

## APPENDIX

## 2A

## THE FEDERAL INCOME TAX SYSTEM



A web site of interest concerning federal tax law is <http://www.taxesites.com/federal.html>. From this home page one can visit other sites that provide summaries of recent tax legislation or current information on corporate and individual tax rates. Another useful web site is <http://www.taxplanet.com>. The official government web site is <http://www.irs.gov>.

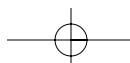
The value of any financial asset (including stocks, bonds, and mortgages), as well as most real assets such as plants or even entire firms, depends on the stream of cash flows produced by the asset. Cash flows from an asset consist of *usable* income plus depreciation, and usable income means income *after taxes*.

Our tax laws can be changed by Congress, and in recent years changes have occurred frequently. Indeed, a major change has occurred, on average, every three to four years since 1913, when our federal income tax system began. Further, certain parts of our tax system are tied to the inflation rate, so changes occur automatically each year, depending on the rate of inflation during the previous year. Therefore, although this section will give you a good background on the basic nature of our tax system, you should consult current rate schedules and other data published by the Internal Revenue Service (available in U.S. post offices) before you file your personal or business tax returns.

Currently (2002), federal income tax rates for individuals go up to 38.6 percent, and, when Social Security, Medicare, and state and city income taxes are included, the marginal tax rate on an individual's income can easily exceed 50 percent. Business income is also taxed heavily. The income from partnerships and proprietorships is reported by the individual owners as personal income and, consequently, is taxed at federal-plus-state rates going up to 50 percent or more. Corporate profits are subject to federal income tax rates of up to 39 percent, plus state income taxes. Furthermore, corporations pay taxes and then distribute after-tax income to their stockholders as dividends, which are also taxed. So, corporate income is really subject to double taxation. *Because of the magnitude of the tax bite, taxes play a critical role in many financial decisions.*

As this text is being written, Congress and the administration continue to debate the merits of different changes in the tax laws. Even in the unlikely event that no explicit changes are made in the tax laws, changes will still occur because certain aspects of the tax calculation are tied to the inflation rate. Thus, by the time you read this appendix, tax rates and other factors will almost certainly be different from those we provide. Still, if you understand this appendix, you will understand the basics of our tax system, and you will know how to operate under the revised Tax Code.

Taxes are so complicated that university law schools offer master's degrees in taxation to lawyers, many of whom are also CPAs. In a field complicated enough to warrant such detailed study, only the highlights can be covered in a book such as this. This is really enough, though, because business managers and investors should and do rely on tax specialists rather than trusting their own limited knowledge. Still, it is important to know the basic elements of the tax system as a starting point for discussions with tax experts.



### Progressive Tax

A tax system where the tax rate is higher on higher incomes. The personal income tax in the United States, which goes from 0 percent on the lowest increments of income to 38.6 percent, is progressive.

## INDIVIDUAL INCOME TAXES

Individuals pay taxes on wages and salaries, on investment income (dividends, interest, and profits from the sale of securities), and on the profits of proprietorships and partnerships. Our tax rates are **progressive**—that is, the higher one's income, the larger the percentage paid in taxes. Table 2A-1 gives the tax rates for single individuals and married couples filing joint returns under the rate schedules that will be in effect in April 2003.

TABLE 2A-1

Individual Tax Rates in April 2003

#### SINGLE INDIVIDUALS

IF YOUR TAXABLE INCOME IS	YOU PAY THIS AMOUNT ON THE BASE OF THE BRACKET	PLUS THIS PERCENTAGE ON THE EXCESS OVER THE BASE	AVERAGE TAX RATE AT TOP OF BRACKET
Up to \$6,000	\$ 0	10.0%	10.0%
\$6,000–\$27,950	600.00	15.0	13.9
\$27,950–\$67,700	3,892.50	27.0	21.6
\$67,700–\$141,250	14,625.00	30.0	26.0
\$141,250–\$307,050	36,690.00	35.0	30.8
Over \$307,050	94,720.00	38.6	38.6

#### MARRIED COUPLES FILING JOINT RETURNS

IF YOUR TAXABLE INCOME IS	YOU PAY THIS AMOUNT ON THE BASE OF THE BRACKET	PLUS THIS PERCENTAGE ON THE EXCESS OVER THE BASE	AVERAGE TAX RATE AT TOP OF BRACKET
Up to \$12,000	\$ 0	10.0%	10.0%
\$12,000–\$46,700	1,200.00	15.0	13.7
\$46,700–\$112,850	6,405.00	27.0	21.5
\$112,850–\$171,950	24,265.50	30.0	24.4
\$171,950–\$307,050	41,995.50	35.0	29.1
Over \$307,050	89,280.50	38.6	38.6

