

FINANCIAL BACKGROUND: A REVIEW OF ACCOUNTING, FINANCIAL STATEMENTS, AND TAXES

CHAPTER OUTLINE



Accounting Systems and Financial Statements

- The Nature of Financial Statements
- The Accounting System

The Income Statement

- Presentation

The Balance Sheet

- Presentation

- Assets
- Liabilities
- Equity

The Tax Environment

- Taxing Authorities and Tax Bases
- Income Taxes—The Total Effective Tax Rate
- Progressive Tax Systems, Marginal and Average Rates
- Capital Gains and Losses

Income Tax Calculations

- Personal Taxes
- Corporate Taxes

Some knowledge of accounting is necessary to appreciate finance. That's because financial transactions are recorded in accounting systems, and financial performance is stated in accounting terms. In other words, if we want to deal with money in business, we have to deal with the system that keeps track of it, and that's accounting. Some knowledge of taxes is also necessary, because tax considerations influence most financial decisions.

Although accounting is generally a prerequisite, finance students have differing levels of knowledge about the subject. Some are quite expert, while others, who may have taken accounting some time ago, don't remember much.

This chapter provides a review of what you need to know about accounting and taxes in a condensed form. If you're not strong in the area, reading the chapter carefully will be a lot quicker than digging the ideas out of your old accounting text. If you are up to speed, you can skim the material and move on.

We'll conduct our review as painlessly as possible, keeping in mind that while financial people need to know something about accounting, they don't have to be accountants. In fact, we won't even have to use debits and credits!

ACCOUNTING SYSTEMS AND FINANCIAL STATEMENTS

Virtually everything business enterprises do is recorded as a series of money transactions within the structure of an accounting system. That record and the system itself provide the framework most managements use to control their businesses. Accounting systems produce several fairly standard reports known as financial statements that reflect business performance.

http://

For more help with your review of accounting, go to Accounting Over Easy at

<http://www.ezaccounting.com/previewindex.html>

Financial statements are numerical representations of a firm's activities for an accounting period.

THE NATURE OF FINANCIAL STATEMENTS

A business's financial statements are numerical representations of what it is physically doing. Keep that concept firmly in mind as we go forward. The idea behind statements is to give a picture of what's happening within the company and between the company and the rest of the world both physically and financially. This excellent idea creates a problem, however, in that it causes statements to be somewhat counterintuitive. That is, they don't necessarily say what a person untrained in accounting is likely to think they're saying. Here's an example.

Is Income "Income"?

Most people think of income as the money they're paid, which after payroll withholding is what they take home. In other words, income means cash in your pocket or cash paid to Uncle Sam for your taxes.

The income statement is one of the traditional financial statements. It starts with the dollar amount the company has sold, deducts costs, expenses, and taxes, and winds up with a figure called net income (also called earnings after tax, which is abbreviated as EAT). Most people would expect that figure to represent cash in the pocket of the business or its owner, just like a paycheck. However, it doesn't mean that at all. Several accounting concepts get in the way and give net income a character of its own. We'll describe two major differences between net income and cash flowing into the company's pocket.

Accounts Receivable

It's customary for many businesses to sell most of their products on credit, receiving a promise of later payment rather than immediate cash. Despite the fact that no money is received, accounting theory says that when a credit sale occurs, the firm has done everything it has to do to earn the related income, and the income therefore should be *recognized* in the financial statements.

In fact, however, the firm has less cash than it would have had if it never made the sale. That's because, although it hasn't collected from the customer, it did supply product and to do so it had to pay for labor and materials.

Uncollected payments for product sold are called *accounts receivable* and represent a big difference between cash and accounting income.

Depreciation

Another idea that seems odd to the uninitiated is the way long-lived assets are handled financially. Suppose a company buys a machine to use in its business, paying \$10,000 in cash at the time of purchase. Assume the machine is expected to last five years. How is the cost of the machine recognized as a cost of doing business?

Someone unfamiliar with accounting might think the cost would be recognized along with the outflow of money that pays for the machine—that is, a \$10,000 cost in the year of purchase. However, accounting theory says that to properly reflect the workings of the business, we have to match the cost of the machine with the period over which it gives service. Therefore, we prorate the \$10,000 cost over the five-year life of the asset.

That's done with a financial device called depreciation. If the proration is even over the life of the asset, depreciation allocates \$2,000 to cost in the income statement in each of the asset's five years of life. (Evenly prorated depreciation is called *straight line*.)

Depreciation is the proration of an asset's cost over its service life.

That convention creates a strange situation in terms of cash in the company's pocket. In the first year, the firm spent \$10,000 but could declare only \$2,000 as a cost of doing business. In other words, it used up a lot more cash than the income statement indicates. In each of the subsequent four years, it didn't spend anything but still got to declare \$2,000 in cost. So in those years the income statement indicates that the company used up more money than it actually did.

Clearly these practices indicate that accounting income is conceptually different from paycheck income and that financial statements are concerned with more than just the flow of money in and out of the business. They do tell us about that, but they also tell us about what's going on in other ways.

The Three Financial Statements

Three financial statements are of interest to us: the income statement, the balance sheet, and the statement of cash flows. There is a fourth that pertains to changes in owner's equity, but we won't be concerned with it here. The income statement and the balance sheet are the *basic* statements that derive from the books of account. The statement of cash flows is developed from them.

We'll consider the income statement and balance sheet in this chapter and the statement of cash flows in Chapter 3. First, a little background on accounting in general is in order.

THE ACCOUNTING SYSTEM

An accounting system is an organized set of rules by which every transaction the firm makes is recorded in a set of records. The records are collectively known as the company's "books." Books used to be kept in ledgers that looked like books—hence the name. Today, they're more likely to be records in a computer.

The books are separated into a series of "accounts." An account generally holds records of transactions of a particular type or those related to a particular part of the business. For example, a revenue account receives all transactions involving the sale of product to customers, while a fixed asset account receives records related to the acquisition and disposal of heavy machinery.

Transactions include activities like selling product, buying inventory and equipment, paying wages, building product, borrowing money, paying taxes, and paying dividends. A business transaction is recorded in the books by an *entry*. An entry generally means that we add or subtract a dollar figure to or from the balance in an account.

The Double Entry System

Most accounting systems use the double entry system of keeping records. Double entry means that each entry has two equal parts, called *sides*. Each side of an entry is made to a different account.

The double entry concept is hard to grasp at first. You can get used to the idea by thinking of certain kinds of entries in which the two sides represent where we get money and what we do with it. For example, suppose we bought a machine on credit for \$1,000. That essentially means we bought the machine and took out a loan for the purchase price at the same time. One side of the entry that records this transaction would involve adding \$1,000 to the fixed asset account to show that the company now has the machine. The other side would involve adding \$1,000 to a payable account to reflect an obligation to pay the money. The asset side of the transaction shows what we did with the money, and the payable side shows where we got it.

A firm's **financial books** are a collection of records in which money transactions are recorded.

In **double entry** accounting, every entry has two sides that must balance.

The two sides of an entry are called *debits* and *credits*. In any entry, the total debit must equal the total credit. (This is the only time we'll mention debits and credits.)

Consider another example, recording a sale. Suppose we sold an item to a customer for \$200. One side of the entry would add \$200 to the sales account, but what would the other side be?

The answer depends on the terms of the sale. If the customer paid cash, the other side would simply add \$200 to the cash account to reflect that the firm now has that additional money. However, if the customer bought on credit, the \$200 would be added to a receivable account to reflect the fact that the company is owed the money.

Every entry must have two equal or *balancing* sides. Hence, it's common to say that correctly kept books are balanced.

Accounting Periods and Closing the Books

In business, time is divided into accounting periods, usually months, quarters, and years, during which transactions are accumulated. At the end of each period, all the transactions occurring in the period are totaled and the company's books are brought up to date as of the last day of the period. This process, called *closing the books*, usually takes place in the days immediately following the last day of an accounting period.

Certain procedures are applied to the closed books to generate the financial statements with which we began our discussion. It's important to understand that financial statements are associated with particular accounting periods. The balance sheet is associated with the point in time at the end of the period, while the income statement and statement of cash flows are related to the entire period.

Implications

It's important to keep in mind that last year's financial statements don't say anything about what's going on this year or what will happen next year. They refer only to the past.

Statements can, however, be used as an indication of what is likely to happen in subsequent years. Past financial statements are a little like a person's medical history. If you were sick last year, you're more likely to be sick next year than if you were healthy. However, a sick person can get well, and a healthy person can get sick and die. Similarly, a firm that was financially sound last year can fail next year if it's mismanaged or something dramatic happens to its business.

Stocks and Flows

There is a fundamental difference between the two basic financial statements. The income statement reflects *flows* of money *over a period of time*. The balance sheet represents *stocks* of money *at a point in time*.

The income statement shows money flowing in and out of the organization. Revenues flow in while costs and expenses flow out. The difference is profit. The balance sheet makes a statement as of a moment in time. It says at this instant the company owns a particular list of assets and owes a particular list of creditors.

A set of statements includes an income statement that covers an entire accounting period and a balance sheet that can be thought of as a snapshot at the end of that period. The derived statement of cash flows, like the income statement, represents flows over an entire period.

Books are closed by updating the period's transactions in the accounting system and creating financial statements.

THE INCOME STATEMENT

An income statement shows how much money a company has earned during the accounting period, commonly a year.

PRESENTATION

Most income statements have a form similar to the one shown in Table 2.1. Let's examine each line individually.

Table 2.1

**A Conventional
Income
Statement
Format**

Sales (Revenue)	\$1,000
Cost of goods sold	<u>600</u>
Gross margin	\$ 400
Expenses	<u>230</u>
Earnings before interest & taxes	\$ 170
Interest expense	<u>20</u>
Earnings before tax	\$ 150
Tax	<u>50</u>
Net income	\$ 100

Sales

Sales, also called *revenue*, represents the total receipts from selling whatever it is the company is in business to sell. In other words, sales are receipts from normal business operations.

This is an important point. If the company receives money from activities outside its usual form of business, that money should be recorded as other income rather than as sales. For example, a retail business might sell the store in which it operates to move to another. That sale of real estate shouldn't be included in the sales line.

Cost and Expense

Cost of goods sold and expenses are subtracted from sales to arrive at earnings before interest and taxes. Both cost and expense represent money spent to do business, but there's an important distinction between the two.

Cost of Goods Sold (COGS)

COGS represents spending on things that are closely associated with the production of the product or service being sold. For example, in a retail business COGS is usually just the wholesale cost of product plus incoming freight. In a manufacturing business, however, COGS is much more complex. It includes labor and material directly associated with production as well as any peripheral spending in support of production. The peripheral spending is called *overhead* and can be substantial. It includes the cost of such things as factory management, the factory building itself, and depreciation on machinery.

In a service business, COGS (usually just called Cost) includes the wages of the people who provide the services, depreciation on their tools and equipment, travel costs of getting to sites requiring service, and the cost of the facilities that house service operations.

