CHAPTER TWO

Balance Sheet Woes

During the 2002 congressional hearings on the Enron bankruptcy, some senators asked Jeff Skilling, former chief executive officer (CEO) of Enron, about the firm's liabilities. In a huff Skilling retorted, "I think your question suggests that there's some issue of hiding debt!" Well, Jeff, there is an issue.

Corporate managers have an array of tools and techniques in their toolbox by which they can hide their liabilities. Some of the older methods include such things as the equity method, lease accounting, pension accounting, take-or-pay contracts, and throughput arrangements. Newer schemes create special-purpose entities (SPEs) and hide their debts from loan securitizations, synthetic leases, and other borrowings. We are aware that managers have fashioned accounting practices for the sole purpose of lying about the corporate liabilities, methods that the accounting profession and the Securities and Exchange Commission (SEC) have implicitly or explicitly endorsed within the body of generally accepted accounting principles (GAAP).

Besides these legal ways of hiding corporate debts, managers of some business enterprises have misrepresented their firm's financial leverage. Among these companies are Enron, Global Crossing, Adelphia, and WorldCom. The CEOs and chief financial officers (CFOs) purposely and deliberately understated the financial risk of their firms. As I discuss in this chapter, one perceived benefit of such prevarication comes about because lower perceived liabilities might bring lower interest rates if creditors incorrectly believe that the firm has low financial risk. In addition, investors and creditors might perceive a lower probability of bankruptcy that large amounts of debt could cause, and so have higher stock prices as well as higher bond prices. Managers thus hoodwink investors and creditors into thinking that the firm is doing better than it actually is.

In this chapter I explore the woes brought on by balance sheet deceptions. I begin with a definition of financial risk, a look at some simple metrics of financial risk, and examine why managers finance the firm with debt. I then explore the relationship of corporate liabilities with stock prices, probability of bankruptcy, and bond ratings. With this foundation, I conclude with a closer examination of the motivations for managerial lying about corporate liabilities and how the market fights back by lowering stock and bond prices.

INVESTMENT RISKS

Financial economists have argued that expected returns depend on the investment's risk. *Risk* generally refers to the uncertainty of returns on whatever investment vehicle is relevant to the user. While no one worries about the upside potential—that is, when the investment returns more than one thought—most people do fret over the possibility of an investment's losing money. Assessing the riskiness of an investment is a crucial aspect of any portfolio analysis, however large or small. While there are different types of risk, including business risk, inflation risk, political risk, and exchange rate risk, I shall focus on financial risk.

As I shall soon show, there are positive and negative benefits to a firm's taking on too much debt. *Financial risk* concentrates on those negative consequences of having too much debt. Too much debt can lead to at least three problems for the business enterprise, so investors and creditors need to recognize these issues. First, too much debt can magnify the shareholders' returns. It can do this both in a positive and a negative way, but the risk to the shareholder occurs, of course, when return on equity is lowered by the corporation's having too many liabilities. A second problem with too much debt is that the interest costs are fixed, so that the corporation must pay the interest regardless of its revenues or cash inflows. If the organization does not generate enough revenues to cover all of these fixed costs, then the firm might go bankrupt. The third issue is that well before the company gets to the point of corporate failure, banks and other creditors might recognize the increased financial risk and increase the interest rates they charge the corporation. Increases in financial risk compel these creditors to protect themselves by requiring higher rates of return.

A balance sheet depicts an entity's assets and its liabilities and its shareholders' equity. In other words, it shows the firm's resources and the claims to those resources. For the most part I am going to ignore the asset side of the balance sheet and study the claims to the entity's resources. *Financial structure* means that part of the balance sheet displaying those claims to the resources of the firm. The term *capital structure* sometimes is equivalent to financial structure, but more often it refers to the long-term components of financial structure. With the second meaning, capital structure is equal to financial structure minus short-term liabilities.

I define *financial leverage* as the ratio of total liabilities to total assets. This ratio then allows us a way to investigate what happens as a business enterprise assumes more debt in its financial structure. As the examples unfold, the reader should notice that adding debt to the financial structure, which is equivalent to increases in the corporations' financial leverage, does indeed lead to greater uncertainty about the investment's expected returns.

SOME RATIOS[1] THAT INDEX FINANCIAL RISK

Exhibit 2.1 lists the liabilities and stockholders' equities for Ford in 2001 and 2000. As typical in this country, Ford separates current debt from noncurrent debt, where current debt is that which typically comes due in one year. (If the length of the operating cycle

is longer than one year—where the *length of the operating cycle* refers to the time it takes to convert cash into inventory, sell the inventory, and receive cash from the customer—then use the length of the operating cycle to determine which liabilities are current.) Current debts consist of accounts payable, the current portion of long-term debt, accrued expenses, income taxes payable, and other current liabilities. Noncurrent liabilities include deferred income taxes, long-term debt, other noncurrent liabilities, and minority interest (though some analysts consider minority interest a special form of shareholders' equity).[2]

Shareholders' equity comprises both preferred stock and common equity; however, Ford has no preferred stock. Common equity embraces common stock at par value, additional paid-in capital, retained earnings, other equity, and treasury stock.

