristics (risk, for example), the same face value of \$10,000, and the same market interest rate of 10 percent. The only difference between the two bonds is that the interest income from the Coca-Cola Co. bond is subject to a 20 percent income tax rate, whereas the interest income from the State of Georgia bond is tax-exempt with a 0 percent

(continued on page 1-16)

tax rate. Which of the two bonds is a better investment and should therefore have a higher demand?

	Price	Before-Tax* Return	Interest Income	Income† Tax	After-Tax Income	After-Tax† Return
Coca-Cola Bond	\$10,000	10%	\$1,000	\$200	\$ 800	8%
State of GA Bond	\$10,000	10%	\$1,000	0	\$1,000	10%

\*Before-tax return is calculated as the before-tax income divided by the price of the bond. Likewise, after-tax return is calculated as the after-tax income divided by the price of the bond.

†Income tax equals the taxable interest income (\$1,000) multiplied by the assumed income marginal tax rate (20 percent).

**Answer:** Compare the after-tax returns of the bonds. Given the difference between the return after taxes (10 percent vs. 8 percent), the better investment—again, all other investment features being equal—is the State of Georgia bond because it provides a higher *after-tax* return. Because all investors in this example should prefer to buy the State of Georgia bond, the demand for the bond will be high, and its price should increase. This increase in price leads to a lower before-tax return due to the bond’s tax-favored status (this is an implicit tax).

Example 1-12 is a basic illustration of the need to consider the role of taxes in investment decisions. Without understanding the relative tax effects associated with each bond, we cannot correctly compare their after-tax returns.

At what point in Example 1-12 would you be indifferent between investing in the Coca-Cola Co. bond and the State of Georgia bond? Assuming each bond has the same nontax characteristics, you would be indifferent between them when they both provide the same after-tax rate of return. This could occur if the state of Georgia raised the price of its bond from \$10,000 to \$12,500 (\$1,000 interest/\$12,500 price = 8% return). Or the state of Georgia could lower its bond interest payment from \$1,000 to \$800 (\$800 interest/\$10,000 price = 8% return). Either way, the state of Georgia benefits from selling the tax-exempt bonds—either at a higher price or at a lower interest rate relative to other bonds. Let’s look more closely at this latter option, because it is, in fact, what many tax-exempt bond issuers choose to do.

**THE KEY FACTS**

Implicit Taxes

- Implicit taxes are indirect taxes that result from a tax advantage the government grants to certain transactions to satisfy social, economic, or other objectives.
- Implicit taxes are defined as the reduced before-tax return that a tax-favored asset produces because of its tax-advantaged status.
- Implicit taxes are difficult to quantify, but are important to understand in evaluating the relative tax burdens of tax-advantaged investments.

	Price	Before-Tax Return	Interest Income	Income Tax	After-Tax Income	After-Tax Return
Coca-Cola Bond	\$10,000	10%	\$1,000	\$200	\$800	8%
State of GA Bond	\$10,000	8%	\$ 800	0	\$800	8%

At this point, assuming each bond has the same nontax characteristics, an investor should be indifferent between the Coca-Cola Co. bond and the State of Georgia bond. What is the tax burden on investors choosing the Coca-Cola Co. bond? Coca-Cola Co. bond investors are paying \$200 of income taxes (explicit taxes). What is the tax burden on investors choosing the State of Georgia bond? While it is true they are subject to zero income taxes (explicit taxes), they are subject to implicit taxes in the form of the \$200 less in interest income they accept. This \$200 reduced interest income (2 percent reduced before-tax rate of return) is an implicit tax. Although the investors in the State of Georgia bond are not paying this tax directly, they are paying it indirectly.

Does this happen in real life? Yes. Municipal bond interest income (interest income paid on bonds issued by state and local governments) generally is not subject to federal income taxation. Because of their tax-advantaged status, municipalities are able to pay

a lower interest rate on their bond issuances and investors are willing to accept the lower rate. This type of indirect federal subsidy allows municipalities to raise money at a reduced cost without the need of direct federal subsidy or approval.

Although we were able to quantify the implicit taxes paid in the above example, in reality it is very difficult to estimate the amount of implicit taxes paid. For example, the federal government subsidizes housing by allowing taxpayers to deduct mortgage interest on their principal residence. Does this subsidy result in an implicit tax in the form of higher housing prices? Probably. Nonetheless, it would be difficult to quantify this implicit tax.

Despite the difficulty in quantifying implicit taxes, you should understand the concept of implicit taxes so you can make informed judgments about the attractiveness of alternative investments, and about the relative total tax burdens of tax-advantaged investments (considering both explicit and implicit taxes).

## EVALUATING ALTERNATIVE TAX SYSTEMS

### LO 1-5

Although it may appear that tax systems are designed without much forethought, in truth lawmakers engage in continuous debate over the basic questions of whom to tax, what to tax, and how much to tax. Margaret's friend Eddy is obviously upset with what he views as an unfair tax system. But fairness, as we will discuss shortly, is often like beauty—it is in the eye of the beholder. What is fair to one may seem blatantly unfair to others. In the following paragraphs, we offer various criteria (sufficiency, equity, certainty, convenience, and economy) you can use to evaluate alternative tax systems.<sup>8</sup> Satisfying everyone at the same time is difficult. Hence, the spirited debate on tax reform.