Expense

Expenses represent spending on things that although necessary aren't closely related to production. These include functions like marketing and sales, accounting, personnel, research, and engineering. The money spent in those areas tends to be related to the passage of time rather than to the amount produced.

Depreciation

Although not a separate line on most income statements, depreciation is an important item. We'll study the idea in more detail later. For now, it's important to note that *both* cost and expense usually include some depreciation.

Gross Margin

Gross margin, sometimes called *gross profit margin*, is simply sales revenue less COGS. It is a fundamental measure of profitability, getting at what it costs to make the product or service before consideration of the costs of selling, distributing, or accounting for it.

Interest and Earnings Before Interest and Taxes

Most but not all income statement presentations show interest expense separately and give an earnings figure calculated before interest has been paid.

Interest

If the firm has borrowed money, it has to pay interest on those borrowings. It's important to realize that there's a big difference in the amount of interest various companies pay. If a business is completely financed with the owners' money, there's no interest at all. If part of the financing is borrowed, the firm is burdened with debt and the associated interest payments. A company financed with debt is said to be **leveraged**.

Leverage is the use of **debt** financing.

Earnings Before Interest and Taxes (EBIT)

Earnings before interest and taxes is an important line on the income statement, because it shows the profitability of the firm's operations before consideration of how it is financed. The line is also called **operating profit**.

To understand the concept of EBIT, imagine that we want to compare the performance of two businesses that are identical except for their financing. Assume one business is entirely equity financed and the other has a significant amount of debt.

If we try to judge the two companies on the basis of net income, we won't get a true picture of the relative strengths of business operations, because the second firm will have its profit reduced by the interest it pays on borrowed money. But the amount borrowed has nothing to do with how well the product sells, the cost of making it, or how well operations are managed.

The problem arises because interest, the payment to creditors, is shown on the income statement but dividends, the payment to owners, are not. Therefore, a company with debt financing will always look weaker at the net income line than an otherwise identical firm that's equity financed.

To get around this problem, we create the EBIT line. It shows the profitability of business operations *before* results are muddled by the method of financing.

Operating profit (EBIT) is a business's profit **before** consideration of **financing charges**.

Earnings Before Tax, and Tax

Gross margin less all expenses, including interest, yields earnings before tax. This is conceptually simple, what the business produces before Uncle Sam and the state take out their bites.

http://

Rutgers University provides links to tax and accounting sites at

<http://accounting.rutgers.edu/>

Retained earnings are those **not paid** out as dividends.

A **liability** is an amount a firm must eventually pay.

Tax

The tax line on the income statement refers to *income* taxes on the amount of earnings before tax. Companies pay other taxes, but those appear as cost or expense items farther up on the income statement.

However, the statutory tax rate applied to earnings before tax doesn't always give the tax shown on the statement. There can be a variety of credits and adjustments behind the final number.

The tax figure also doesn't necessarily reflect the tax actually due, because some items are treated differently for tax and reporting purposes. When the tax due is different from the tax shown, most of the difference is usually taken to a deferred tax account on the balance sheet. Current taxes can be deferred or previously deferred taxes can be due now. Some complicated accounting is generally involved.

We won't worry about such complications in this book. We will generally just calculate business taxes based on current earnings before tax.

Net Income

Net income is calculated by subtracting tax from earnings before tax and is the proverbial "bottom line." As we've already said, it is not equivalent to cash in the firm's pocket. In some cases it may be close to cash flow, but in others it's significantly different. It takes the statement of cash flows to figure out how much the company is really making in the short run.

Net income, also called *earnings*, belongs to the company's owners. It can either be paid out as dividends or retained in the business. *Retained earnings* become an addition to owner's equity on the balance sheet.

Terminology

The terminology used on the income statement is far from uniform between companies. The words "income," "profit," and "earnings" are generally synonyms, so you may see any of them on the various lines instead of the expressions we've used here. "Profit before tax" and "profit after tax," abbreviated PBT and PAT, are particularly common as are EBT and EAT for "earnings before tax" and "earnings after tax."

THE BALANCE SHEET

The balance sheet lists everything a company owns and everything it owes at a moment in time. Stated another way, it shows where all of the business's money has come from and what it's been used for. The fundamental principle is that all the sources of money and all the uses must be equal.

The firm's money comes from creditors and owners. Creditors have loaned money in one form or another and thereby create *liabilities* for repayment. Owners have invested in the company or let past earnings remain in it rather than drawing them out. In a loose sense, the firm "owes" its owners their equity investments.

A firm uses its money to acquire assets, both tangible and intangible.

PRESENTATION

A balance sheet has two sides. One lists all of the company's assets, and the other lists all of its liabilities and equity.

The balance sheet can be thought of as an equation,

$$\text{assets} = \text{liabilities} + \text{equity}$$

Table 2.2 A Conventional Balance Sheet Format

Assets		Liabilities	
Cash	\$1,000	Accounts payable	\$1,500
Accounts receivable	3,000	Accruals	<u>500</u>
Inventory	<u>2,000</u>	Current liabilities	\$2,000
Current assets	\$6,000		
Fixed assets		Long-term debt	\$5,000
Gross	\$4,000	Equity	<u>2,000</u>
Accumulated depreciation	<u>(1,000)</u>	Total capital	\$7,000
Net	\$3,000		
Total assets	\$9,000	Total liabilities and equity	\$9,000

On one side we have assets, representing what the company has done with its money. On the other side we have liabilities and equity, representing where the money came from. If everything has been accounted for properly, the two sides must be equal, or “balance”—hence the name balance sheet. The balance sheet is sometimes called the *statement of financial position*.

A typical balance sheet looks like the one shown in Table 2.2. Notice that total assets equals total liabilities plus equity.

This illustration is somewhat simplified, but it will serve to explain the important features of a balance sheet. We’ll start on the asset side and work through the entire statement.

Both assets and liabilities are arranged in decreasing order of **liquidity**. Liquidity, in this context, means the readiness with which an asset can be turned into cash or a liability will require cash. On the asset side, the most liquid asset is cash itself. Next comes accounts receivable because one expects that in the normal course of business receivables will be collected in cash within a few days. Inventory is next because it is normally sold in short order, generating cash or a receivable. Fixed assets are low on the list because they would generally have to be sold on a used equipment market to be turned into money. Similar logic applies on the liabilities side.

ASSETS

In what follows, we’ll consider each asset and present the important elements of its financial/accounting treatment.

Cash

Cash is defined as money in bank checking accounts plus currency on hand. Currency is usually a minor amount. Companies keep cash balances in bank accounts to pay bills and as a precaution against unforeseen emergencies.

Larger companies usually hold a near-cash item called **marketable securities** as well as cash itself. Marketable securities are short-term investments that pay a modest return and are very secure. They can be sold almost immediately if the need arises. Thus, they fill the precautionary need for cash but earn a little interest at the same time.

The ease with which an asset **becomes cash** is referred to as **liquidity**.

Marketable securities are **liquid** investments that are held **instead of cash**.

Accounts Receivable

Accounts receivable represent credit sales that have not yet been collected. Under normal conditions, these should be paid in cash within a matter of weeks.

Most companies sell on credit terms of approximately 30 days. Customers often push those terms by taking somewhat longer to pay. That means it isn't unusual for a company to have 45 days of credit sales in receivables. That's $(45/365=)$ 12.3% of a year's revenue.

The Bad Debt Reserve

Receivables are usually stated net of an offsetting account called the *allowance for doubtful accounts* or the *bad debt reserve*. As the name implies, this offset allows for the fact that most businesses make some credit sales that are never paid. These are usually a small percentage of total sales.

The bad debt reserve is created and maintained by adding an amount equal to a small percentage of sales to its balance each month. This amount estimates credit sales that will never be collected even though nobody knows which ones will prove to be bad when they are made. The amount added is generally based on experience. The other side of the entry which maintains the reserve is an expense, that is, a reduction in profit.

Writing Off a Receivable

When a receivable is known to be uncollectible (perhaps because the customer is bankrupt), it should be *written off*. Writing off a receivable means reducing the balance in accounts receivable by the uncollected amount. The other side of the entry normally reduces the bad debt reserve which has been provided regularly each month for that purpose. Hence a write off doesn't generally affect the net receivables balance.

However, if the lost receivable is unusually large, the other side of the write-off has to go directly to an expense account. That generally represents an unexpected reduction in profit.

Overstated Receivables

Profit reductions caused by uncollectible receivables are distasteful, so managements sometimes postpone writing off bad debts beyond the time when they should be recognized. This causes the receivables balance to include amounts that will never be collected. Such an account is said to be overstated.

from the **CFO**

Inventory

Inventory is product held for sale in the normal course of business. In a manufacturing company, inventory can be in one of three forms: raw materials, work in process (abbreviated WIP), and finished goods. A retailer has only finished goods inventory.

Work in Process Inventories

The nature of raw materials and finished goods is self-explanatory, but WIP needs a little explanation. As raw materials move through the production process, labor is expended to produce product. We think of that labor as being embodied in the inventory. For example, if in a certain production step a piece of wood costing \$10 is worked on for one hour by a worker who makes \$15 an hour, we would think of the wood as having a value of \$25 when it emerges from that process. Thus, work in process inventory contains the cost of raw materials and the cost of an increasing amount of labor as it moves toward becoming finished product.

Besides labor, most accounting systems add the cost of factory overhead (the building, equipment, heat, electricity, supervision, etc.) to the value of inventory as labor is added.

The Inventory Reserve

Inventory on the balance sheet is assumed to be usable but frequently isn't. A number of things can happen to make inventory worth less than the firm paid for it. Items can be damaged, become spoiled, get stolen (called *shrinkage*), and become obsolete.

Firms conduct periodic physical counts to discover shrinkage, but other damage often goes undetected until an attempt is made to use or sell the item.

Balance sheet inventories are generally stated net of an inventory reserve to allow for a normal amount of problem material. The inventory reserve is conceptually similar to the bad debt reserve associated with accounts receivable. It is maintained similarly with an addition each month, the other side of which is an expense.

Writing Off Bad Inventory

If inventory is discovered to be missing, damaged, or obsolete, the balance sheet inventory account must be reduced to reflect the loss. The other side of the entry that reduces the recorded inventory balance normally reduces the inventory reserve, so the net inventory balance is unaffected. However, if the loss is large, the reduction may have to be offset directly to an expense account, resulting in a reduction in profit.

Overstated Inventory

Managements usually try to avoid reducing recorded profits. Therefore, they're prone to accept any rationalization to the effect that the inventory is holding its original value. This can lead to an overstatement of the inventory balance.

from the **CFO**

Overstatements

The overstatement of receivables and inventories can be a significant problem to users of financial statements, which purport to reflect the value of a company. To the extent that assets are overstated, the firm's value is less than it is being held out to be. Overstatements can also mean that the company isn't managed effectively. Both of these possibilities are of significant concern in valuing the firm's securities.