#### NOTES:

- These are the tax rates in April 2003. The income ranges at which each tax rate takes effect, as well as the ranges for the additional taxes discussed below, are indexed with inflation each year, so they will change from those shown in the table.
  - The average tax rate approaches 38.6 percent as taxable income rises without limit. At \$1 million of taxable income, the average tax rates for single individuals and married couples filing joint returns are 36.2 percent and 35.7 percent, respectively, while at \$10 million they are 38.4 and 38.3 percent, respectively.
  - In 2002, a *personal exemption* of \$3,000 per person or dependent could be deducted from gross income to determine taxable income. Thus, a husband and wife with two children would have a 2002 exemption of  $4 \times \$3,000 = \$12,000$ . The amount of the exemption is scheduled to increase with inflation. However, if gross income exceeds certain limits (\$206,000 for joint returns and \$137,300 for single individuals in 2002), the exemption is phased out, and this has the effect of raising the effective tax rate on incomes over the specified limit by about 0.5 percent per family member, or 2.0 percent for a family of four. In addition, taxpayers can claim *itemized deductions* for charitable contributions and certain other items, but these deductions are reduced if the gross income exceeds \$137,300 (for both single individuals and joint returns), and this raises the effective tax rate for high-income taxpayers by another 1 percent or so. The combined effect of the loss of exemptions and the reduction of itemized deductions is about 3 percent, so the marginal federal tax rate for high-income individuals goes up to about 41.6 percent.
- In addition, there is the Social Security tax, which amounts to 6.2 percent (12.4 percent for a self-employed person) on up to \$84,900 of earned income, plus a 1.45 percent Medicare payroll tax (2.9 percent for self-employed individuals) on all earned income. Finally, older high-income taxpayers who receive Social Security payments must pay taxes on 85 percent of their Social Security receipts, up from 50 percent in 1994. All of this pushes the effective tax rate up even further.

**Taxable Income**

Gross income minus exemptions and allowable deductions as set forth in the Tax Code.

**Marginal Tax Rate**

The tax rate applicable to the last unit of a person's income.

**Average Tax Rate**

Taxes paid divided by taxable income.

**Bracket Creep**

A situation that occurs when progressive tax rates combine with inflation to cause a greater portion of each taxpayer's real income to be paid as taxes.

- 1. Taxable income** is defined as gross income less a set of exemptions and deductions that are spelled out in the instructions to the tax forms individuals must file. When filing a tax return in 2003 for the tax year 2002, each taxpayer received an exemption of \$3,000 for each dependent, including the taxpayer, which reduces taxable income. However, this exemption is indexed to rise with inflation, and the exemption is phased out (taken away) for high-income taxpayers. Also, certain expenses including mortgage interest paid, state and local income taxes paid, and charitable contributions, can be deducted and thus be used to reduce taxable income, but again, high-income taxpayers lose most of these deductions.
- The **marginal tax rate** is defined as the tax rate on the last unit of income. Marginal rates begin at 15 percent and rise to 38.6 percent. Note, though, that when consideration is given to the phase-out of exemptions and deductions, to Social Security and Medicare taxes, and to state taxes, the marginal tax rate can actually exceed 50 percent.
- One can calculate **average tax rates** from the data in Table 2A-1. For example, if Jill Smith, a single individual, had taxable income of \$35,000, her tax bill would be  $\$3,892.50 + (\$35,000 - \$27,950)(0.27) = \$3,892.50 + \$1,903.50 = \$5,796.00$ . Her *average tax rate* would be  $\$5,796.00/\$35,000 = 16.56\%$  versus a *marginal rate* of 27 percent. If Jill received a raise of \$1,000, bringing her income to \$36,000, she would have to pay \$270 of it as taxes, so her after-tax raise would be \$730. In addition, her Social Security and Medicare taxes would increase by \$76.50, which would cut her net raise to \$653.50.
- As indicated in the notes to the table, the tax code indexes tax brackets to inflation to avoid the **bracket creep** that occurred several years ago and that in reality raised tax rates substantially.<sup>1</sup>

**Taxes on Dividend and Interest Income**

Dividend and interest income received by individuals from corporate securities is added to other income and thus is taxed at rates going up to about 50 percent.<sup>2</sup> Since corporations pay dividends out of earnings that have already been taxed, there is *double taxation* of corporate income—income is first taxed at the corporate rate, and when what is left is paid out as dividends, it is taxed again at the personal rate.