Exhibit 2.1 Financial Structure of Ford (in Millions of Dollars)

Liabilities & Shareholders' Equity	2001	2000
Liabilities		
Accounts Payable	15,677	21,959
Current Portion Long-Term Debt	302	277
Accrued Expenses	23,990	23,515
Income Taxes Payable	0	449
Other Current Liabilities	5,515	4,011
Total Current Liabilities	45,484	50,211
Deferred Income Taxes	10,065	9,030
Long-Term Debt	167,035	165,279
Other Non-Current Liabilities	45,501	40,618
Minority Interest(Liabilities)	672	673
Total Liabilities	268,757	265,811
Shareholders' Equity		
Common Stock (Par)	19	19
Additional Paid-in Capital	6,001	6,174
Retained Earnings	10,502	17,884
Other Equity	(8,736)	(3,432)
Treasury Stock	0	(2,035)
Total Shareholders' Equity	7,786	18,610
Total Liabilities & Shareholders' Equity	276,543	284,421

Note: Parentheses denote negative numbers.

Financial leverage is total debts divided by total assets; since total assets equal total equities, we could say that financial leverage is total debts divided by total liabilities and shareholders' equity. Other measures of risk include the debt-to-equity ratio, which is total liabilities divided by shareholders' equity. Ford's financial leverage was 0.97 in 2001 and 0.93 in 2000. Its debt to equity was 34.5 in 2001 and 14.3 in 2000. These figures denote quite high levels of financial structure in the United States.

While I concentrate on the balance sheet in this book, one income statement ratio that bears mentioning is times interest earned. This ratio indexes the safety of the creditors by assessing how well operating earnings cover the fixed interest charges. Times interest earned equals the firm's earnings before interest and taxes divided by the firm's interest expense. Ford's times-interest-earned ratio (numbers are not in the exhibit) was 0.30 in 2001 and 1.62 in 2000. The 2000 ratio is marginal at best, while the 2001 ratio indicates weakness because of Ford's financial structure.

FINANCIAL LEVERAGE AND ITS EFFECTS

Let us now look at an extended example to see how these definitions and concepts play out. The idea is to comprehend the impact of financial leverage on some metric of shareholder interest; in particular, to notice, under certain circumstances, how the use of financial leverage can hurt the firm and its investors and creditors.

As stated earlier, financial structure means that part of the balance sheet displaying those claims to the resources of the firm. For example, Exhibit 2.2 contains several balance sheets in which total assets and total equities equal $100. I do not break down the total assets into constituent parts, such as current and long-term assets, to drive home the idea that this aspect is unimportant. How the assets are structured is irrelevant to this discussion about financial structure.

Exhibit 2.2 Different Financial Structures

Panel A: No debt; all common equity

		Liabilities	$ 0
		Common equity	100
Total assets	$100	Total equities	$100

Panel B: 25 percent debt; 75 percent common equity

		Liabilities	$ 25
		Common equity	75
Total assets	$100	Total equities	$100

Exhibit 2.2 *(Continued)*

Panel C: 50 percent debt; 50 percent common equity

		Liabilities	$ 50
		Common equity	50
Total assets	$100	Total equities	$100

Panel D: 75 percent debt; 25 percent common equity

		Liabilities	$ 75
		Common equity	25
Total assets	$100	Total equities	$100

The four balance sheets in panels A through D of Exhibit 2.2 show liabilities as 0, 25, 50, and 75 percent of total equities (and thus also of total assets). As defined, we have these four levels of financial leverage and now turn our attention to what difference financial leverage makes. These effects are captured in Exhibit 2.3.

Exhibit 2.3 Effects of Financial Leverage on ROE

Assume cost of debt is 8 percent and total assets = $100.
EBIT = earnings before interest and taxes
EBT = earnings before taxes = EBIT − interest expense
ROE = return on equity
Tax rate = 50 percent. Assume losses result in income tax credits.

Rates of return on assets	0%	4%	8%	12%	16%
EBIT	$0	$4	$8	$12	$16
Panel A: 0 percent leverage					
EBIT	$0	$4	$8	$12	$16
Interest expense	0	0	0	0	0
EBT	$0	$4	$8	$12	$16
Taxes	0	2	4	6	8
Earnings available to common equity	$0	$2	$4	$ 6	$ 8
ROE	0%	2%	4%	6%	8%

Exhibit 2.3 ***(Continued)***

Panel B: 25 percent leverage

EBIT	$ 0	$ 4	$8	$12	$16
Interest expense	2	2	2	2	2
EBT	$(2)	$ 2	$6	$10	$14
Taxes	(1)	1	3	5	7
Earnings available to common equity	$(1)	$ 1	$3	$ 5	$ 7
ROE	(1.3%)	1.3%	4%	6.7%	9.3%

Panel C: 50 percent leverage

EBIT	$ 0	$ 4	$8	$12	$16
Interest expense	4	4	4	4	4
EBT	$(4)	$ 0	$4	$ 8	$12
Taxes	(2)	0	2	4	6
Earnings available to common equity	$(2)	$ 0	$2	$ 4	$ 6
ROE	(4%)	0%	4%	8%	12%

Panel D: 75 percent leverage

EBIT	$ 0	$4	$8	$12	$16
Interest expense	6	6	6	6	6
EBT	$(6)	$(2)	$2	$ 6	$10
Taxes	(3)	(1)	1	3	5
Earnings available to common equity	$(3)	$(1)	$1	$ 3	$ 5
ROE	(12%)	(4%)	4%	12%	20%

Note: Parentheses denote negative numbers.