### Sufficiency

Judging the **sufficiency** of a tax system means assessing the size of the tax revenues it must generate and ensuring that it provides them. For a tax system to be successful, it must provide sufficient revenues to pay for governmental expenditures for a defense system, social services, and so on. This sounds easy enough: Estimate the amount of government expenditures that will be required, and then design the system to generate enough revenues to pay for these expenses. In reality, however, accurately estimating governmental expenditures and revenues is a rather daunting and imprecise process. Estimating governmental expenditures is difficult because it is impossible to predict the unknown. For example, in recent years governmental expenditures have increased due to the terrorist attacks of September 11, 2001, the Iraq War, natural disasters, economic stimulus, and health care. Likewise, estimating governmental revenues is difficult because tax revenues are the result of transactions influenced by these same national events, the economy, and other factors. Thus, precisely estimating and matching governmental expenditures with tax revenues is nearly impossible.

The task of estimating tax revenues becomes even more daunting when the government attempts to make significant changes to the existing tax system or design a new one. Whenever Congress proposes changing who is taxed, what is taxed, or how much is taxed, its members must consider the taxpayer response to the change. That affects the amount of tax collected, and how forecasters predict what taxpayers will do affects how much revenue they estimate.

**Static vs. Dynamic Forecasting** One option in forecasting revenue is to ignore how taxpayers may alter their activities in response to a tax law change and to base projected tax revenues on the existing state of transactions, a process referred to as **static forecasting**. However, this type of forecasting may result in a large discrepancy in

#### THE KEY FACTS

##### Evaluating Alternative Taxes—Sufficiency

- **Sufficiency** involves assessing the aggregate size of the tax revenues that must be generated and ensuring that the tax system provides these revenues.
- **Static forecasting** ignores how taxpayers may alter their activities in response to a proposed tax law change and bases projected tax revenues on the existing state of transactions.
- **Dynamic forecasting** attempts to account for possible taxpayer responses to a proposed tax law change.

<sup>8</sup>Adam Smith identified and described the latter four criteria in *The Wealth of Nations*.

projected versus actual tax revenues if taxpayers do change their behavior. The other choice is to attempt to account for possible taxpayer responses to the tax law change, a process referred to as **dynamic forecasting**. Dynamic forecasting is ultimately only as good as the assumptions underlying the forecasts and does not guarantee accurate results. Nonetheless, considering how taxpayers may alter their activities in response to a tax law change is a useful exercise to identify the potential ramifications of the change, even if the revenue projections ultimately miss the mark.

### Example 1-13

The city of Heflin would like to increase tax revenues by \$2,000,000 to pay for needed roadwork. A concerned taxpayer recently proposed increasing the cigarette excise tax from \$1.00 per pack of cigarettes to \$6.00 per pack to raise the additional needed revenue. Last year, 400,000 packs of cigarettes were sold in the city. Will the tax be successful in raising the \$2,000,000 revenue?

**Answer:** Not likely. The proposed tax increase of \$5, and the assumption that 400,000 packs will still be sold, is an example of static forecasting: it ignores that many taxpayers may respond to the tax change by quitting, cutting down, or buying cheaper cigarettes in the next town.

In some cases, static forecasting can lead to a tax consequence opposite the desired outcome. In Example 1-13, we might estimate that given Heflin's close proximity to other cities with a \$1.00 cigarette tax, the number of packs of cigarettes sold within the city would drop significantly to, say, 50,000. In this case, the tax increase would actually *decrease* tax revenues by \$100,000 (\$400,000 existing tax – \$300,000 new tax), not a good outcome if the goal was to increase tax revenues.

**Income vs. Substitution Effects** The example above described proposed changes in an excise tax, which is a proportional tax. In terms of a progressive tax such as an *income* tax, a tax rate increase or an expansion of the tax base can result in one of two taxpayer responses, both of which are important for dynamic forecasting. The **income effect** predicts that when taxpayers are taxed more (when, say, a tax rate increases from 25 to 28 percent), they will work harder to generate the same after-tax dollars. The **substitution effect** predicts that when taxpayers are taxed more, rather than work more, they will substitute nontaxable activities like leisure pursuits for taxable ones because the marginal value of taxable activities has decreased. Which view is accurate? The answer depends on the taxpayer. Consider the following examples.

### Example 1-14

Margaret's friend George, who earns \$40,000 taxable income as a mechanic, is taxed at an average rate of 10 percent (\$4,000 of tax). If Congress increases the income tax rate such that George's average tax rate increases from 10 percent to 25 percent, how much more income tax will he pay?

**Answer:** It depends on whether the income effect or the substitution effect is operating. Assuming George is single and cannot afford a net decrease in his after-tax income, he will likely work more (the income effect rules). Prior to the tax rate increase, George had \$36,000 of after-tax income (\$40,000 taxable income less \$4,000 tax). With the increased tax rate, George will have to earn \$48,000 of taxable income to keep \$36,000 after taxes [ $\$48,000 - (\$48,000 \times .25) = \$36,000$ ]. Thus, if the income effect rules, the government will collect \$12,000 of federal income tax from George, or \$8,000 more than under the previous lower tax rate. In this scenario, the tax change increases government revenues because of the increased tax rate *and* the increased tax base.