It should be noted that under U.S. tax laws, interest on most state and local government bonds, called *municipals* or “*munis*,” is not subject to federal income taxes. Thus, investors get to keep all of the interest received from most municipal bonds but only a fraction of the interest received from bonds issued by corporations or by

<sup>1</sup> For example, if you were single and had a taxable income of \$27,950 your tax bill would be \$3,892.50. Now suppose inflation caused prices to double and your income, being tied to a cost-of-living index, rose to \$55,900. Because our tax rates are progressive, if tax brackets were not indexed, your taxes would jump to \$11,439.00. Your after-tax income would thus increase from \$24,057.50 to \$44,461.00, but, because prices have doubled, your real income would *decline* from \$24,057.50 to \$22,230.50 (calculated as one-half of \$44,461.00). You would be in a higher tax bracket, so you would be paying a higher percentage of your real income in taxes. If this happened to everyone, and if Congress failed to change tax rates sufficiently, real disposable incomes would decline because the federal government would be taking a larger share of the national product. This is called the federal government's “inflation dividend.” However, since tax brackets are now indexed, if your income doubled due to inflation, your tax bill would double, but your after-tax real income would remain constant at \$24,057.50. Bracket creep was a real problem until the 1980s, when indexing put an end to it.

<sup>2</sup> You do not pay Social Security and Medicare taxes on interest, dividends, and capital gains, only on earned income, but state taxes are generally imposed on dividends, interest, and capital gains.

the U.S. government. This means that a lower-yielding muni can provide the same after-tax return as a higher-yielding corporate bond. For example, a taxpayer in the 38.6 percent marginal tax bracket who could buy a muni that yielded 5.5 percent would have to receive a before-tax yield of 8.96 percent on a corporate or U.S. Treasury bond to have the same after-tax income:

$$\begin{aligned}\text{Equivalent pre-tax yield} &= \frac{\text{Yield on muni}}{1 - \text{Marginal tax rate}} \\ \text{on taxable bond} &= \frac{5.5\%}{1 - 0.386} = 8.96\%.\end{aligned}$$

If we know the yield on the taxable bond, we can use the following equation to find the equivalent yield on a muni:

$$\begin{aligned}\text{Equivalent yield on muni} &= \left( \frac{\text{Pre-tax yield}}{\text{on taxable bond}} \right) (1 - \text{Marginal tax rate}) \\ &= 8.96\% (1 - 0.386) = 8.96\% (0.614) = 5.5\%.\end{aligned}$$

The exemption from federal taxes stems from the separation of federal and state powers, and its primary effect is to help state and local governments borrow at lower rates than they otherwise could.

Munis always yield less than corporate bonds with similar risk, maturity, and liquidity. Because of this, it would make no sense for someone in a zero or very low tax bracket to buy munis. Therefore, most munis are owned by high-bracket investors.

### Capital Gains versus Ordinary Income

Assets such as stocks, bonds, and real estate are defined as *capital assets*. If you buy a capital asset and later sell it for more than your purchase price, the profit is called a **capital gain**; if you suffer a loss, it is called a **capital loss**. An asset sold within one year of the time it was purchased produces a *short-term gain or loss* and one held for a year or more produces a *long-term gain or loss*. Thus, if you buy 100 shares of Disney stock for \$42 per share and sell it for \$52 per share, you make a capital gain of  $100 \times \$10$ , or \$1,000. However, if you sell the stock for \$32 per share, you will have a \$1,000 capital loss. Depending on how long you held the stock, you will have a short-term or long-term gain or loss.<sup>3</sup> If you sell the stock for exactly \$42 per share, you make neither a gain nor a loss; you simply get your \$4,200 back, and no tax is due.

Short-term capital gains are added to such ordinary income as wages, dividends, and interest and then are taxed at the same rate as ordinary income. However, long-term capital gains are taxed differently. The top rate on long-term gains for most situations is 20 percent. Thus, if in 2002 you were in the 38.6 percent tax bracket, any short-term gains you earned would be taxed just like ordinary income, but your long-term gains would be taxed at 20 percent. However, for investors in the 15 percent tax bracket the long-term capital gains tax rate is only 10 percent, and effective in 2001, individuals in the 15 percent tax bracket will pay a capital gains rate of 8 percent on profits from the sale of investments held more than five years. Thus, capital gains on assets held for more than 12 months are better than ordinary income for many people because the tax bite is smaller.

<sup>3</sup> If you have a net capital loss (capital losses exceed capital gains) for the year, you can currently deduct only up to \$3,000 of this loss against your other income (for example, salary, interest, and dividends). This \$3,000 loss limitation is not applicable to losses on the sale of business assets, which by definition are not capital assets.

#### Capital Gain or Loss

The profit (loss) from the sale of a capital asset for more (less) than its purchase price.

Capital gains tax rates have varied over time, but they have generally been lower than rates on ordinary income. The reason is simple—Congress wants the economy to grow, for growth we need investment in productive assets, and low capital gains tax rates encourage investment. To see why, suppose you owned a company that earned \$1 million after corporate taxes. Because it is your company, you could have it pay out the entire \$1 million profit as dividends, or you could have it retain and reinvest all or part of the income to expand the business. If it paid dividends, they would be taxable to you at a rate of 38.6 percent. However, if the company reinvests its income, that reinvestment should cause the company's earnings and stock price to increase. Then, if you wait for one year and then sell some of your stock at a now-higher price, you will have earned capital gains, but they will be taxed at only 20 percent. Further, you can postpone the capital gains tax indefinitely by simply not selling the stock.