Current Assets

The first three assets on our balance sheet are called **current assets**. The term "current" means that in the normal course of business, these items can be expected to become cash within one year. More complex businesses have a few other current items, but they are of minor importance compared with these.

The current concept is important in financial analysis, because it relates to a company's ability to meet its obligations in the short run. All of the money the business receives from normal operations flows in through the current asset accounts. In other words, money that isn't in current assets today may be a long time coming in, but money now in current assets can be expected to be realized as cash soon.

Fixed Assets

Longer-lived items are located below the current section of the balance sheet. Although many things can be in this category, the predominant item is usually fixed assets, which can also be called *property, plant, and equipment* (PPE).

Current assets become cash, within **one year**.

The word “fixed” can be a little confusing. It doesn’t mean fixed in location, as a truck or a railroad car can be a fixed asset. It simply implies long lived. A fixed asset is something that has a useful life of at least a year. It’s important to understand the basics of fixed asset accounting and the associated concept of depreciation.

Depreciation

Depreciation is an artificial accounting device that spreads the cost of an asset over its estimated useful life regardless of how it is acquired or paid for. If the cost is spread evenly over the life of the asset, we say the depreciation is straight line. The idea behind depreciation is to match the flow of the asset’s cost into the income statement with the delivery of its services over time. This *matching principle* is an important accounting concept.

In some cases, an argument is made that cost flows out of an asset more rapidly in the early years of its life than in the later years. Depreciation can be structured to be greater in the early years to reflect that idea. When the depreciation schedule is front loaded like that, it’s called **accelerated depreciation**.

Financial Statement Presentation

Depreciation appearing on the income statement reflects an asset’s cost. The same depreciation also appears on the balance sheet where its cumulative value helps to reflect the remaining worth of the asset.

Recall that every accounting entry has two sides. The entry posting depreciation expense to the income statement posts the same amount to a balance sheet account called *accumulated depreciation*. Accumulated depreciation is carried as an offset to the value of an asset, so at any time the net value of the asset is the difference between its original cost and its accumulated depreciation. An example should make the idea clear.

Suppose a firm buys a truck for \$10,000 and decides to depreciate it over a useful life of four years at \$2,500 each year. During that time, the income statement will include a \$2,500 expense item each year. During the same period, each year’s balance sheet will carry three numbers related to the asset: its gross value, its accumulated depreciation, and its net value.

It’s important to understand the pattern of these numbers over time. The accounts will look like those shown in Table 2.3 at the end of each year. Notice that each year’s depreciation expense is the same. That’s because the example is using straight line depreciation. If accelerated depreciation were being used, the early years would have larger numbers than the later years. The total depreciation expense, however, would still be equal to the \$10,000 cost of the asset.¹ That’s an important idea. Total depreciation can never exceed the cost of the asset.

Also notice that accumulated depreciation grows each year by the amount of depreciation expense in that year, but the asset’s gross value stays the same. The asset’s true value at any point in time is approximated by the net line, which is known as the item’s book value or net book value, abbreviated NBV.

Disposing of a Used Asset

Net book value is not market value. The asset may be salable on the used equipment market for an amount that’s more or less than its NBV at any time. It’s important to understand the accounting treatment if that occurs.

According to the **matching principle**, recognition of an asset’s **cost** should match its **service life**.

Accelerated depreciation recognizes more of an asset’s cost in the **early years** of its life.

1. We’re assuming that at the end of its life the asset will have a zero salvage value. If a positive salvage value is assumed, we would depreciate only the difference between the original cost and that value. Otherwise the procedure would be the same.

Table 2.3 Fixed Asset Depreciation

Year	Income Statement		Balance Sheet	
1	Depreciation expense	\$2,500	Gross	\$10,000
			Accumulated depreciation	<u>(2,500)</u>
			Net	\$ 7,500
2	Depreciation expense	\$2,500	Gross	\$10,000
			Accumulated depreciation	<u>(5,000)</u>
			Net	\$ 5,000
3	Depreciation expense	\$2,500	Gross	\$10,000
			Accumulated depreciation	<u>(7,500)</u>
			Net	\$ 2,500
4	Depreciation expense	\$2,500	Gross	\$10,000
			Accumulated depreciation	<u>(10,000)</u>
			Net	\$ -0-

Suppose the truck in the example is sold after two years for \$6,000. The firm would recognize revenue of \$6,000 at that time. The cost associated with that revenue, however, would be the truck's NBV at that time, \$5,000. The \$1,000 difference would be a profit on the disposal of the asset.

Notice that the revenue and profit would not be part of operating revenue and income, because selling used trucks isn't the company's business. They should be recorded as an item of other revenue and income. Such a profit would generally be taxable.

The transaction recording the sale of the truck would remove both its gross value and its accumulated depreciation from the books. The net of these, \$5,000, becomes the used asset's cost.

The Life Estimate

Depreciation runs over the estimated useful life of an asset. However, it's quite common for things to last beyond their estimated lives. Assets still in use beyond their life estimates are said to be fully depreciated. Such an asset's gross value remains on the books entirely offset by accumulated depreciation. If it is sold after that time, there is zero cost.

Tax Depreciation and Tax Books

The government provides many incentives to business through the tax system. One of the most prominent involves depreciation, which is a tax-deductible expense.

Deductibility implies that higher depreciation in a given year results in lower tax in that year, because taxable profit is lower. That means accelerated depreciation reduces taxes early in the life of an asset. The savings is given back later in the asset's life when depreciation is lower and taxes are higher, but the net effect is to *defer* taxes if accelerated depreciation is used.

Unfortunately, the lower recorded profit in early years caused by accelerated depreciation isn't something management likes to see. It makes the company look less successful in the short run than it would appear if straight line depreciation were used. To get around this

conflict, the government allows businesses to use different depreciation schedules for tax purposes and for financial reporting purposes. The term “tax books” is used to mean financial records and statements generated by using the tax rules, and the term “financial books” or just “books” is used to mean the regular statements that we’re talking about here. The difference between the two methods results in an account called *deferred tax* on the financial books.

Depreciation Is a Noncash Expense

Depreciation is a financial fiction; it doesn’t represent a current flow of money even though it’s treated as a cost or an expense. It has nothing to do with how an asset is acquired or paid for.

Total Assets

The things we’ve talked about so far constitute most of the left side of the balance sheet for a majority of companies. Their sum is simply total assets.

LIABILITIES

Liabilities represent what the company owes to outsiders.

Accounts Payable

Accounts payable arise when firms buy from vendors on credit (called **trade credit**). Payables and receivables are opposite sides of the same coin. When a credit sale is made, the seller records a receivable and the buyer records a payable. In most companies, the bulk of accounts payable arises from the purchase of inventory.

Terms of Sale

The length of time allowed until payment is due on a credit sale is specified in the **terms of sale**. Common terms involve payment within 30 days and include a discount for prompt payment. Terms of two 10, net 30, written 2/10, n.30, mean that a 2% discount is allowed if payment is received within 10 days or the full amount is due in 30 days. Trade credit is generally free in that no interest is charged if the full amount is paid within the allowed time.

Vendors become upset if their bills aren’t paid in the times specified under the terms of sale. Delaying payment of trade payables is called **stretching payables** or **leaning on the trade**. If a customer abuses a vendor’s terms, the credit privilege is likely to be revoked, and the seller will subsequently demand cash in advance before shipping goods.

Understated Payables

When we discussed accounts receivable and inventory, we were concerned about overstatements, conditions in which the balance sheet claims assets the company doesn’t have. On the liabilities side, we’re concerned about understatements, conditions in which the firm has liabilities that are not reflected on its balance sheet.

For example, it’s possible to receive goods from a vendor, use them, and simply not recognize the transaction financially. Eventually, the vendor will demand payment and the issue will be raised, but that may take quite a while.

Accruals

Accruals are poorly understood by most nonfinancial businesspeople. They are an accounting device used to recognize expenses and liabilities associated with transactions that are not entirely complete.

Vendors extend **trade credit** when they deliver product without demanding immediate payment.

Terms of sale specify when payment is expected for sales made on trade credit.

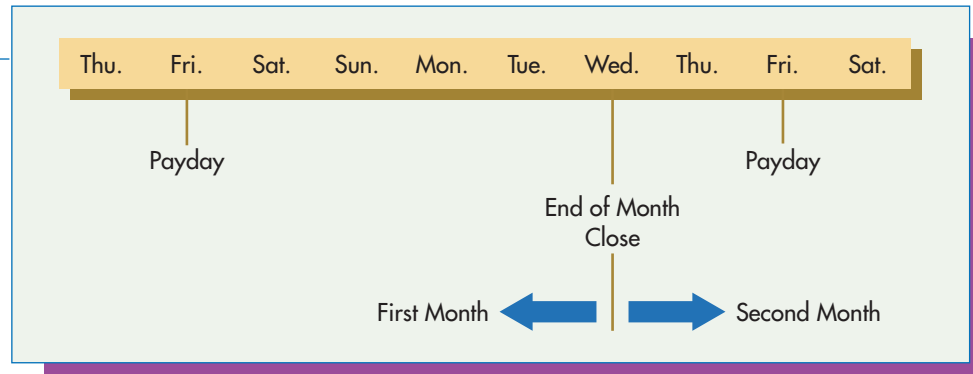
Stretching payables is delaying payment of trade payables.

from the **CFO**

Accruals represent **incomplete** transactions.

Figure 2.1

A Payroll Accrual

**A Payroll Accrual**

The best way to understand accruals is to consider a simple example involving payroll. Suppose a company pays its employees every Friday afternoon for work through that day. Then suppose the last day of a particular month falls on a Wednesday, and the books are closed as of that afternoon. Figure 2.1 shows this situation graphically.

As of the close of business on Wednesday, the financial statements have to include two things that aren't reflected by paper transactions. These arise from the fact that employees have worked for three days (Monday, Tuesday, and Wednesday) that are in the first month, but won't be paid for those days until Friday, which is in the second month.

The first issue is that as of the closing date, the firm owes its employees for those days, and the debt (liability) must be reflected on the balance sheet. The second issue is that the work went into the month just closing and should be reflected in that month's costs and expenses.

If we were to simply recognize payroll expense when the cash is paid on Friday, the three days' labor would go into the second month, and there would be no recognition of the liability at month end.

The solution is a month-end *accrual* entry in the amount of the three days' wages. One side of the entry increases an accrued wages liability on the balance sheet, while the other side increases wage expense in the closing month. It's important to realize that the liability will be paid in just two days on the next payday.

Other Accruals

There are accruals for any number of things. For example, suppose a company is billed in arrears for property tax at the end of a government fiscal year in June. If the firm closes its books at the end of December, it owes the local government for six months of property tax even though it has received no bill and won't until June. A property tax accrual properly reflects this expense and liability in the meantime.

Current Liabilities

Current liabilities are defined as items requiring payment within one year; hence, payables and accruals are classified as current. Other current liabilities include notes payable, short-term loans, and any long-term debt that's within a year of its due date.