Whether the substitution effect or the income effect will describe any individual taxpayer's reaction to a tax increase is something we can only guess. But some factors—such as having higher disposable income—are likely to correlate with the substitution effect.

## Example 1-15

**What if:** Now let's assume that George is married and has two young children, both he and his wife work, and they file a tax return jointly with a 10 percent average tax rate. Either of their incomes is sufficient to meet necessities, even after the tax rate increase. But fixed child care costs make the marginal wage rate (the after-tax hourly wage less hourly child care cost) more sensitive to tax rate increases. In this case, the lower-earning spouse may choose to work less. Suppose George quits his full-time job and takes a part-time position that pays \$10,000 to spend more time with his kids and to pursue his passion, reading sports novels. What are the taxes on George's income?

**Answer:** In this case, George will owe \$2,500 tax ( $\$10,000 \times .25 = \$2,500$ ). Here, the substitution effect operates, and the government collects much less than it would have if George had maintained his full-time position, because the tax rate increase had a negative effect on the tax base.

As the previous examples illustrate, the response to a tax law change can vary by taxpayer and can greatly affect the magnitude of tax revenues generated by the change. Herein lies one of the challenges in significantly changing an existing tax system or designing a new one: if a tax system fails to generate sufficient revenues, the government must seek other sources to pay for governmental expenditures. The most common source of these additional funds for the federal government is the issuance of debt instruments such as Treasury bonds. This, however, is only a short-term solution to a budget deficit. Debt issuances require both interest and principal payments, which require the federal government to identify even more sources of revenue to service the debt issued, or to cut governmental spending (both of which may be unpopular choices with voters). A third option is for the government to default on its debt obligations. However, the costs of this option are potentially devastating. If the historical examples of Mexico, Brazil, Argentina, and Greece are any guide, a U.S. government default on its debt obligations would likely devalue the U.S. dollar severely and have extreme negative consequences for the U.S. capital markets.

The best option is for the government to match its revenues with its expenses—that is, not to spend more than it collects. State governments seem to be more successful in this endeavor than the U.S. federal government. Indeed, all states except Vermont require a balanced budget each year, whereas the federal government has had deficit spending for most of the last 40 years.

Taxes in the Real World *National Debt*

**How much debt does the U.S. have today?** About \$16.2 trillion. Over \$11 trillion of the national debt is held by public investors including: individual bondholders; institutional investors; and foreign governments such as China, the United Kingdom, and Brazil. The almost \$5 trillion remaining amount represents intra-governmental holdings—primarily Social Security.

**Is \$16.2 trillion too much to handle?** The key issue is fiscal sustainability: the ability to pay off a debt in the future. Rising debt also has other negative consequences, such as higher interest payments, a need for higher taxes, restricting policymaker's fiscal policy choices, and increasing the probability of a sudden fiscal crisis. If nothing is done to change the

national debt trajectory, the debt will grow faster than the economy.

**Is the national debt sustainable?** The federal government has been recording budget deficits that are a larger share of the economy than any year since the end of World War II. With an aging population, Social Security and other benefits will require larger expenditures. By the end of the current decade, barring any significant policy shifts, the vast majority of federal tax revenue will be consumed by just four expenditures: interest on the debt, Medicare, Medicaid, and Social Security. To finance other government expenditures, including defense and all other discretionary programs, policymakers will have to borrow the money to pay for them.



## Equity

We've looked at the challenges of designing a tax system that provides sufficient revenues to pay for governmental expenditures. An equally challenging issue is how the tax burden should be distributed across taxpayers. At the heart of this issue is the concept of **equity** or fairness. Fairness is inherently subject to personal interpretation, and informed minds often disagree about what is fair. There is no "one-size-fits-all" definition of equity or fairness. Nonetheless, it is informative to consider in broad terms what makes a fair or equitable tax system.

In general terms, a tax system is considered fair or equitable if the tax is based on the taxpayer's ability to pay. Taxpayers with a greater ability to pay tax, pay more tax. In broad terms, each of the federal, state, and local taxes we've discussed satisfies this criterion. For example, those individuals with greater taxable income, purchases, property, and estates (upon death) generally pay higher dollar amounts in federal income tax, sales tax, property tax, and estate tax. If this is the case, why is there so much debate over the fairness of the U.S. income tax system? The answer is that equity is more complex than our first definition suggests. Let's take a closer look.

### THE KEY FACTS

#### Evaluating Alternative Taxes—Equity

- Equity considers how the tax burden should be distributed across taxpayers.
- Horizontal equity means that two taxpayers in similar situations pay the same tax.
- Vertical equity is achieved when taxpayers with greater ability to pay tax, pay more tax relative to taxpayers with a lesser ability to pay tax.

**Horizontal vs. Vertical Equity** Two basic types of equity are relevant to tax systems. **Horizontal equity** means that two taxpayers in similar situations pay the same tax. In broad terms, each of the federal, state, and local taxes discussed satisfy this definition. Two individual taxpayers with the same taxable income, same purchases, same value of property, and same estate value pay the same federal income tax, sales tax, property tax, and estate tax. However, on closer inspection we might argue that each of these tax systems is *not* horizontally equitable. Here are some examples:

- Two individual taxpayers with the same income will not pay the same federal income tax if one individual's income was earned as salary and the other individual's income was tax-exempt municipal bond interest income, dividend income, or capital gain(s) income, which can be subject to a lower tax rate.
- Two individuals with the same dollar amount of purchases will not pay the same sales tax if one buys a higher proportion of goods that are subject to a lower sales tax rate, such as groceries.
- Two individuals with real estate of the same value will not pay the same property tax if one individual owns farmland, which is generally subject to a lower property tax rate.
- Finally, two individuals with estates of the same value will not pay the same estate tax if one individual bequeaths more of her property to charity or a spouse, because these transfers are not subject to estate tax.