It should be clear that a lower tax rate on capital gains will encourage investment. The owners of small businesses will want to reinvest income to get capital gains, as will stockholders in large corporations. Individuals with money to invest will understand the tax advantages associated with investing in newly formed companies versus buying bonds, so new ventures will have an easier time attracting equity capital. All in all, lower capital gains tax rates stimulate capital formation and investment.<sup>4</sup>

## CORPORATE INCOME TAXES

The corporate tax structure, shown in Table 2A-2, is relatively simple. To illustrate, if a firm had \$65,000 of taxable income, its tax bill would be

$$\begin{aligned}\text{Taxes} &= \$7,500 + 0.25(\$15,000) \\ &= \$7,500 + \$3,750 = \$11,250,\end{aligned}$$

and its average tax rate would be  $\$11,250/\$65,000 = 17.3\%$ . Note that corporate income above \$18,333,333 has an average and marginal tax rate of 35 percent.<sup>5</sup>

<sup>4</sup> Fifty percent of any capital gains on the newly issued stock of certain small companies is excluded from taxation, provided the small-company stock is held for five years or longer. The remaining 50 percent of the gain is taxed at a rate of 20 percent for most taxpayers. Thus, if one bought newly issued stock from a qualifying small company and held it for at least five years, any capital gains would be taxed at a maximum rate of 10 percent for most taxpayers. This provision was designed to help small businesses attract equity capital.

<sup>5</sup> Prior to 1987, many large, profitable corporations such as General Electric and Boeing paid no income taxes. The reasons for this were as follows: (1) expenses, especially depreciation, were defined differently for calculating taxable income than for reporting earnings to stockholders, so some companies reported positive profits to stockholders but losses—hence no taxes—to the Internal Revenue Service; and (2) some companies that did have tax liabilities used various tax credits to offset taxes that would otherwise have been payable. This situation was effectively eliminated in 1987.

The principal method used to eliminate this situation is the Alternative Minimum Tax (AMT). Under the AMT, both corporate and individual taxpayers must figure their taxes in two ways, the “regular” way and the AMT way, and then pay the higher of the two. The AMT is calculated as follows: (1) Figure your regular taxes. (2) Take your taxable income under the regular method and then add back certain items, especially income on certain municipal bonds, depreciation in excess of straight-line depreciation, certain research and drilling costs, itemized or standard deductions (for individuals), and a number of other items. (3) The income determined in (2) is defined as AMT income, and it must then be multiplied by the AMT tax rate to determine the tax due under the AMT system. An individual or corporation must then pay the higher of the regular tax or the AMT tax. In 2002, there were two AMT tax rates for individuals (26 percent and 28 percent, depending on the level of AMT income and filing status). Most corporations have an AMT of 20 percent. However, there is no AMT for very small companies, defined as those that have had average sales of less than \$5 million for the last three years and whose average sales continue to be less than \$7.5 million.

TABLE 2A-2

## Corporate Tax Rates as of January 2002

IF A CORPORATION'S TAXABLE INCOME IS	IT PAYS THIS AMOUNT ON THE BASE OF THE BRACKET	PLUS THIS PERCENTAGE ON THE EXCESS OVER THE BASE	AVERAGE TAX RATE AT TOP OF BRACKET
Up to \$50,000	\$ 0	15%	15.0%
\$50,000–\$75,000	7,500	25	18.3
\$75,000–\$100,000	13,750	34	22.3
\$100,000–\$335,000	22,250	39	34.0
\$335,000–\$10,000,000	113,900	34	34.0
\$10,000,000–\$15,000,000	3,400,000	35	34.3
\$15,000,000–\$18,333,333	5,150,000	38	35.0
Over \$18,333,333	6,416,667	35	35.0

### Interest and Dividend Income Received by a Corporation

Interest income received by a corporation is taxed as ordinary income at regular corporate tax rates. However, 70 percent of the dividends received by one corporation from another is excluded from taxable income, while the remaining 30 percent is taxed at the ordinary tax rate.<sup>6</sup> Thus, a corporation earning more than \$18,333,333 and paying a 35 percent marginal tax rate would pay only  $(0.30)(0.35) = 0.105 = 10.5\%$  of its dividend income as taxes, so its effective tax rate on dividends received would be 10.5 percent. If this firm had \$10,000 in pre-tax dividend income, its after-tax dividend income would be \$8,950:

$$\begin{aligned}
 \text{After-tax income} &= \text{Before-tax income} - \text{Taxes} \\
 &= \text{Before-tax income} - (\text{Before-tax income})(\text{Effective tax rate}) \\
 &= \text{Before-tax income}(1 - \text{Effective tax rate}) \\
 &= \$10,000 [1 - (0.30)(0.35)] \\
 &= \$10,000(1 - 0.105) = \$10,000(0.895) = \$8,950.
 \end{aligned}$$