Current liabilities require cash within **one year**.

Net working capital represents the money required to support **day-to-day** activities.

Working Capital

Current assets are collectively referred to as *gross working capital*, while the difference between current assets and current liabilities is known as net working capital.

Conceptually, net working capital represents the amount of money a firm needs to carry on its routine day-to-day activities. Formally,

$$\text{net working capital} = \text{current assets} - \text{current liabilities}$$

In practice, people frequently omit the word “net.”

Working capital is an important idea to which we’ll devote all of Chapter 16.

Long-Term Debt

Typically, the most significant non-current liability is long-term debt. It is common practice to refer to it simply as debt, especially if there isn’t much short-term debt. Long-term debt usually consists of bonds and long-term loans.

Leverage

A business that is financed with debt is said to be *leveraged*. The word implies that when things are going well, using borrowed money can enhance the return on an entrepreneur’s own investment. It works like this.

Suppose a business is started with a total capital investment of \$100,000 and earns an after-tax profit of \$15,000 in the first year. First, imagine that the invested money is entirely from the entrepreneur’s own pocket. The return on his or her invested equity is 15% (\$15,000/\$100,000).

Now suppose the entrepreneur had borrowed half the money, \$50,000, at an interest rate that nets to 10% after tax. In that case, profit would be reduced to \$10,000 by the \$5,000 interest paid (10% of \$50,000) on the loan, but the entrepreneur’s investment would be only half as much, \$50,000. Hence, the return on his or her investment would be 20% (\$10,000/\$50,000). Borrowing money would have *levered* the return up from 15% to 20%. The figures are shown below.

	All Equity	Leveraged
Earnings	\$ 15,000	\$ 15,000
Interest	—	(5,000)
EAT	\$ 15,000	\$ 10,000
Debt	—	\$ 50,000
Equity	\$100,000	50,000
Total Capital	\$100,000	\$100,000
Return	15%	20%

In general, a business is able to produce a higher return to the owner’s invested funds by using borrowed money *if* the return on the *total* amount of invested money exceeds the interest rate being paid on the loan. Otherwise, the effect is in the opposite direction and the return is worse with borrowed money.

Fixed Financial Charges

The most significant concern about borrowed money is the interest charge. It’s important to keep in mind that interest charges are fixed. That means they must be paid regardless of how the business is doing. You can’t go to the bank and say, “Sales are

A business financed with **debt** is said to be **leveraged**.

down a little this month, so do you mind if I skip the interest payment?" That can be a real problem in tough times. Many businesses have gone bankrupt because of fixed financial obligations.

EQUITY

Equity represents funds supplied to businesses by their owners. These funds are in two forms: direct investment and retained earnings. Direct investment occurs when stock is sold or an entrepreneur puts money into his or her business. Retained earnings occur when profits are kept in the business rather than being paid out to the owners.

Equity financing is provided by a business's owners.

The Representation of Direct Investment by Owners

If a business is incorporated, its direct equity investments are reflected in two stock accounts. One is entitled *common stock* and represents an arbitrary amount called the *par value* of each share times the number of shares outstanding. The other account is usually called *paid in excess* and represents the amount paid for the stock over its par value. The two together represent the total direct equity investment, that is, the money paid for the stock.

It's important to understand that par value is an arbitrary and largely meaningless number. If the business isn't incorporated, the two separate accounts aren't necessary.

Retained Earnings

A company's profit belongs to its owners, who can either pay it to themselves or leave it in the business. Earnings paid out are said to be distributed; those kept in the business are said to be retained. If a business is incorporated, the balance sheet will show retained earnings separately from the directly invested money shown in the stock accounts. This may or may not be so in an unincorporated business.

Retained earnings are profits that have not been distributed to shareholders as dividends.

Money retained or "reinvested" in a business is just as much the contribution of its owners as directly invested money. That's because they could have taken it out and used it elsewhere if they wanted to do so.

The retained earnings account is subject to a common misconception. Probably because of the words in the name, people sometimes get the idea that retained earnings represent a reserve of cash on which the firm can draw in times of need. That isn't so. Just like any other invested funds, retained earnings are generally spent on assets shortly after they become available.

The retained earnings account shows all earnings ever retained by the company just as the stock accounts show all money ever invested directly by owners. Neither is generally available as cash at any point in time, because both tend to have been spent on assets to build the business.

Example: Equity Accounts

We'll summarize these ideas with a brief illustration. Suppose a firm is started with the sale of 20,000 shares of \$2 par value stock at \$8 per share and subsequently earns \$70,000 of which \$15,000 is paid in dividends. The equity accounts will then be as follows.

Common stock ($\$2 \times 20,000$)	\$ 40,000
Paid in excess ($\$6 \times 20,000$)	120,000
Retained earnings ($\$70,000 - \$15,000$)	<u>55,000</u>
Total equity	<u>\$215,000</u>

The Relationship between Net Income and Retained Earnings

It is very important to understand the interaction between net income and retained earnings in the financial statements.

Net income (or earnings after tax) becomes part of retained earnings and therefore part of equity at the end of the accounting period *if* it is not distributed to the owners. That means that if no new equity investments are made and nothing is paid out to the owners during an accounting period,

$$\text{beginning equity} + \text{net income} = \text{ending equity}$$

If something is paid out to owners in the form of a dividend, the relation is

$$\text{beginning equity} + \text{net income} - \text{dividends} = \text{ending equity}$$

If new equity is contributed through the sale of additional stock,

$$\text{beginning equity} + \text{net income} - \text{dividends} + \text{stock} = \text{ending equity}$$

Beginning balance sheet figures, including equity, are those of the balance sheet dated at the end of the prior accounting period. For example, the beginning balance sheet for 2008 is the ending balance sheet for 2007. Therefore, 2008's beginning equity is 2007's ending equity.

Preferred Stock

Preferred stock is a security issued by some firms that is effectively a cross between debt and common equity. It's thought of as a hybrid, because it has some of the characteristics of each of the more traditional securities. Legally, however, it is classified as equity and is included in the equity section of the balance sheet *above* the common stock accounts. Total equity is the sum of common and preferred equity. (We'll study preferred stock in Chapter 8.)

Preferred stock is an equity security that has some of the characteristics of debt.

Total Capital

The sum of long-term debt and equity is total capital. These funds are generally used to support long-term assets.

Total Liabilities and Equity

The sum of the right side of the balance sheet reflects where all of the company's funds have come from and the obligations it has to outsiders and owners as a result of those advances. Total liabilities and equity must always equal total assets.

THE TAX ENVIRONMENT

In finance, we're primarily concerned with federal income taxes for both individuals and corporations. We will begin, however, with a little background on taxes in general.

TAXING AUTHORITIES AND TAX BASES

Taxes are imposed by various governmental authorities. In this country, we typically think in terms of three taxing levels: federal, state, and local (cities and counties).

Every tax must have a **tax base**, the thing that is taxed. The three common tax bases are income, wealth, and consumption.

A **tax base** is the item that is taxed, usually income, wealth, or consumption.

http://

Federal tax information and forms can be found at

<http://www.irs.gov/formspubs/index.html>

Income Tax

The idea of an income tax is straightforward. A taxpayer pays a fraction of income in a designated time period, generally a year, to the taxing authority. The most important income tax is the federal tax, because it typically takes the biggest share of our income. Depending on how much an individual makes, the federal tax can be as much as 35% of the last dollar earned.² Most states have income taxes, but the rates are much lower, typically from 5% to 10%. Several major cities also have income taxes with rates in the neighborhood of 1%. New York City is a prominent example.

Individuals and corporations are both subject to income taxes, but under different sets of rules, which we'll discuss shortly.

Wealth Tax

Wealth taxes are based on the value of certain types of assets. The most common wealth tax is levied by cities and counties on the value of real estate. The money collected from real estate taxes is typically used to run local school systems and pay for town services such as fire and police departments. Wealth taxes are also called *ad valorem taxes*.

Consumption Tax

Consumption taxes are based on the amount of certain goods we use. The most common consumption tax is a *sales tax* in which the end user of a product pays a tax on its purchase price. It's important to understand that because the tax is on consumption or use, only the end user pays. Therefore, if something is purchased for resale, no sales tax is due.

Sales taxes are imposed by state and local governments. The federal government taxes the consumption of certain items such as alcohol, tobacco, and gasoline. The federal government's consumption taxes are called *excise taxes*.

INCOME TAXES—THE TOTAL EFFECTIVE TAX RATE

Many investment decisions turn on the tax rate that an individual or company will pay on the income from the investment. If there is a state income tax, it should be taken into consideration along with the federal tax. The total effective tax rate is the combined rate to which the taxpayer is subject. It is not simply the sum of the federal and state rates, because state tax is deductible from income in the calculation of federal tax.

For example, suppose a taxpayer is subject to a 30% federal tax and a 10% state tax on income of \$100. He or she would pay as follows.

Taxable income for state tax	\$100
State tax @ 10%	<u>10</u>
Taxable income for federal tax	\$ 90
Federal tax @ 30%	<u>27</u>
Net after tax	\$ 63
Total tax	\$ 37
Total effective tax rate (\$37/\$100)	37%

Adding the two rates would give 40%. In general, we can calculate the **total effective tax rate (TETR)** using the formula

$$(2.1) \quad \text{TETR} = T_f + T_s (1 - T_f)$$

where T_f is the federal tax rate and T_s is the state tax rate.

2. Legislation passed in 2001 and 2003 phased the maximum rate down from 39.6% to 35%.

A **progressive tax** system is characterized by **higher tax rates** on incrementally **higher income**.

PROGRESSIVE TAX SYSTEMS, MARGINAL AND AVERAGE RATES

The U.S. federal income tax system is progressive. In a **progressive tax** system, a taxpayer's tax *rate* increases as income increases. It's important to distinguish that idea from the simpler notion that taxpayers with higher incomes pay higher taxes. The latter statement would be true if everyone paid the same tax rate regardless of their income.

A progressive system might be one in which everyone earning less than \$20,000 pays at a 20% rate, but those who earn over \$20,000 pay 30% on earnings over \$20,000. Because the rate goes up as income increases past \$20,000, the system is progressive.

Notice that taxpayers with income over \$20,000 don't pay the higher rate on their entire incomes, but only on the amounts over \$20,000. For example, a taxpayer earning \$25,000 would calculate taxes as follows.

20% of the first \$20,000	=	\$4,000
30% of the remaining \$5,000	=	1,500
Total tax		\$5,500

Brackets

Tax rates in progressive systems don't increase smoothly as income goes up. Rather, they remain constant over some range of income and then jump abruptly to a higher level for another range. Ranges of income through which the tax rate is constant are called tax brackets. Here's a hypothetical progressive tax system with three brackets.

A **tax bracket** is a range of income in which the tax rate is constant.

Bracket	Tax Rate
\$0–\$5,000	10%
\$5,000–\$15,000	15%
Over \$15,000	25%

This representation of the tax structure is called a *tax table* or a *tax schedule*.