These failures of horizontal equity are due to what we call *tax preferences*. Governments provide tax preferences for a variety of reasons, such as to encourage investment or further social objectives. Whether we view these tax preferences as appropriate greatly influences whether we consider a tax system to be fair in general and horizontally equitable in particular.

The second type of equity to consider in evaluating a tax system is **vertical equity**. Vertical equity is achieved when taxpayers with greater ability to pay tax, pay more tax than taxpayers with less ability to pay. We can think of vertical equity in terms of tax dollars paid or in terms of tax rates. Proponents of a flat income tax or of a sales tax—both of which are proportional tax rate structures—are more likely to argue that vertical equity is achieved when taxpayers with a greater ability to pay

tax, simply pay more in tax *dollars*. Proponents of a progressive tax system are more likely to argue that taxpayers with a greater ability to pay should be subject to a higher tax *rate*. This view is based upon the argument that the *relative* burden of a flat tax rate decreases as a taxpayer's income increases. Which is the correct answer? There is no correct answer. Nonetheless, many feel very strongly regarding one view or the other.

Our discussion has focused on how we can view alternative tax rate structures in terms of vertical equity, ignoring the role that the tax base plays in determining vertical equity. Indeed, focusing on the tax rate structure in evaluating a tax system is appropriate only if the tax base chosen—whether it's taxable income, purchases, property owned, or something else—accurately portrays a taxpayer's ability to pay. This can be a rather strong assumption. Consider the sales tax in Example 1-9. Although taxable purchases in this example increase as the taxpayers' total incomes increase, total incomes increase at a much faster rate than taxable purchases. Thus, the gap between taxable purchases and total income widens as total income increases. The end result is that the effective tax rates for those with a greater ability to pay are *lower* than for those taxpayers with a lesser ability to pay, making this tax regressive. Regressive tax rate structures are generally considered not to satisfy vertical equity, unless you strongly believe that those with a greater ability to pay do so simply by paying more tax dollars, albeit at a lower tax rate. In sum, evaluating vertical equity in terms of effective tax rates may be much more informative than simply evaluating tax rate structures.

### **Certainty**

**Certainty** means that taxpayers should be able to determine when to pay the tax, where to pay the tax, and how to determine the tax. Determining when and where to pay each of the taxes previously discussed is relatively easy. For example, individual federal income tax returns and the remaining balance of taxes owed must be filed with the Internal Revenue Service each year on or before April 15th. Likewise, sales taxes, property taxes, and excise taxes are each determined with relative ease: Sales taxes are based on the value of taxable purchases, property taxes are generally based on assessed property values, and excise taxes are based on the number of taxable units purchased. Indeed, these taxes are calculated for the taxpayer and often charged at regular intervals or at the point of purchase; they do not require a tax return.

In contrast, income taxes are often criticized as being too complex. What are taxable vs. nontaxable forms of income? What are deductible/nondeductible expenses? When should income or expenses be reported? For wage earners with few investments, the answers to these questions are straightforward. For business owners and individuals with a lot of investments, the answers are nontrivial. Yearly tax law changes enacted by Congress can make it more difficult to determine a taxpayer's current tax liability, much less plan for the future.

### **Convenience**

**Convenience** suggests that a tax system should be designed to facilitate the collection of tax revenues without undue hardship on the taxpayer or the government. Various tax systems meet this criterion by tying the collection of the tax as closely as possible to the transaction that generates it. For example, retailers collect sales taxes when buyers purchase goods. Thus, it is difficult for the buyer to avoid paying sales tax, assuming she is transacting with an ethical retailer. Likewise, employers withhold federal income and Social Security taxes directly from wage earners' paychecks, which speeds the government's collection of the taxes and makes it difficult



**THE KEY FACTS****Evaluating Alternative Taxes—Certainty, Convenience, and Economy****■ Certainty**

- Means taxpayers should be able to determine when, where, and how much tax to pay.
- Determining when and where to pay each of the taxes previously discussed is relatively easy.
- The income tax has been criticized for its complexity in determining how much to pay.

**■ Convenience**

- Means a tax system should be designed to facilitate the collection of tax revenues without undue hardship on the taxpayer or the government.
- Various tax systems meet this criterion by tying the collection of the tax as closely as possible to the transaction that generates it.

**■ Economy**

- Means a tax system should minimize its compliance and administration costs.
- May be viewed from both the taxpayers' and the government's perspectives.

for the taxpayer to evade the taxes. If tax withholdings are not sufficient relative to the taxpayer's anticipated income tax liability, the taxpayer is required to make quarterly estimated tax installments. Individual quarterly estimated payments are due on April 15, June 15, September 15, and January 15, whereas corporate estimated tax payments are due on the 15th day of the third, sixth, ninth, and twelfth months of the corporation's fiscal year.