If the corporation pays its own after-tax income out to its stockholders as dividends, the income is ultimately subjected to *triple taxation*: (1) the original corporation is first taxed, (2) the second corporation is then taxed on the dividends it received, and (3) the individuals who receive the final dividends are taxed again. This is the reason for the 70 percent exclusion on intercorporate dividends.

If a corporation has surplus funds that can be invested in marketable securities, the tax factor favors investment in stocks, which pay dividends, rather than in bonds, which pay interest. For example, suppose GE had \$100,000 to invest, and it could buy either bonds that paid interest of \$8,000 per year or preferred stock that paid

<sup>6</sup>The size of the dividend exclusion actually depends on the degree of ownership. Corporations that own less than 20 percent of the stock of the dividend-paying company can exclude 70 percent of the dividends received; firms that own more than 20 percent but less than 80 percent can exclude 80 percent of the dividends; and firms that own more than 80 percent can exclude the entire dividend payment. We will, in general, assume a 70 percent dividend exclusion.

dividends of \$7,000. GE is in the 35 percent tax bracket; therefore, its tax on the interest, if it bought bonds, would be  $0.35(\$8,000) = \$2,800$ , and its after-tax income would be \$5,200. If it bought preferred (or common) stock, its tax would be  $0.35[(0.30)(\$7,000)] = \$735$ , and its after-tax income would be \$6,265. Other factors might lead GE to invest in bonds, but the tax factor certainly favors stock investments when the investor is a corporation.<sup>7</sup>

### Interest and Dividends Paid by a Corporation

A firm's operations can be financed with either debt or equity capital. If it uses debt, it must pay interest on this debt, whereas if it uses equity, it is expected to pay dividends to the equity investors (stockholders). The interest *paid* by a corporation is deducted from its operating income to obtain its taxable income, but dividends paid are not deductible. Therefore, a firm needs \$1 of pre-tax income to pay \$1 of interest, but if it is in the 40 percent federal-plus-state tax bracket, it must earn \$1.67 of pre-tax income to pay \$1 of dividends:

$$\text{Pre-tax income needed to pay \$1 of dividends} = \frac{\$1}{1 - \text{Tax rate}} = \frac{\$1}{0.60} = \$1.67.$$

Working backward, if a company has \$1.67 in pre-tax income, it must pay \$0.67 in taxes  $[(0.4)(\$1.67) = \$0.67]$ . This leaves it with after-tax income of \$1.00.

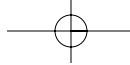
Table 2A-3 shows the situation for a firm with \$10 million of assets, sales of \$5 million, and \$1.5 million of earnings before interest and taxes (EBIT). As shown in Column 1, if the firm were financed entirely by bonds, and if it made interest

<sup>7</sup>This illustration demonstrates why corporations favor investing in lower-yielding preferred stocks over higher-yielding bonds. When tax consequences are considered, the yield on the preferred stock,  $[1 - 0.35(0.30)](7.0\%) = 6.265\%$ , is higher than the yield on the bond,  $(1 - 0.35)(8.0\%) = 5.200\%$ . Also, note that corporations are restricted in their use of borrowed funds to purchase other firms' preferred or common stocks. Without such restrictions, firms could engage in *tax arbitrage*, whereby the interest on borrowed funds reduces taxable income on a dollar-for-dollar basis, but taxable income is increased by only \$0.30 per dollar of dividend income. Thus, current tax laws reduce the 70 percent dividend exclusion in proportion to the amount of borrowed funds used to purchase the stock.

TABLE 2A-3

Returns to Investors under Bond and Stock Financing

	USE BONDS (1)	USE STOCK (2)
Sales	\$5,000,000	\$5,000,000
Operating costs	<u>3,500,000</u>	<u>3,500,000</u>
Earnings before interest and taxes (EBIT)	\$1,500,000	\$1,500,000
Interest	<u>1,500,000</u>	<u>0</u>
Taxable income	\$ 0	\$1,500,000
Federal-plus-state taxes (40%)	<u>0</u>	<u>600,000</u>
After-tax income	<u>\$ 0</u>	<u>\$ 900,000</u>
Income to investors	<u>\$1,500,000</u>	<u>\$ 900,000</u>
Rate of return on \$10 million of assets	15.0%	9.0%



payments of \$1.5 million, its taxable income would be zero, taxes would be zero, and its investors would receive the entire \$1.5 million. (The term *investors* includes both stockholders and bondholders.) However, as shown in Column 2, if the firm had no debt and was therefore financed only by stock, all of the \$1.5 million of EBIT would be taxable income to the corporation, the tax would be  $\$1,500,000(0.40) = \$600,000$ , and investors would receive only \$0.9 million versus \$1.5 million under debt financing. The rate of return to investors on their \$10 million investment is therefore much higher if debt is used.