Prior to 1986, the personal tax system had as many as 14 brackets, and many years ago the top rates were as high as 70%. In 2006, there are six brackets, and the highest rate is 35%. We'll discuss the actual rate structure after we illustrate a few ideas using our simplified example.

A taxpayer is often identified by his or her bracket, which is named by its highest rate. Thus a person earning \$10,000 in our example would be said to be in the 15% bracket.

The Marginal and Average Tax Rates

Two tax rate concepts are applicable to every taxpayer. The marginal tax rate is the rate that will be paid on the next dollar of income the person earns. The average tax rate is the percentage of total income the person pays in taxes. The marginal rate is relevant for investment decisions. We'll illustrate why shortly. Now let's calculate some hypothetical taxes as well as some average and marginal rates to get used to the procedure.

Calculations

Using the three-bracket hypothetical tax rate schedule above, we'll calculate the dollar tax and the two rates on incomes of \$4,000, \$11,000, and \$25,000.

At an income of \$4,000, a taxpayer is in the lowest bracket and is subject to only one rate. The calculations are very simple. The tax is just 10% of \$4,000, or \$400, and the average and marginal rates are both clearly 10%.

At \$11,000, things are a little more interesting. The tax calculation follows.

$$\begin{array}{rcl} 10\% \text{ of the first } \$5,000 & = & \$ 500 \\ 15\% \text{ of the next } \$6,000 & = & \underline{900} \\ & & \$1,400 \end{array}$$

The average rate is the total tax bill divided by taxable income.

$$\$1,400/\$11,000 = 12.7\%$$

The marginal rate is 15% because that's what would be paid on the eleven-thousand-and-first dollar of income.

Notice that the marginal rate is almost always the bracket rate. Only at the very top of a bracket is it the rate of the next bracket.

At \$25,000 the calculation is as follows.

$$\begin{array}{rcl} 10\% \text{ of the first } \$5,000 & = & \$ 500 \\ 15\% \text{ of the next } \$10,000 & = & 1,500 \\ 25\% \text{ of the last } \$10,000 & = & \underline{2,500} \\ & & \$4,500 \end{array}$$

Notice that each rate is applied to the income within the relevant bracket only. The average tax rate is

$$\$4,500/\$25,000 = 18.0\%$$

The marginal rate is 25%, because that's what would be paid on an additional dollar of earnings.

An important conceptual point in the system we've illustrated is that high-income taxpayers enjoy lower rates on the first part of their earnings. Notice that the taxpayer with a \$25,000 income pays only 10% on his or her first \$5,000 even though the rest is taxed at much higher rates. You can think of this as a benefit being retained by the high income taxpayer. In the actual tax system, some of this benefit is taken back as income increases.

In the foregoing examples, we've applied a tax rate schedule to *taxable income*. Taxable income isn't a taxpayer's total or gross income. It must be calculated according to rules within the tax code. We'll cover the basics of those rules shortly.



Ordinary income includes wages, business profits, dividends, and interest.

Capital gain/loss income arises when an asset that's held for investment is sold for more/less than was paid for it.

CAPITAL GAINS AND LOSSES

The tax system recognizes two major types of income: ordinary and capital gain.

Ordinary income is generally the result of normal money-making activity. Examples include salary earned, the profit from an unincorporated business, or interest and dividends received from investments. Salaries, dividends, and interest can only be positive, but business profits can be positive or negative. Hence ordinary income can also be an ordinary loss.

A **capital gain or loss** arises when someone buys something for a particular price, holds it for a while, and then sells it for a different price. If the price at which the object is sold is higher than the price at which it was purchased, the difference represents a capital gain. If the selling price is lower, we have a capital loss. The item involved can be a real or a financial asset.

The Tax Treatment of Capital Gains and Losses

Historically, capital gains have received favorable tax treatment. That is, they are taxed at lower rates than ordinary income. The reason behind this treatment lies in

the use of the tax system as a means to incentivize desirable economic activity. Investment in assets stimulates the economy, and Congress generally views that as favorable. Taxing profits earned through such investment at lower rates makes projects more attractive and more are undertaken.

The capital gains system is actually very complicated, requiring many rules and explanations of what qualifies for particular treatments. Further, the rules tend to be changed frequently. The most important distinction is the length of time the taxpayer holds an asset before selling it. Currently, if the *holding period* is less than one year, any capital gain on an asset's sale is classified as short-term and isn't eligible for favorable tax treatment. Gains on assets held for more than a year are classified as long-term and usually qualify for favorable tax treatment. As of 2006 the essence of the system was that *generally* the tax rate on long-term gains was capped at 15%.

The capital gains tax rate is currently **capped at 15%** for long-term gains.

That means a taxpayer in a bracket above 15% with respect to ordinary income generally pays no more than 15% on long-term capital gains income. That can be a considerable saving, since the top personal tax bracket rate is 35%. Corporations don't get favorable rates on capital gains.

Capital losses can be used to offset capital gains. But if gains and losses add up to a net loss, no more than \$3,000 of that loss can be used by individual taxpayers to offset ordinary income in any one year. Corporate taxpayers can't use capital losses to offset ordinary income at all. Thus capital losses receive *unfavorable* tax treatment.

If an individual's capital losses exceed capital gains by more than \$3,000 in a given year, the excess can be carried forward into future years as a reduction to ordinary income of up to \$3,000 per year. Corporate capital losses can be carried forward to offset future capital gains only.

The Significance of the Tax Treatment

It's important to understand why the treatment of capital gains is a financially significant issue. Many investors buy stock in anticipation of an increase in price rather than to receive dividends. The profit derived from an increase in a stock's price is a capital gain. If it is taxed at substantially lower rates than other profits, buying stock becomes a relatively more attractive proposition to the general investing public. Therefore favorable tax treatment of capital gains makes it easier to raise money by selling stock. Hence the idea is enthusiastically supported by the business community.

INCOME TAX CALCULATIONS

Income taxes are paid by both people and corporations according to the same basic tax principles. In each case, the tax is levied on a base of taxable income, which is gross income less certain deductions. The tax due is then calculated using a progressive rate schedule. But that's where the similarity ends. The rate schedules for corporations and people are very different as are the rules for determining taxable income. We'll have a look at the basic calculation procedures for both in the following pages.

PERSONAL TAXES

Taxes on people are called *personal* or *individual* taxes. The taxpaying unit is a *household*, usually a family of some kind. There are separate schedules for single individuals, married couples filing jointly, married people filing separately, and certain heads of households who aren't married. This last category is largely for single parents. In this book we'll focus on two personal tax schedules, those for single individuals and married couples filing joint returns.

Table 2.4**Personal Tax Schedules**

Single Individuals		Married Couples Filing Jointly	
Income (\$)	Rate (%)	Income (\$)	Rate (%)
0–7,550	10	0–15,100	10
7,550–30,650	15	15,100–61,300	15
30,650–74,200	25	61,300–123,700	25
74,200–154,800	28	123,700–188,450	28
154,800–336,550	33	188,450–336,550	33
Over 336,550	35	Over 336,550	35

Between 2001 and 2003, Congress lowered personal tax rates to stimulate the economy. The top rate was 39.6% before 2001. Since 2003 it is 35%. Rates for 2006 are shown in Table 2.4. In addition, the rate on *dividend income* is *capped* at 15%.

In addition to the rate changes we've just described, the personal tax schedules are adjusted each year to compensate for the effects of inflation. That's done by raising the break points between the brackets each year by a factor that reflects a general increase in prices throughout the economy.

We'll use the 2006 rate schedules in Table 2.4 for illustrative purposes, but you should realize that the schedules for subsequent years will be somewhat different.

Taxable Income

Items of income such as wages, profits, interest, and dividends are either *taxable* or *exempt*. The most significant exempt item is interest on **municipal bonds**. Municipals, or **munis**, are bonds issued by governmental authorities below the federal level. These include states, counties, and cities. Notice that interest on federal bonds is *not* exempt, but is taxable. Exempt income can also be called an exclusion.

Personal taxable income is calculated by adding up all of a taxpayer's income, excluding exempt items, and subtracting amounts known as **deductions** and **exemptions**.

Deductions

Deductions are personal expenditures that the tax code permits people to subtract from income before calculating their tax. The most significant deductions for most people are interest on a home mortgage, certain taxes paid to state and local authorities (mainly income and real estate), and donations to recognized charities. If a household hasn't spent much money on these things, a *standard deduction* is allowed.

Exemptions

Personal and dependency exemptions are fixed amounts that can be deducted for each person in the household to arrive at taxable income. The exemption amount changes each year to account for inflation. In 2006 it was \$3,300. Be careful not to confuse personal exemptions with exempt income; they're two different ideas.

Dividend and Capital Gain Calculations

Although dividends and capital gains are part of taxable income, they have to be handled separately as they are taxed at different rates than other income. The following example should make this idea clear.

Interest on **municipal bonds** is **exempt** from federal tax.

Taxable income is total non-exempt income less **exemptions** and **deductions**.

Example 2.1

The Smith family had the following income in 2006

Salaries	Joe	\$ 55,000
	Sue	52,000
Interest on savings account		2,000
Interest on IBM bonds		800
Interest on Boston bonds		1,200
Dividends from General Motors		600

During 2006 they sold an investment property for \$50,000 that they had purchased three years earlier for \$53,000. They also sold some AT&T stock for \$14,000 for which they had paid \$12,000 five years before. They paid \$12,000 interest on their home mortgage and \$1,800 in real estate taxes. State income tax of \$3,500 was withheld from their paychecks during the year. They contributed \$1,200 to their church. They have two children living at home. Assume the exemption rate is \$3,300 per person. What is their taxable income and their tax liability? Further, what are their marginal and average tax rates?

SOLUTION: First, add up the Smith's ordinary income, leaving out the interest on Boston bonds, which is exempt, and dividends, which are taxed at their own rate.

Salaries	\$ 107,000
Interest	<u>2,800</u>
	\$109,800

Next, calculate the net capital gain or loss.

Loss on investment property	\$ (3,000)
Gain on stock	<u>2,000</u>
Net capital loss	\$ (1,000)

The net capital loss is less than \$3,000, so it can be entirely used to offset ordinary income. If the Smiths had a capital gain, it would require a separate calculation.

Ordinary income (excl divs)	\$109,800
Capital loss	<u>(1,000)</u>
Income	\$108,800

The deductions are as follows.

Mortgage interest	\$ 12,000
Taxes	5,300
Charity	<u>1,200</u>
Total deductions	\$ 18,500

Because there are four people in the household, the exemption total is

$$\$3,300 \times 4 = \$13,200$$

Now we can determine their taxable income, excluding dividend income.

Income	\$108,800
Less:	
Deductions	(18,500)
Exemptions	<u>(13,200)</u>
Taxable income (excl divs)	\$ 77,100

The Smith's tax liability on this income can be found using the married filing jointly tax table (see Table 2.4). They are in the 25% tax bracket, so we calculate as follows.