**Economy**

**Economy** requires that a good tax system should minimize the compliance and administration costs associated with the tax system. We can view economy from both the taxpayers' and the government's perspectives. Believe it or not, most tax systems fare well in terms of economy, at least from the government's perspective. For example, the current IRS budget represents approximately  $\frac{1}{2}$  of a percent of every tax dollar collected. Compared to the typical costs of a collection agency, this is quite low.

How about from the taxpayer's perspective? Here the picture is a bit different. The sales tax imposes no administrative burden on the taxpayer and only small administrative costs on the local retailer. However, out-of-state sellers argue that collecting and remitting use taxes for thousands of state and city jurisdictions would be a substantial burden. Other taxes such as excise taxes and property taxes also impose minimal administrative costs on the taxpayer. In contrast, as we've seen, the income tax is often criticized for the compliance costs imposed on the taxpayer. Indeed, for certain taxpayers, record-keeping costs, accountant fees, attorney fees, and so on can be substantial. Advocates of alternative tax systems often challenge the income tax on this criterion.

**Evaluating Tax Systems—The Trade-off**

At the heart of any debate on tax reform are fundamental decisions and concessions based on the five criteria we've just discussed. Interestingly enough, much of the debate regarding alternative tax systems reduces to a choice between simplicity and fairness. Those taxes that generally are simpler and easier to administer, such as the sales tax, are typically viewed as less fair. Those taxes that may be viewed as more fair, such as the federal income tax, often are more complex to administer. Thus, Margaret's friend Eddy faces a difficult choice about which type of tax system to advocate, as do all taxpayers. An understanding of the evaluative criteria should be helpful to anyone trying to reconcile the trade-offs among alternative tax proposals.

**CONCLUSION**

In almost any society taxes are a part of life. They influence decisions about personal finance, investment, business, and politics. In this chapter, we introduced the basic concepts of why one should study tax, what is a tax, and how to calculate a tax. We also discussed various tax rates, tax rate structures, and different types of taxes imposed by federal, state, and local governments. Finally, we discussed the criteria that one might use to evaluate alternative tax rate systems. To make informed personal finance, investment, business, and political decisions, one must have a basic understanding of these items. In the following chapters we expand the discussion of how taxes influence these decisions while providing a basic understanding of our federal income tax system. Read on and learn more!

## SUMMARY

Demonstrate how taxes influence basic business, investment, personal, and political decisions.

LO 1-1

- Taxes are significant costs that influence many basic business, investment, and personal decisions.
  - *Business decisions*: what organization form to take; where to locate; how to compensate employees; appropriate debt mix; owning vs. renting equipment and property; how to distribute profits, and so forth.
  - *Investment decisions*: alternative methods for saving for education or retirement, and so forth.
  - *Personal finance decisions*: evaluating job offers; gift or estate planning; owning vs. renting home, and so forth.
- Taxes also play a major part in the political process. Major parties typically have very diverse views on whom, what, and how much to tax.

Discuss what constitutes a tax and the general objectives of taxes.

LO 1-2

- The general purpose of taxes is to fund the government. Unlike fines or penalties, taxes are not meant to punish or prevent illegal behavior; but “*sin taxes*” (on alcohol, tobacco, tanning beds, etc.) are meant to discourage some behaviors.
- The three criteria necessary to be a tax are that the payment is (1) required (it is not voluntary), (2) imposed by a government (federal, state, or local), and (3) not tied directly to the benefit received by the taxpayer.

Describe the different tax rate structures and calculate a tax.

LO 1-3

- $\text{Tax} = \text{Tax Rate} \times \text{Tax Base}$ , where the tax base is what is taxed and the tax rate is the level of taxes imposed on the base. Different portions of a tax base may be taxed at different rates.
- There are three different tax rates that are useful in contrasting the different tax rate structures, tax planning, and/or assessing the tax burden of a taxpayer: the marginal, average, and effective tax rates.
- The marginal tax rate is the tax that applies to the next increment of income or deduction. The average tax rate represents a taxpayer’s average level of taxation on each dollar of taxable income. The effective tax rate represents the taxpayer’s average rate of taxation on each dollar of total income (taxable *and* nontaxable income).
- The three basic tax rate structures are proportional, progressive, and regressive.
  - A *proportional tax rate* structure imposes a constant tax rate throughout the tax base. As a taxpayer’s tax base increases, the taxpayer’s taxes increase proportionally. The marginal tax rate remains constant and always equals the average tax rate. A common example is a sales tax.
  - A *progressive tax rate* imposes an increasing marginal tax rate as the tax base increases. As a taxpayer’s tax base increases, both the marginal tax rate and the taxes paid increase. A common example is the U.S. federal income tax.
  - A *regressive tax rate* imposes a decreasing marginal tax rate as the tax base increases. As a taxpayer’s tax base increases, the marginal tax rate decreases while the total taxes paid increases.

Identify the various federal, state, and local taxes.

LO 1-4

- Federal taxes include the income tax, employment taxes (Social Security and Medicare taxes), unemployment taxes, excise taxes (levied on quantity purchased), and transfer taxes (estate and gift taxes).
- State and local taxes include the income tax (levied by most states), sales tax (levied on retail sales of goods and some services), use tax (levied on the retail price of goods owned or consumed within a state that were purchased out of state), property taxes (levied on fair market value of real and personal property), and excise taxes.