Of course, it is generally not possible to finance exclusively with debt capital, and the risk of doing so would offset the benefits of the higher expected income. *Still, the fact that interest is a deductible expense has a profound effect on the way businesses are financed—our corporate tax system favors debt financing over equity financing.* This point is discussed in more detail in the chapters on cost of capital and capital structure and leverage.

### Corporate Capital Gains

Before 1987, corporate long-term capital gains were taxed at lower rates than corporate ordinary income, so the situation was similar for corporations and individuals. Under current law, however, corporations' capital gains are taxed at the same rates as their operating income.

### Corporate Loss Carry-Back and Carry-Forward

Ordinary corporate operating losses can be carried back (**carry-back**) to each of the preceding 2 years and forward (**carry-forward**) for the next 20 years and used to offset taxable income in those years. For example, an operating loss in 2003 could be carried back and used to reduce taxable income in 2001 and 2002, and forward, if necessary, and used in 2004, 2005, and so on, to the year 2023. The loss is typically applied first to the earliest year, then to the next earliest year, and so on, until losses have been used up or the 20-year carry-forward limit has been reached.

To illustrate, suppose Apex Corporation had \$2 million of *pre-tax* profits (taxable income) in 2001 and 2002, and then, in 2003, Apex lost \$12 million. Also, assume that Apex's federal-plus-state tax rate is 40 percent. As shown in Table 2A-4, the company would use the carry-back feature to recompute its taxes for 2001, using \$2 million of the 2003 operating losses to reduce the 2001 pre-tax profit to zero. This would permit it to recover the taxes paid in 2001. Therefore, in 2003 Apex would receive a refund of its 2001 taxes because of the loss experienced in 2003. Because \$10 million of the unrecovered losses would still be available, Apex would repeat this procedure for 2002. Thus, in 2003 the company would pay zero taxes for 2003 and also would receive a refund for taxes paid in 2001 and 2002. Apex would still have \$8 million of unrecovered losses to carry forward, subject to the 20-year limit. This \$8 million could be used until the entire \$12 million loss had been used to offset taxable income. The purpose of permitting this loss treatment is to avoid penalizing corporations whose incomes fluctuate substantially from year to year.

### Improper Accumulation to Avoid Payment of Dividends

Corporations could refrain from paying dividends and thus permit their stockholders to avoid personal income taxes on dividends. To prevent this, the Tax Code contains an **improper accumulation** provision that states that earnings accumulated by a corporation are subject to penalty rates *if the purpose of the accumulation is to enable stockholders to*

#### Tax Loss Carry-Back and Carry-Forward

Ordinary corporate operating losses can be carried backward for 2 years and forward for 20 years to offset taxable income in a given year.

#### Improper Accumulation

Retention of earnings by a business for the purpose of enabling stockholders to avoid personal income taxes.

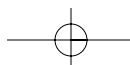


TABLE 2A-4

**Apex Corporation: Calculation of Loss Carry-Back and Carry-Forward  
for 2001–2002 Using a \$12 Million 2003 Loss**

	2001	2002
Original taxable income	\$ 2,000,000	\$ 2,000,000
Carry-back credit	<u>– 2,000,000</u>	<u>– 2,000,000</u>
Adjusted profit	\$ 0	\$ 0
Taxes previously paid (40%)	<u>800,000</u>	<u>800,000</u>
Difference = Tax refund	<u>\$ 800,000</u>	<u>\$ 800,000</u>
Total refund check received in 2004: \$800,000 + \$800,000 = \$1,600,000		
Amount of loss carry-forward available for use in 2004–2023:		
2003 loss	\$12,000,000	
Carry-back losses used	<u>4,000,000</u>	
Carry-forward losses still available	<u>\$ 8,000,000</u>	

*avoid personal income taxes.* A cumulative total of \$250,000 (the balance sheet item “retained earnings”) is by law exempted from the improper accumulation tax for most corporations. This is a benefit primarily to small corporations.

The improper accumulation penalty applies only if the retained earnings in excess of \$250,000 are *shown by the IRS to be unnecessary to meet the reasonable needs of the business.* A great many companies do indeed have legitimate reasons for retaining more than \$250,000 of earnings. For example, earnings may be retained and used to pay off debt, to finance growth, or to provide the corporation with a cushion against possible cash drains caused by losses. How much a firm should properly accumulate for uncertain contingencies is a matter of judgment. We shall consider this matter again in the chapter on distributions to shareholders.