10% of the entire first bracket	
	$\$15,100 \times .10 = \$ 1,510$
15% of the amount in the second bracket	
	$(\$61,300 - \$15,100) \times .15 = \$ 6,930$
25% of the amount in the third bracket	
	$(\$77,100 - \$61,300) \times .25 = \underline{\$ 3,950}$
Tax on ordinary income	<u>\$12,390</u>
Next, the tax on dividends at 15% is	$\$600 \times .15 = \underline{\$ 90}$
So the Smith's total tax liability is	<u>\$12,480</u>

The Smith's average tax rate is their total tax liability divided by their taxable income which, including dividends, is $\$77,100 + \$600 = \$77,700$ so their average rate is

$$\$12,480 / \$77,700 = 16.1\%$$

Their marginal rate is what they'll pay on incremental income. That's the rate in their current bracket, 25%. Notice, however, that there are really two marginal rates, depending on the nature of the incremental income—25% if it comes from salary or interest, and 15% if it comes from capital gains and is more than \$1,000, or from dividends.

Tax Rates and Investment Decisions

A problem arises when an investor wants to choose between a corporate bond and a municipal bond. Both have posted interest rates, but the muni is tax exempt while the corporate issue is not. That means the investor gets to keep all of the interest on the muni but has to pay some of the interest on the corporate bond to the government in tax.

If a muni and a corporate bond are paying the same rate and the risks are similar, the muni is clearly the better deal. However, because of their tax advantage, munis usually don't pay as much interest as similar corporate or federal government bonds.

Investors have to compare the rates offered by competing bonds on an equal basis. Because the stated rate on a muni is after tax, while that of a corporate bond is pretax, one or the other must be restated to get both in the same terms. It's usually easier to restate the corporate. To do that, we just multiply by 1 minus the investor's marginal tax rate.

Example 2.2

Suppose the Smith family in the preceding example is offered a choice between an AT&T bond paying 11% and a Boston bond paying 9%. Which is better?

SOLUTION: The AT&T bond pays 11%, but the Smiths only get to keep

$$11\% \times (1 - .25) = 8.25\%$$

That's their after-tax yield on the bond, and it's less than the 9% offered by Boston. Therefore the Boston bond is the better deal.

What if the Smith's marginal tax rate was only 15%? Then their after-tax rate on the AT&T bond would be

$$11\% \times (1 - .15) = 9.35\%$$

which is more attractive than the Boston bond's 9%.

Notice that high-bracket taxpayers tend to be more interested in tax-exempt bonds than are those with lower incomes.

<http://>

Find business tax information at <http://www.irs.gov/formspubs/index.html>.

CORPORATE TAXES

Corporate taxes are in principle similar to individual taxes. Total income is the business's revenue. Deductions, however, are the charges and expenditures required to run the company. These are essentially the cost and expense items on the income statement. Exemptions don't exist for corporations. The income statement line item earnings before tax (EBT) is a corporation's taxable income. Tax is calculated by taking that figure to the corporate tax table.

Remember from early in this chapter that companies have tax books and financial books that may be somewhat different (pages 35 and 36). The actual tax liability comes from applying the tax schedule to EBT per the tax books. When we apply the schedule to EBT on the financial books we get a *reported* tax liability. The difference is accounted for through a deferred tax account on the balance sheet. We needn't be too concerned about that difference here, other than to be aware that it often exists. In our examples, we'll assume tax and financial books are the same.

The corporate tax schedule is shown in Table 2.5. Notice that there is something different about the corporate schedule in comparison with the personal schedules. There are obviously eight brackets rather than six, but there's a more significant difference in the pattern of rates. The corporate rates increase to 39% and then decrease back to 34%. Then they rise to 38% before decreasing back to 35%. This pattern seems strange as well as contrary to our notion of a progressive tax system in which higher income means a higher marginal rate.

Table 2.5

Corporate Income Tax Schedule

Income (\$)	Rate (%)
0–50,000	15
50,000–75,000	25
75,000–100,000	34
100,000–335,000	39
335,000–10,000,000	34
10,000,000–15,000,000	35
15,000,000–18,333,333	38
Over 18,333,333	35

The ideas behind the current system are fairly simple, but implementing them results in the peculiar table. There are basically three goals.

1. A progressive system with income under \$10 million taxed at 34% and income over that amount taxed at 35%.
2. Substantially lower rates on incomes up to \$75,000.
3. Higher-income taxpayers pay the targeted rates on their *whole* incomes.

The first two goals are easy within a traditional progressive system. It's the third goal that makes things messy.

Recall that in a traditional progressive system, a high-income taxpayer retains the *benefit* of lower tax rates on income in the bottom brackets regardless of how much total income is earned. The current system is designed to take away that benefit for wealthy corporate taxpayers so that they pay a constant rate on all of their income.

This is accomplished in two steps. First, the benefit of the 15% and 25% brackets is taken away by putting an additional 5% tax on income between \$100,000 and \$335,000 to make up for the amount by which the tax rate is below 34% on income up to \$75,000. The additional tax is called a *surtax*. (Verify for yourself that the dollar amount of extra tax collected between \$100,000 and \$335,000 just makes up for the undercollection below \$75,000.)

Next, the benefit of a 34% tax on income up to \$10 million is taken away with a 3% surtax between \$15 million and \$18,333,333. Beyond that all income is taxed at a flat 35%.

Example 2.3

Calculate the tax liability for a corporation making EBT of \$280,000.

SOLUTION: Applying the corporate tax table results in the following tax liability.

$$\begin{array}{r}
 \$ 50,000 \times .15 = \$ 7,500 \\
 \$ 25,000 \times .25 = 6,250 \\
 \$ 25,000 \times .34 = 8,500 \\
 \$180,000 \times .39 = 70,200 \\
 \hline
 \$92,450
 \end{array}$$



PRACTICAL FINANCE

The Other Purpose of the Tax System

The tax system in the United States has two purposes. The first, of course, is to raise money. But the government also uses the system to incentivize what it considers desirable behavior. Sometimes these desirable ends are economic and sometimes they're social. Here are a few examples.

Lower taxes on capital gains and dividends make investment more profitable so people buy more stocks. That makes more funds available for business investment, so companies undertake more new projects. That, in turn, creates jobs and expands the economy.

S-type corporations and LLCs allow small businesses to escape double taxation while enjoying the other benefits of the corporate form. That encourages the formation of new companies, which creates jobs and expands the economy.

Companies get tax credits for employing and training certain types of unskilled, difficult-to-employ people.

Tax credits are available for money spent on restoring and preserving certain historical buildings.

Example 2.4

Calculate the tax liability for a corporation making EBT of \$500,000.

SOLUTION: This problem is easy because between \$335,000 and \$10 million the overall tax rate is just 34%.

$$\$500,000 \times .34 = \$170,000$$

Example 2.5

Calculate the tax liability for a corporation making EBT of \$16 million.

SOLUTION: We don't have to go through the calculations in the bottom brackets because we know that the system recovers those benefits to an overall 34% rate up to \$10 million.

\$10,000,000	×	.34	=	\$3,400,000
\$5,000,000	×	.35	=	1,750,000
\$1,000,000	×	.38	=	<u>380,000</u>
				\$5,530,000

Notice that over \$18,333,333, we just calculate at a flat 35%.

The corporate tax system favors debt financing.

Taxes and Financing

The U.S. tax system favors debt financing of business over equity financing. The reason is that interest payments made to debt investors are tax deductible to the paying company, while dividend payments made to equity investors are not.

To illustrate the point, suppose two companies are identical except that one is financed entirely by debt³ and one entirely by equity. Assume the payments to the debt and equity investors are the same, say \$20, both firms have EBIT of \$120, and the tax rate is a uniform 30% (to make the illustration simple).

To see the point, we have to look beyond earnings after tax (EAT) to the net amount retained by each firm after paying its investors. That is, we have to subtract dividends from EAT to arrive at the net addition to retained earnings. The comparison follows.

	<u>Firm Financed by</u>	
	<u>DEBT</u>	<u>EQUITY</u>
EBIT	\$120	\$120
Interest	<u>20</u>	<u>—</u>
EBT	\$100	\$120
Tax @ 30%	<u>30</u>	<u>36</u>
EAT	\$ 70	\$ 84
Dividends	<u>—</u>	<u>20</u>
Net RE addition	\$ 70	\$ 64

³ In reality, some equity is always required. We're just imagining total debt financing for the sake of the illustration.

Notice that the firm financed with debt gets to keep \$6 more money, about 10% in this case. The difference is in the tax line. The debt-financed firm gets to deduct the payment to its investors before calculating taxes, while the equity financed business has to pay tax on an amount that is not reduced by the dividend payment.

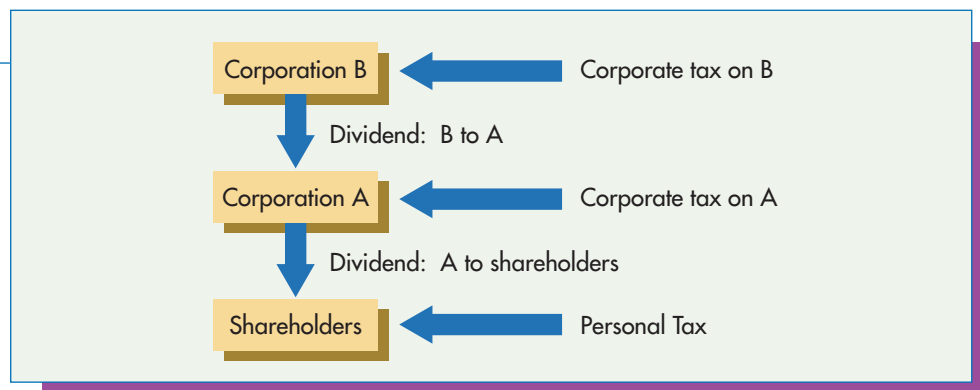
Dividends Paid to Corporations

In Chapter 1, we said that the major financial disadvantage of the corporate form is the double taxation of earnings. Earnings are first taxed as corporate profits and then taxed again as personal income when passed to shareholders in the form of dividends.

But what happens if one corporation owns another that in turn is owned by individuals? Under those conditions, we'd expect *triple taxation*. To see this, consider Figure 2.2 in which corporation B is owned by corporation A, which is owned by individuals.

Figure 2.2

Multiple Taxation



It's easy to see that a dollar earned by B is taxed as income to B, as dividend income to A, and as dividend income to the shareholders. If B was owned by corporation C, its earnings would be subject to quadruple taxation.

The government intends double taxation but not triple taxation and beyond. It therefore gives partial relief by exempting most of dividends paid by one corporation to another from taxation as income to the receiving company.

The percentage exempted depends on the amount of B's stock owned by A.

Dividends paid to another corporation are partially tax exempt.