- Implicit taxes are indirect taxes that result from a tax advantage the government grants to certain transactions to satisfy social, economic, or other objectives. They are defined as the reduced before-tax return that a tax-favored asset produces because of its tax-advantaged status.

**LO 1-5**

Apply appropriate criteria to evaluate alternate tax systems.

- Sufficiency involves assessing the aggregate size of the tax revenues that must be generated and ensuring that the tax system provides these revenues. Static forecasting ignores how taxpayers may alter their activities in response to a proposed tax law change and bases projected tax revenues on the existing state of transactions. Dynamic forecasting attempts to account for possible taxpayer responses to a proposed tax law change.
- Equity considers how the tax burden should be distributed across taxpayers. Generally, a tax system is considered fair or equitable if the tax is based on the taxpayer's ability to pay—that is, taxpayers with a greater ability to pay tax, pay more tax. Horizontal equity means that two taxpayers in similar situations pay the same tax. Vertical equity is achieved when taxpayers with greater ability to pay tax, pay more tax relative to taxpayers with a lesser ability to pay tax.
- Certainty means taxpayers should be able to determine when, where, and how much tax to pay.
- Convenience means a tax system should be designed to facilitate the collection of tax revenues without undue hardship on the taxpayer or the government.
- Economy means a tax system should minimize its compliance and administration costs.

## KEY TERMS

ad valorem (1-14)

average tax rate (1-7)

bracket (1-5)

certainty (1-21)

convenience (1-21)

dynamic forecasting (1-18)

earmarked tax (1-4)

economy (1-22)

effective tax rate (1-7)

employment taxes (1-12)

equity (1-20)

estate tax (1-13)

excise taxes (1-12)

explicit tax (1-15)

flat tax (1-5)

gift tax (1-13)

graduated taxes (1-5)

horizontal equity (1-20)

implicit tax (1-15)

income effect (1-18)

income tax (1-11)

local tax (1-13)

marginal tax rate (1-5)

Medicare tax (1-12)

personal property tax (1-14)

progressive tax rate

structure (1-9)

proportional tax rate

structure (1-8)

real property tax (1-14)

regressive tax rate structure (1-9)

sales tax (1-14)

self-employment tax (1-12)

sin taxes (1-4)

Social Security tax (1-12)

state tax (1-13)

static forecasting (1-17)

substitution effect (1-18)

sufficiency (1-17)

tax (1-3)

tax base (1-4)

tax rate (1-4)

transfer taxes (1-13)

unemployment tax (1-12)

use tax (1-14)

value-added tax (1-11)

vertical equity (1-20)

## DISCUSSION QUESTIONS

1. **(LO 1-1)** Jessica's friend Zachary once stated that he couldn't understand why someone would take a tax course. Why is this a rather naïve view?
2. **(LO 1-1)** What are some aspects of business that require knowledge of taxation? What are some aspects of personal finance that require knowledge of taxation?

3. **(LO 1-1)** Describe some ways in which taxes affect the political process in the United States.
4. **(LO 1-2)** Courtney recently received a speeding ticket on her way to the university. Her fine was \$200. Is this considered a tax? Why or why not?
5. **(LO 1-2)** Marlon and Latoya recently started building a house. They had to pay \$300 to the county government for a building permit. Is the \$300 payment a tax? Why or why not?
6. **(LO 1-2)** The city of Birmingham recently enacted a 1 percent surcharge on hotel rooms that will help pay for the city's new stadium. Is this a tax? Why or why not?
7. **(LO 1-2)** As noted in Example 1-2, tolls, parking meter fees, and annual licensing fees are not considered taxes. Can you identify other fees that are similar?
8. **(LO 1-2)** If the general objective of our tax system is to raise revenue, why does the income tax allow deductions for charitable contributions and retirement plan contributions?
9. **(LO 1-2)** One common argument for imposing so-called sin taxes is the social goal of *reducing* demand for such products. Using cigarettes as an example, is there a segment of the population that might be sensitive to price and for whom high taxes might discourage purchases?
10. **(LO 1-3)** Dontae stated that he didn't want to earn any more money because it would "put him in a higher tax bracket." What is wrong with Dontae's reasoning?
11. **(LO 1-3)** Describe the three different tax rates discussed in the chapter and how taxpayers might use them.
12. **(LO 1-3)** Which is a more appropriate tax rate to use to compare taxpayers' tax burdens—the average or the effective tax rate? Why?
13. **(LO 1-3)** Describe the differences between a proportional, progressive, and regressive tax rate structure.
14. **(LO 1-3)** Arnold and Lilly have recently had a heated discussion about whether a sales tax is a proportional tax or a regressive tax. Arnold argues that a sales tax is regressive. Lilly counters that the sales tax is a flat tax. Who is correct?
15. **(LO 1-4)** Which is the largest tax collected by the U.S. government? What types of taxpayers are subject to this tax?
16. **(LO 1-4)** What is the tax base for the Social Security and Medicare taxes for an employee or employer? What is the tax base for Social Security and Medicare taxes for a self-employed individual? Is the self-employment tax in addition to or in lieu of federal income tax?
17. **(LO 1-4)** What are unemployment taxes?
18. **(LO 1-4)** What is the distinguishing feature of an excise tax?
19. **(LO 1-4)** What are some of the taxes that currently are unique to state and local governments? What are some of the taxes that the federal, state, and local governments each utilize?
20. **(LO 1-4)** The state of Georgia recently increased its tax on a pack of cigarettes by \$2.00. What type of tax is this? Why might Georgia choose this type of tax?
21. **(LO 1-4)** What is the difference between a sales tax and a use tax?
22. **(LO 1-4)** What is an ad valorem tax? Name an example of this type of tax.
23. **(LO 1-4)** What are the differences between an explicit and an implicit tax?
24. **(LO 1-4)** When we calculate average and effective tax rates, do we consider implicit taxes? What effect does this have on taxpayers' perception of equity?
25. **(LO 1-4)** Benjamin recently bought a truck in Alabama for his business in Georgia. What different types of federal and state taxes may affect this transaction?