### Consolidated Corporate Tax Returns

If a corporation owns 80 percent or more of another corporation’s stock, it can aggregate income and file one consolidated tax return; thus, the losses of one company can be used to offset the profits of another. (Similarly, one division’s losses can be used to offset another division’s profits.) No business ever wants to incur losses (you can go broke losing \$1 to save 35¢ in taxes), but tax offsets do help make it more feasible for large, multidivisional corporations to undertake risky new ventures or ventures that will suffer losses during a developmental period.

### S Corporation

A small corporation that, under Subchapter S of the Internal Revenue Code, elects to be taxed as a proprietorship or a partnership yet retains limited liability and other benefits of the corporate form of organization.

## TAXATION OF SMALL BUSINESSES: S CORPORATIONS

The Tax Code provides that small businesses that meet certain restrictions as spelled out in the code may be set up as corporations and thus receive the benefits of the corporate form of organization—especially limited liability—yet still be taxed as proprietorships or partnerships rather than as corporations. These corporations are called **S corporations**. (“Regular” corporations are called C corporations.) If a corporation elects S corporation status for tax purposes, all of the business’s income is reported as personal income by its stockholders, on a pro rata basis, and thus is taxed at the rates

that apply to individuals. This is an important benefit to the owners of small corporations in which all or most of the income earned each year will be distributed as dividends, because then the income is taxed only once, at the individual level.

## DEPRECIATION

Depreciation plays an important role in income tax calculations—the larger the depreciation, the lower the taxable income, the lower the tax bill, hence the higher the cash flow from operations. Congress specifies, in the Tax Code, both the life over which assets can be depreciated for tax purposes and the methods of depreciation that can be used. We will discuss in detail how depreciation is calculated, and how it affects income and cash flows, when we take up capital budgeting.

## QUESTIONS

- 2A-1** In what way does the Tax Code discourage corporations from paying high dividends to their shareholders?
- 2A-2** If you were starting a business, what tax considerations might cause you to prefer to set it up as a proprietorship or a partnership rather than as a corporation?
- 2A-3** For someone planning to start a new business, is the average or the marginal tax rate more relevant?

## SELF-TEST PROBLEM

**ST2A-1**  
Effect of form of organization  
on taxes

Mary Henderson is planning to start a new business, MH Enterprises, and she must decide whether to incorporate or to do business as a sole proprietorship. Under either form, Henderson will initially own 100 percent of the firm, and tax considerations are important to her. She plans to finance the firm's expected growth by drawing a salary just sufficient for her family living expenses, which she estimates will be about \$40,000, and by retaining all other income in the business. Assume that as a married woman with one child, she files a joint return. She has income tax exemptions of  $3 \times \$3,000 = \$9,000$ , and she estimates that her itemized deductions for each of the 3 years will be \$9,700. She expects MH Enterprises to grow and to earn income of \$52,700 in 2003, \$90,000 in 2004, and \$150,000 in 2005. Which form of business organization will allow Henderson to pay the lowest taxes (and retain the most income) during the period from 2003 to 2005? Assume that the tax rates given in the appendix are applicable for all future years. (Social Security taxes would also have to be paid, but ignore them.)

## STARTER PROBLEMS

*Note: By the time this book is published, Congress might have changed rates and/or other provisions of current tax law—as noted in the appendix, such changes occur fairly often. Work all problems on the assumption that the information in the appendix is applicable.*

- 2A-1**  
After-tax yield An investor recently purchased a corporate bond that yields 9 percent. The investor is in the 35 percent tax bracket. What is the bond's after-tax yield?
- 2A-2**  
Personal taxes Joe and Jane Keller are a married couple who file a joint income tax return. The couple's taxable income was \$102,000. How much federal taxes did they owe? Use the tax tables given in the appendix.
- 2A-3**  
After-tax yield Corporate bonds issued by Johnson Corporation currently yield 8 percent. Municipal bonds of equal risk currently yield 6 percent. At what tax rate would an investor be indifferent between these two bonds?

### EXAM-TYPE PROBLEMS

The problems included in this section are set up in such a way that they could be used as multiple-choice exam problems.