Ownership	Exemption
<20%	70%
20%–80%	80%
>80%	100%

In our illustration, this means that if A owns 30% of B and B pays a dividend of \$100 to A, A would declare only \$20 as income in preparing its taxes. The remaining \$80 would be exempt.

Tax Loss Carry Back and Carry Forward

Suppose that over a four-year period a business had three good years and one with a substantial loss. If we consider each year individually, its earnings before tax, tax, and

Figure 2.3**Tax Loss Carry Back and Carry Forward**

	Year				Total
	1	2	3	4	
EBT	\$100	\$100	\$(250)	\$100	\$50
Tax	30	30	—	30	90
EAT	\$ 70	\$ 70	\$(250)	\$ 70	\$(40)
			↓		
	←	←	→	→	
	↓	↓		↓	
Adjusted	\$(100)	\$(100)		\$(50)	
EBT	\$ 0	\$ 0	\$ 0	\$50	\$50
Tax	0	0	0	15	15
EAT	\$ 0	\$ 0	\$ 0	\$35	\$35

earnings after tax might be as shown at the top of Figure 2.3 (we are assuming a flat 30% tax rate to make the illustration simple).

At first glance, this looks reasonable. The company pays taxes when it has income and no tax when it has a loss. However, the business owner might very well claim that the IRS is putting him or her out of business if the tax system worked like this.

The entrepreneur would point to the total column and claim that over the entire four-year period, the government was trying to make the business pay \$90 in tax on \$50 of earnings before tax. This would not only be unfair but impossible.

Recognizing this problem, the tax system allows businesses to spread the loss in year 3 among the years before and after. In this case, \$100 of the year 3 loss would be carried back into each of years 1 and 2, entirely offsetting income in those years. After the loss year, the company would file amended tax returns for years 1 and 2 and receive refunds of the taxes paid. The remaining \$50 of year 3 loss could be carried forward to reduce year 4 EBT. The idea is shown schematically in Figure 2.3.

Losses can be carried back for 2 years and forward for as many as 20 years.

Business **losses** can be **carried backward** or **forward** in time to offset taxes.

QUESTIONS

1. Why does a financial professional working outside accounting need a knowledge of accounting principles and methods?
2. Discuss the purpose of an accounting system and financial statements in terms of the way the system represents the business.
3. Why is EBIT an important line item in the income statement? What does EBIT show us?
4. What is meant by liquidity in financial statements?
5. What are the common misstatements of balance sheet figures, and why do they present a problem?

6. Do the definitions of current assets and current liabilities suggest a quick way of looking at the firm's ability to meet its financial obligations (pay its bills) over the near term? (*Hint*: Think in terms of ratios.)
7. How are capital and working capital different?
8. What is leverage, and how does it work? What is the main concern about using it?
9. Define the term tax base and discuss common bases. What government units tax on each? What are these taxes commonly called?
10. What is the total effective tax rate?
11. What is taxable income for an individual? How does it differ from taxable income for a corporation?
12. What tax rate is important for investment decisions? Why?
13. Why is the tax treatment of capital gains an important financial issue?
14. Is the corporate tax schedule progressive? Why or why not?
15. What are the tax implications of financing with debt versus equity? If financing with debt is better, why doesn't everyone finance almost entirely with debt?
16. Why are dividends paid from one corporation to another partially tax exempt?
17. Explain the reasoning behind tax loss carry backs and carry forwards.

PROBLEMS

1. The Johnson Company bought a truck costing \$24,000 two and a half years ago. The truck's estimated life was four years at the time of purchase. It was accounted for by using straight line depreciation with zero salvage value. The truck was sold yesterday for \$19,000. What taxable gain must be reported on the sale of the truck?
2. If the Johnson Company of Problem 1 is subject to a marginal tax rate of 34%, what is the cash flow associated with the sale of the used truck?
3. Heald and Swenson Inc. purchased a drill press for \$850,000 one year and nine months ago. The asset has a six-year life and has been depreciated according to the following accelerated schedule.

Year	Percent of Cost
1	55%
2	20%
3	10%
4	5%
5	5%
6	5%

The press was just sold for \$475,000. The firm's marginal tax rate is 35%. Calculate Heald and Swenson's taxable profit and cash flow on the sale. Assume depreciation is spread evenly within each year.

4. Fred Gowen opened Gowen Retail Sales as a sole proprietorship and recorded the following transactions during his first month in business:
 - (1) Purchased \$50,000 of fixed assets, putting 10% down and borrowing the remainder.
 - (2) Sold 1,000 units of product at an average price of \$45 each. Half of the sales were on credit, none of which had been collected as of the end of the month.
 - (3) Recorded cost of goods sold of \$21,000 related to the above sales.
 - (4) Purchased \$30,000 worth of inventory and paid cash.
 - (5) Incurred other expenses (including the interest from the loan) of \$5,000, all of which were paid in cash.
 - (6) Fred's tax rate is 40%. (Taxes will be paid in a subsequent period.)
 - a. What will the business report as net income for its first month of business?
 - b. List the flows of cash in and out of the business during the month. Show inflows as positives and outflows as negatives (using parentheses). Sum to arrive at a "Net Cash Flow" figure.
 - c. Should Fred pay more attention to net income or cash flow? Why?
5. McFadden Corp. reports the following balances on its December 31, 20X2, balance sheet:

Amounts in Thousands	
Accounts payable	\$ 60
Accounts receivable	120
Accumulated depreciation	350
Fixed assets (net)	900
Inventory	150
Long-term debt	400
Paid in excess	160
Retained earnings	380
Total assets	1,240
Total liabilities	500 (long-term debt + current liabilities)

All of the remaining accounts are listed below. Calculate the balance in each.

Accruals	Total current assets
Cash	Total current liabilities
Common stock	Total equity
Fixed assets (gross)	

6. Consider the current asset accounts (Cash, Accounts Receivable, and Inventory) individually and as a group. What impact will the following transactions have on each account and current assets in total (Increase, Decrease, No Change)?
 - a. The purchase of a fixed asset for cash
 - b. The purchase of a fixed asset on credit

- c. The purchase of inventory for cash
 - d. The purchase of inventory on credit
 - e. Customer payment of an account receivable
 - f. Writing off a customer's bad debt (assume the allowance process is in place)
 - g. The sale of a fixed asset for cash
 - h. The sale of inventory (at a profit) for cash
 - i. The sale of inventory (at a loss) for cash
 - j. The sale of inventory (at a profit) on credit
7. On January 1, 20X2, Miller Corp. purchased a milling machine for \$400,000. It will be depreciated on a straight line basis over 20 years. On January 1, 20X3, Miller purchased a heavy-duty lathe for \$250,000, which will be depreciated on a straight line basis over 40 years.
- a. Compute Miller's depreciation expense for 20X2, 20X3, and 20X4.
 - b. Prepare the Fixed Asset portion of the balance sheet (for these two fixed assets) as of the end of 20X2, 20X3, and 20X4.
8. Becher Industries has three suppliers for its raw materials for manufacturing. The firm purchases \$180 million per year from Johnson Corp. and normally takes 30 days to pay these bills. Becher also purchases \$150 million per year from Jensen, Inc., and normally pays Jensen in 45 days. Becher's third supplier, Docking Distributors, offers 2/10, n.30 terms. Becher takes advantage of the discount on the \$90 million per year that it typically purchases from Docking. Calculate Becher's expected Accounts Payable balance. (Use a 360-day year for your calculations.)
9. Belvedere Inc. has an annual payroll of \$52 million. The firm pays employees every two weeks on Friday afternoon. Last month, the books were closed on the Tuesday after payday. How much is the payroll accrual at the end of the month?
10. Sanderson Metals Inc. accrues four liability items: payroll, employee vacation that has been earned but not used, property taxes, and inventory that arrives at its factory dock before an invoice is received from the vendor.
- Payroll: Sanderson pays its employees every other Friday for work performed through that day. The annual payroll is \$47 million.
- Property tax: the firm pays the local government \$3.6 million per year in property taxes on its factory and office buildings. The tax is paid in arrears* on June 30 at the end of the county's fiscal year.** The firm accrues a liability each month to reflect the fact that it owes the county property tax through that date.
- Vacation: Sanderson's employees get three weeks (15 work days) of vacation each year, which is earned at a rate of $(15 \div 12 =) 1.25$ days per month worked. No vacation can be carried over year end, but an employee can take the current year's vacation before it is actually earned. There are 250 work days each year. The vacation accrual reflects that pay for vacation days earned but not used is a liability of the company.

*A property tax bill paid in arrears is due at the end of the period during which the liability is incurred. The liability for the bill, however, comes from owning the property as time passes. Hence, as each month of the tax year goes by, the company's property tax liability increases by 1/12 of the annual bill until it is paid at the end of the fiscal year.

**A fiscal year is an organization's year for accounting purposes. Many companies and most government units use fiscal years that don't coincide with calendar years. Sanderson's books are kept on a calendar year.

Inventory: The accounting department uses vendor (supplier) invoices combined with receiving documents to enter new inventory on the company's books. However, inventory often arrives a few days before the associated invoice is received. The approximate value of material in this received but unbilled status is accrued to reflect that the company is in possession of the goods and has a liability to pay for them.

Sanderson is currently closing the books on April 20X8. The last day of the month was seven days after a payday. Through the end of April employees had taken \$587,000 of paid vacation time. Five railroad carloads of steel arrived in the last week of April but invoices for only three of those shipments have been received. An average carload shipment costs \$107,000. All prior receipts have been invoiced.

- a. Calculate Sanderson's April month end accruals balance.
- b. What is April's accrual entry if March's vacation accruals balance was \$478,000?

(Hint: Some accruals, like payroll and inventory, clear a few days after month end. Others, like property tax, build up steadily until cleared at the end of a period like the county's fiscal year. Still others, like vacation, are increased steadily and are decreased when some activity occurs, such as people going on vacation.)

In order to calculate the accrual entry for a month, we calculate the ending balance and subtract whatever is in the account just before closing the books.)

11. In January 20X3, Elliott Industries recorded the following transactions:
 - (1) Paid bills from 20X2 totaling \$120,000 and collected \$150,000 for sales that were made in 20X2.
 - (2) Purchased inventory on credit totaling \$500,000, 30% of which remained unpaid at the end of January.
 - (3) Sold \$400,000 of inventory on credit for \$600,000, 20% of which remained uncollected at the end of the month.
 - (4) Accruals increased by \$10,000 during the month.
 - (5) Made additional cash payments for expenses incurred during the month totaling \$80,000.

Compute Elliott's change in working capital for the month of January 20X3.