26. **(LO 1-5)** Kobe strongly dislikes SUVs and is appalled that so many are on the road. He proposes to eliminate the federal income tax and replace it with a \$50,000 annual tax per SUV. Based on the number of SUVs currently owned in the United States, he estimates the tax will generate exactly the amount of tax revenue currently collected from the income tax. What is wrong with Kobe's proposal? What type of forecasting is Kobe likely using?
27. **(LO 1-5)** What is the difference between the income and substitution effects? For which types of taxpayers is the income effect more likely descriptive? For which types of taxpayers is the substitution effect more likely descriptive?
28. **(LO 1-5)** What is the difference between horizontal and vertical equity? How do tax preferences affect people's view of horizontal equity?
29. **(LO 1-3, LO 1-5)** Montel argues that a flat income tax rate system is vertically equitable. Oprah argues that a progressive tax rate structure is vertically equitable. How do their arguments differ? Who is correct?
30. **(LO 1-3, LO 1-5)** Discuss why evaluating vertical equity simply based on tax rate structure may be less than optimal.
31. **(LO 1-4, LO 1-5)** Compare the federal income tax to sales taxes using the "certainty" criterion.
32. **(LO 1-5)** Many years ago a famous member of Congress proposed eliminating federal income tax withholding. What criterion for evaluating tax systems did this proposal violate? What would likely have been the result of eliminating withholding?
33. **(LO 1-5)** "The federal income tax scores very high on the economy criterion because the current IRS budget is relatively low compared to the costs of a typical collection agency." Explain why this statement may be considered wrong.

## PROBLEMS

All applicable problems are available with McGraw-Hill's **Connect® Accounting**.

34. **(LO 1-3)** Chuck, a single taxpayer, earns \$75,000 in taxable income and \$10,000 in interest from an investment in City of Heflin bonds. Using the U.S. tax rate schedule, how much federal tax will he owe? What is his average tax rate? What is his effective tax rate? What is his current marginal tax rate?
35. **(LO 1-3)** Using the facts in the previous problem, if Chuck earns an additional \$40,000 of taxable income, what is his marginal tax rate on this income? What is his marginal rate if, instead, he had \$40,000 of additional deductions?
36. **(LO 1-3)** In reviewing the tax rate schedule for a single taxpayer, Chuck notes that the tax on \$75,000 is \$4,991.25 plus 25 percent of the taxable income over \$36,250. What does the \$4,991.25 represent?
37. **(LO 1-3)** Campbell, a single taxpayer, earns \$400,000 in taxable income and \$2,000 in interest from an investment in State of New York bonds. Using the U.S. tax rate schedule, how much federal tax will she owe? What is her average tax rate? What is her effective tax rate? What is her current marginal tax rate?
38. **(LO 1-3)** Using the facts in the previous problem, if Campbell earns an additional \$15,000 of taxable income, what is her marginal tax rate on this income? What is her marginal rate if, instead, she had \$15,000 of additional deductions?
39. **(LO 1-3)** Jorge and Anita, married taxpayers, earn \$150,000 in taxable income and \$40,000 in interest from an investment in City of Heflin bonds. Using the U.S. tax rate schedule for married filing jointly, how much federal tax will they owe? What is their average tax rate? What is their effective tax rate? What is their current marginal tax rate?