- 2A-4** Corporate tax liability The Talley Corporation had a 2002 taxable income of \$365,000 from operations after all operating costs but before (1) interest charges of \$50,000, (2) dividends received of \$15,000, (3) dividends paid of \$25,000, and (4) income taxes. What are the firm's income tax liability and its after-tax income? What are the company's marginal and average tax rates on taxable income?
- 2A-5** Corporate tax liability The Wendt Corporation had \$10.5 million of taxable income from operations in 2002.
- What is the company's federal income tax bill for the year?
  - Assume the firm receives an additional \$1 million of interest income from some bonds it owns. What is the tax on this interest income?
  - Now assume that Wendt does not receive the interest income but does receive an additional \$1 million as dividends on some stock it owns. What is the tax on this dividend income?
- 2A-6** After-tax yield The Shrieves Corporation has \$10,000 that it plans to invest in marketable securities. It is choosing between AT&T bonds, which yield 7.5 percent, state of Florida muni bonds, which yield 5 percent, and AT&T preferred stock, with a dividend yield of 6 percent. Shrieves' corporate tax rate is 35 percent, and 70 percent of the dividends received are tax exempt. Assuming that the investments are equally risky and that Shrieves chooses strictly on the basis of after-tax returns, which security should be selected? What is the after-tax rate of return on the highest-yielding security?
- 2A-7** After-tax yield Your personal tax rate is 35 percent. You can invest in either corporate bonds that yield 9 percent or municipal bonds (of equal risk) that yield 7 percent. Which investment should you choose? (Ignore state income taxes.)

### PROBLEMS

- 2A-8** Personal taxes Marge Trumbell, who is married with two children, received a salary of \$75,000 this year. Trumbell also received \$4,250 in dividend income, \$10,000 of interest income from municipal bonds, and \$12,000 in long-term capital gains from selling stock that she acquired 10 years ago. Marge is entitled to 4 personal exemptions worth \$3,000 each, and her itemized deductions total \$9,375.
- What is Marge's federal income tax liability for the year?
  - What are Marge's marginal and average federal tax rates?
  - How much after-tax income does Marge earn? Assume that Marge resides in a state that has no state income taxes.
- 2A-9** Loss carry-back, carry-forward The Herrmann Company has made \$150,000 before taxes during each of the last 15 years, and it expects to make \$150,000 a year before taxes in the future. However, in 2002 the firm incurred a loss of \$650,000. The firm will claim a tax credit at the time it files its 2002 income tax return, and it will receive a check from the U.S. Treasury. Show how it calculates this credit, and then indicate the firm's tax liability for each of the next 5 years. Assume a 40 percent tax rate on *all* income to ease the calculations.
- 2A-10** Loss carry-back, carry-forward The projected taxable income of the McAlhany Corporation, formed in 2003, is indicated in the table below. (Losses are shown in parentheses.) What is the corporate tax liability for each year? Assume a constant federal-plus-state tax rate of 40 percent.

YEAR	TAXABLE INCOME
2003	(\$ 95,000,000)
2004	70,000,000
2005	55,000,000
2006	80,000,000
2007	(150,000,000)

- 2A-11** Form of organization Susan Visscher has operated her small restaurant as a sole proprietorship for several years, but projected changes in her business's income have led her to consider incorporating. Visscher is

married and has two children. Her family's only income, an annual salary of \$52,000, is from operating the business. (The business actually earns more than \$52,000, but Susan reinvests the additional earnings in the business.) She itemizes deductions, and she is able to deduct \$8,600. These deductions, combined with her four personal exemptions for  $4 \times \$3,000 = \$12,000$ , give her a taxable income of  $\$52,000 - \$8,600 - \$12,000$ . (Assume the personal exemption remains at \$3,000.) Of course, her actual taxable income, if she does not incorporate, would be higher by the amount of reinvested income. Visscher estimates that her business earnings before salary and taxes for the period 2003 to 2005 will be:

YEAR	EARNINGS BEFORE SALARY AND TAXES
2003	\$ 70,000
2004	\$ 95,000
2005	\$ 110,000

- a. What would her total taxes (corporate plus personal) be in each year under
  - (1) A non-S corporate form of organization? (2003 tax = \$6,810.)
  - (2) A proprietorship? (2003 tax = \$7,134.)
- b. Should Visscher incorporate? Discuss.

**2A-12**  
Personal taxes

Mary Jarvis, a single individual, has this situation for the year 2002: salary of \$82,000; dividend income of \$12,000; interest on Disney bonds of \$5,000; interest on state of Florida municipal bonds of \$10,000; proceeds of \$22,000 from the sale of Disney stock purchased in 2000 at a cost of \$9,000; and proceeds of \$22,000 from the November 2002 sale of Disney stock purchased in October 2002 at a cost of \$21,000. Jarvis gets one exemption (\$3,000), and she has allowable itemized deductions of \$6,000; these amounts will be deducted from her gross income to determine her taxable income.

- a. What is Jarvis's federal tax liability for 2002?
- b. What are her marginal and average tax rates?
- c. If she had \$5,000 to invest and was offered a choice of either state of Florida bonds with a yield of 6 percent or more Disney bonds with a yield of 8 percent, which should she choose, and why?
- d. At what marginal tax rate would Jarvis be indifferent in her choice between the Florida and Disney bonds?