12. Gatwick Ltd. has after-tax profits (net income) of \$500,000 and no debt. The owners have a \$6 million equity investment in the business. If they borrow \$2 million at 10% and use it to retire stock, how will the return on their investment (equity) change if earnings before interest and taxes remains the same? Assume a flat 40% tax rate and that the loan reduces equity dollar for dollar. (A business owner's return on investment or equity is $ROI = ROE = \text{Net income}/\text{Equity}$.)
13. Ed Fletcher is planning to start a business in corporate form that requires an investment of \$500,000. He has that much money, but he can also borrow virtually the whole amount from a rich relative. (This is very unusual.) Ed feels that after the business is started, it will be important to retain as much money in the company as possible to fund growth. Nevertheless, he plans to pay the investor, either himself or his relative, a \$50,000 return (10% of the amount invested) each year. That's about as much as could be earned elsewhere. Considering cash retention only, should Ed borrow or invest his own money? That is, which option will result in keeping more money in the company available to grow the business? How much more? The company's total effective tax rate will be 40%.

14. The Glavits Company opened for business on Monday, June 1, with inventory of \$5,000 and cash in the bank of \$7,000. These were its only assets. All start-up financing was provided from the owner's personal funds, and there were no other liabilities. The firm has a line of credit at the bank that enables it to borrow up to \$20,000 by writing overdraft checks on its account.

Glavits's terms of sale are net 30, but the new firm must pay its suppliers in 10 days. Employees are the company's only expense. They're paid a total of \$1,000 per week each Friday afternoon for the week just ending.

On June 3, the company made a sale of \$9,000 out of inventory with a cost of \$3,000. On June 10, it received \$2,000 of new inventory. There were no other sales or inventory receipts. The company bought a delivery truck, paying with a \$6,000 check on June 30. The books were closed for the month on Tuesday, June 30.

Construct Glavits's income statement and balance sheet for June using the worksheet shown. Ignore taxes for this problem. First, enter the beginning balance sheet. Next, enter one number two times in each column to reflect the transaction indicated at the top of the column. Note that sometimes the numbers will be additions and sometimes they will be subtractions. Finally, add across the page to get the statements for June.

Worksheet Rows	Worksheet Columns
1. BALANCE SHEET	1. Opening balance sheet
2. Assets	2. Record sales
3. Cash	3. Record cost of sale
4. Accounts receivable	4. Receive inventory
5. Inventory	5. Pay for inventory
6. Fixed assets (net)	6. Buy truck
7. Total assets	7. Pay employees—first 4 weeks
8. (skip)	8. Pay employees—last 2 days
9. Liabilities	9. Reclassify cash overdraft as loan
10. Accounts payable	10. Record net income as income and equity
11. Accruals	11. (skip)
12. Debt	12. June statements
13. Equity	
14. Total liabilities & equity	
15. (skip)	
16. INCOME STATEMENT	
17. Sales	
18. Cost	
19. Expense	
20. Net income	

15. Mints Entertainment, Inc. had net income of \$170,000 and paid dividends of \$0.25 per share on its 100,000 shares of outstanding stock in 2006. At the end of the year its balance sheet showed retained earnings of \$250,000. What was Mints' retained earnings balance at the end of 2005?

16. Preston Road Inc. was organized last year when its founders contributed \$9 million and issued 3 million shares of \$1.25 par value stock. The company earned \$750,000 in its first year and paid dividends of \$325,000. Construct the Equity section of Preston Road's balance sheet as of the end of that year.
17. The Digital Systems Company was organized two years ago to take advantage of an Internet opportunity. Investors paid \$12 a share for 2 million shares with a \$4 par value. In the next two years, the company had earnings of \$2 million and \$3 million, respectively. It paid dividends of \$1.2 million and \$1.3 million, respectively, in those years. At the end of the first year, Digital sold another 500,000 shares of stock at \$14 per share. Construct the equity section of Digital's balance sheet initially and at the end of its first and second years in business.
18. The Coolidge family had taxable income of \$165,000 in 2006. They live in a state in which income over \$100,000 is taxed at 11%. What was their total effective (marginal) tax rate?
19. Use the following tax brackets for taxable income:

Bracket	Tax Rate
\$0–\$10,000	15%
\$10,000–\$50,000	25%
\$50,000–\$250,000	30%
Over \$250,000	35%

Compute the average tax rate for the following taxable income amounts:

- \$20,000
 - \$125,000
 - \$350,000
 - \$1,000,000
20. Joan Petros reported taxable income in 20X2 of \$150,000, which included the following transactions:
- In June 20X2, Joan sold 100 shares of stock for \$40 per share. She had purchased them three months earlier for \$35 per share.
 - In October 20X2, Joan sold 200 shares of stock for \$79 per share. She had purchased them three years earlier for \$61 per share.

If long-term capital gains are taxed at 15% and *all* ordinary income is taxed at 25%, what is Joan's tax liability for 20X2?

21. The Lindscomb family had the following income in 2006:

Salaries	Mark	\$63,500
	Ashley	57,900
Interest on investments		
	IBM bonds	\$4,750
	New York City bond	1,400
	Savings account	2,600

The family made home mortgage payments that included interest of \$16,480, and paid real estate (property) tax of \$4,320 on their home. They also paid state income tax of \$5,860 and donated \$1,250 to well-known charities. The Lindscombs have three dependent children.

- a. Calculate the family's federally taxable income.
 - b. What is their tax liability assuming they file jointly as a married couple?
 - c. What are their average and marginal tax rates?
22. The Benjamin family had wage earnings of \$85,000 in 2006. They received interest of \$4,500 on corporate bonds and \$1,500 on bonds issued by the state. Their dividend income was \$500, and they had a \$1,000 long-term capital gain on the sale of securities.
- They paid real estate taxes of \$1,450 and state income tax of \$3,000, and they donated \$550 to their church. They paid interest of \$8,000 on their home mortgage. They have one dependent child. What was their tax liability for 2006?
23. Joan and Harry Leahy both had income in 2006. Harry made \$52,500 in wages. Joan has an incorporated small business that paid her a salary of \$30,000. In addition, the business had profits of \$15,000, which were paid to the Leahys as dividends. They received \$5,600 in interest on savings and \$350 in interest on a loan made to Harry's brother, Lou. Lou also repaid \$2,000 of principal on that loan during the year. The couple had interest income from two bonds, \$2,200 on a 20-year IBM issue and \$2,700 on a state of Michigan revenue bond.
- They sold some Biotech stock for \$14,000 that had been purchased five years before for \$4,000. Two years ago, they invested \$50,000 in some rural land on the advice of a real estate agent. They sold the property in 2006 for \$46,000.
- The Leahys paid \$12,500 in mortgage payments of which \$9,000 was interest and the rest reduced principal. They paid real estate taxes of \$2,750 and state income tax of \$6,800 during the year. They contributed \$1,500 to their church and \$3,000 to the support of Joan's elderly mother. They have two young children. (Joan's mother is not a dependent.)
- a. Calculate the Leahy's taxable income.
 - b. What is their tax liability for 2006?
 - c. What is their average tax rate?
 - d. What is their marginal tax rate? Can there be more than one marginal rate? Explain.
24. Calculate the corporate tax on earnings before tax (EBT) of the following amounts:
- a. \$37,000
 - b. \$57,000
 - c. \$88,500
 - d. \$110,000
 - e. \$5,375,000
 - f. \$14,000,000
 - g. \$17,350,000
 - h. \$23,500,000

25. Microchip Inc. had the following profits and losses in the years indicated.

2004	\$5,000,000
2005	350,000
2006	(3,450,000)

How much federal tax will it eventually pay for 2004? The corporate tax schedule on page 48 is the same for all three years.

26. Inky Inc. reported the following financial information in 2006.

Operating income (EBIT)	\$650,000
Interest	\$430,000
Dividends from Printers Inc. not included in operating income (Inky owns 3% of Printers)	\$ 20,000
Dividends paid to Inky's stockholders	\$ 50,000

- What is Inky's tax liability? (Use the corporate tax schedule on page 48.)
- What is Inky's marginal tax rate?
- What is Inky's average tax rate?
- Explain why only one of the rates in b and c is relevant for financial decisions?

27. The Snyder Corporation had the following income and expense items.

Sales	\$180,870,000
Cost	110,450,000
Expenses	65,560,000

In addition, it received both interest and dividends from the Bevins Corp., of which it owns 30%. The interest received from Bevins was \$2,430,000, and the dividends were \$4,700,000.

Calculate Snyder's tax liability.

28. Dick Downen is considering three investment opportunities:

- A 4.5% city of Chicago bond that is tax exempt at both state and federal levels.
- A 4.75% state of Illinois bond that is tax exempt at the federal level but taxable at the state level.
- A 6.7% McDonald's corporate bond that is taxable at both the state and federal levels. (*Hint:* Use the TETR.)

If the Illinois state tax rate is 6% and Dick's marginal federal tax rate is 30%, which investment yields the highest after-tax return?

INTERNET PROBLEM

29. Large corporations often begin as small businesses, and both share many of the same issues. Visit the Small Business Administration at <http://www.sba.gov> and find information on balance sheets, income statements, and other topics discussed in this chapter. The SBA page includes links to many other useful sites, such as the Small Business Resource Guide, state business tax and license sites, and more.

The Internal Revenue Service includes information related to business tax issues and offers tax tips, information on how to avoid costly problems, important due dates, financial guidance and resources, laws and regulations, and statistical data about small businesses. Visit the IRS site at <http://www.irs.gov/smallbiz/all-businesses/index.htm>.

Finally, visit the Census Bureau's site at <http://www.census.gov/epcd/www/smallbus.html> for statistics on businesses large and small.

Find an interesting issue on each site and summarize them all in a one-page paper.

COMPUTER PROBLEMS

30. Rachel and Harry are planning to get married. Both have successful careers and expect to earn the following this year.

	Rachel	Harry
Salary	\$155,380	\$146,200
Interest income (taxable)	6,750	45,325
Long-term capital gain/(loss)	5,798	—
Total income	\$ 167,928	\$191,525
Itemized deductions	\$ 28,763	\$ 15,271

- a. Use the PERSTAX program to calculate their total tax bill as single individuals and determine how much it will cost them in taxes to get married. Assume that getting married during a year subjects the entire year's income to the married filing jointly rate schedule. Assume there are no state taxes.
- b. Duncan and Angela are also considering getting married but have considerably lower incomes as follows.

	Duncan	Angela
Salary	\$56,450	\$37,829
Itemized deductions	6,048	3,224

What will it cost them to get married?

31. You've been hired by the nation of Utopia to computerize its approach to calculating taxes. Utopia's progressive tax system contains only two brackets that are applicable to all households. These are as follows.

Income	Rate
Under \$30,000	20%
Over \$30,000	30%

The treatment of personal exemptions and itemized deductions is similar to the U.S. system, but the exemption amount is permanently fixed at \$2,550 per person. No special consideration is given to capital gains and losses or dividends.

Write a spreadsheet program to compute taxes for a typical Utopian household. Test your program with the following cases.

Income	\$28,950	\$96,250
Number of people	1	5
Deductions	\$ 2,800	\$14,457

Verify that your program works by calculating the Utopian taxes manually. (*Hint*: Use a single conditional instruction [IF statement] to identify which bracket the taxpayer is in *and* make the tax calculation.)