40. **(LO 1-3)** Using the facts in the previous problem, if Jorge and Anita earn an additional \$100,000 of taxable income, what is their marginal tax rate on this income? What is their marginal rate if, instead, they reported an additional \$100,000 in deductions?
41. **(LO 1-3)** In reviewing the tax rate schedule for married filing jointly, Jorge and Anita note that the tax on \$150,000 is \$28,457.50 plus 28 percent of the taxable income over \$146,400. What does the \$28,457.50 represent?
42. **(LO 1-3)** Scot and Vidia, married taxpayers, earn \$240,000 in taxable income and \$5,000 in interest from an investment in City of Tampa bonds. Using the U.S. tax rate schedule for married filing jointly, how much federal tax will they owe? What is their average tax rate? What is their effective tax rate? What is their current marginal tax rate?
43. **(LO 1-3)** Using the facts in the previous problem, if Scot and Vidia earn an additional \$70,000 of taxable income, what is their marginal tax rate on this income? How would your answer differ if they, instead, had \$70,000 of additional deductions?
44. **(LO 1-3, LO 1-4)** Melinda invests \$200,000 in a City of Heflin bond that pays 6 percent interest. Alternatively, Melinda could have invested the \$200,000 in a bond recently issued by Surething Inc., that pays 8 percent interest with similar risk and other nontax characteristics to the City of Heflin bond. Assume Melinda’s marginal tax rate is 25 percent.
  - a. What is her after-tax rate of return for the City of Heflin bond?
  - b. How much explicit tax does Melinda pay on the City of Heflin bond?
  - c. How much implicit tax does she pay on the City of Heflin bond?
  - d. How much explicit tax would she have paid on the Surething Inc. bond?
  - e. What is her after-tax rate of return on the Surething Inc. bond?
45. **(LO 1-3, LO 1-4)** Hugh has the choice between investing in a City of Heflin bond at 6 percent or a Surething bond at 9 percent. Assuming that both bonds have the same nontax characteristics and that Hugh has a 40 percent marginal tax rate, in which bond should he invest?
46. **(LO 1-3, LO 1-4)** Using the facts in the previous problem, what interest rate does Surething Inc., need to offer to make Hugh indifferent between investing in the two bonds?
47. **(LO 1-3, LO 1-4)** Fergie has the choice between investing in a State of New York bond at 5 percent and a Surething bond at 8 percent. Assuming that both bonds have the same nontax characteristics and that Fergie has a 30 percent marginal tax rate, in which bond should she invest?
48. **(LO 1-3, LO 1-4)** Using the facts in the previous problem, what interest rate does the state of New York need to offer to make Fergie indifferent between investing in the two bonds?
49. **(LO 1-3)** Given the following tax structure, what minimum tax would need to be assessed on Shameika to make the tax progressive with respect to average tax rates?

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Taxpayer	Salary	Muni-Bond Interest	Total Tax
Mihwah	\$10,000	\$10,000	\$600
Shameika	\$50,000	\$30,000	???

50. **(LO 1-3)** Using the facts in the previous problem, what minimum tax would need to be assessed on Shameika to make the tax progressive with respect to effective tax rates?

51. **(LO 1-3, LO 1-5)** Song earns \$100,000 taxable income as an interior designer and is taxed at an average rate of 20 percent (i.e., \$20,000 of tax). If Congress increases the income tax rate such that Song’s average tax rate increases from 20 percent to 25 percent, how much more income tax will she pay assuming that the income effect is descriptive? What effect will this tax rate change have on the tax base and tax collected?
52. **(LO 1-3, LO 1-5)** Using the facts from the previous problem, what will happen to the government’s tax revenues if Song chooses to spend more time pursuing her other passions besides work in response to the tax rate change and earns only \$75,000 in taxable income? What is the term that describes this type of reaction to a tax rate increase? What types of taxpayers are likely to respond in this manner?
53. **(LO 1-5)** Given the following tax structure, what tax would need to be assessed on Venita to make the tax horizontally equitable?

Taxpayer	Salary	Total Tax
Mae	\$10,000	\$ 600
Pedro	\$20,000	\$1,500
Venita	\$10,000	???

54. **(LO 1-5)** Using the facts in the previous problem, what is the minimum tax that Pedro should pay to make the tax structure vertically equitable based on the tax rate paid? This would result in what type of tax rate structure?
55. **(LO 1-5)** Using the facts in the previous problem, what is the minimum tax that Pedro should pay to make the tax structure vertically equitable with respect to the amount of tax paid? This would result in what type of tax rate structure?
56. **(LO 1-5)** Consider the following tax rate structure. Is it horizontally equitable? Why or why not? Is it vertically equitable? Why or why not?

Taxpayer	Salary	Total Tax
Rajiv	\$10,000	\$600
LaMarcus	\$20,000	\$600
Dory	\$10,000	\$600

57. **(LO 1-5)** Consider the following tax rate structure. Is it horizontally equitable? Why or why not? Is it vertically equitable? Why or why not?

Taxpayer	Salary	Total Tax
Marilyn	\$10,000	\$ 600
Kobe	\$20,000	\$3,000
Alfonso	\$30,000	\$6,000

58. **(LO 1-5)** Consider the following tax rate structure. Is it horizontally equitable? Why or why not? Is it vertically equitable? Why or why not?

Taxpayer	Salary	Total Tax
Rodney	\$10,000	\$600
Keisha	\$10,000	\$600

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59. **(LO 1-1, LO 1-4)** Lorenzo is considering starting a trucking company either in Texas or Oklahoma. He will relocate his family, which includes his wife, children, and parents, to reside in the same state as his business. What types of taxes may influence his decision of where to locate his business?



60. **(LO 1-3, LO 1-5)** Congress would like to increase tax revenues by 10 percent. Assume that the average taxpayer in the United States earns \$65,000 and pays an average tax rate of 15 percent. If the income effect is in effect for all taxpayers, what average tax rate will result in a 10 percent increase in tax revenues? This is an example of what type of forecasting?
61. **(LO 1-5)** Locate the IRS website at [www.irs.gov/](http://www.irs.gov/). For every \$100 the IRS collected, how much was spent on the IRS collection efforts? What tax system criterion does this information help you to evaluate with respect to the current U.S. tax system?
62. **(LO 1-4)** Using the Internet, find a comparison of income tax rates across states. What state currently has the highest income tax rate? In considering individual tax burdens across states, what other taxes should you consider?

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