Exhibit 2.3 shows the return on equity (ROE) for a particular business enterprise under various scenarios. Assume that the pretax cost of debt (the interest rate) is 8 percent and that total assets and total equities equal $100. Also assume that the income tax rate is 50 percent. (While higher than the real world, this figure makes the computations easier and does not affect the conclusions.)

Note that I say nothing about the asset structure, only that the total assets are $100. We shall assume various rates of return on assets in the exercise to show how the rate of return on assets intersects with the cost of debt to affect the rate of return on equity.

Panels A through D portray four different levels of financial leverage: 0 percent debt, 25 percent debt, 50 percent debt, and 75 percent debt. Exhibit 2.3 shows the results for each of these levels of financial leverage under five different economic scenarios, dif-

fering by the presumed return on assets. These scenarios assume 0, 4, 8, 12, and 16 percent rates of return on assets. This table thus contains 20 different possibilities, four possible levels of financial leverage times five possible rates of return on assets.

In each of the 20 different situations, Exhibit 2.3 reveals the return on equity and its computation. The calculation begins with the earnings before interest and taxes (EBIT), which equals the total assets (remember that this remains $100 in every case) times the presumed rate of return on the total assets. For example, when the return is 8 percent, EBIT becomes $100 times 8 percent, so EBIT is $8.

From EBIT we subtract the interest expense, which equals the total liabilities multiplied by the cost of debt (remember that this is always 8 percent). When financial leverage happens to be 50 percent, total liabilities are $50, so interest expense is $50 times 8 percent interest times one year, resulting in an interest expense of $4.

Earnings before taxes (EBT) amounts to EBIT minus interest expense. Recalling that the presumed income tax rate is 50 percent, we recognize that taxes are 50 percent of EBT. When EBT is negative, we assume that the organization can ask for a refund from the federal government via a tax carryback, so the income taxes are actually negative amounts. Earnings available to common equity (i.e., shareholders) are then EBT minus the income taxes (we assume no preferred stock).

Return on equity (ROE) indicates how well the business enterprise satisfies the investors. It shows how much return an investor acquired from his or her investment during the year. We compute this metric by dividing the earnings available to common equity by the amount of common equity in the company. Common equity is composed of the common stock, additional paid-in capital, and retained earnings of the entity. In each of our cases, the common equity is the residual interest in the firm computed as the total assets or total equities ($100) minus the amount of debt in the financial structure. As an example, consider the case when financial leverage is 75 percent and the rate of return on assets is 16 percent. From the chart, we can observe that in this case the income available to common equity is $5. Common equity is $100 minus total liabilities of $75, for an amount of $25. Return on equity equals $5 divided by $25 for 20 percent.

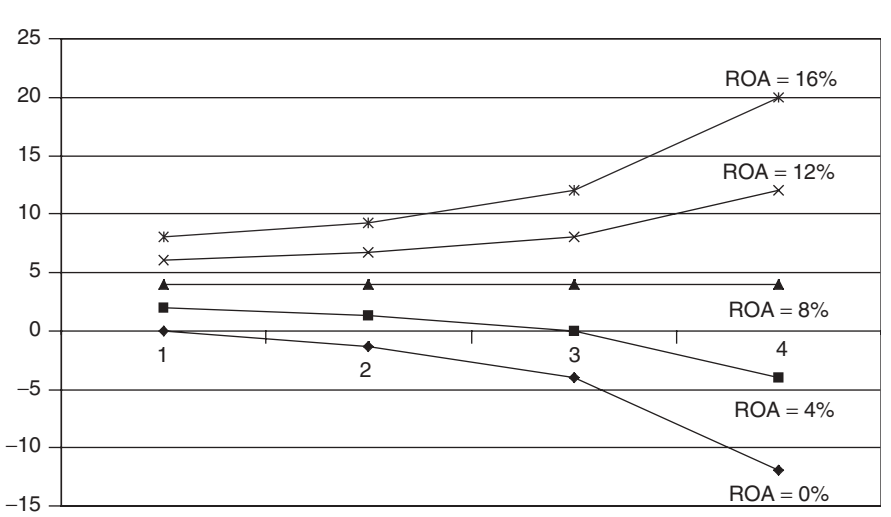
Now that we understand the construction of Exhibit 2.3, let us turn to its implications. The first reflection is that the return on assets positively affects the return on equity. This commonsense deduction can be observed by going across the ROE rows in the exhibit. For whichever ROE row is chosen, the ROE increases as the rate of return on assets increases. The second conclusion is that financial leverage generally changes the return on equity, as can be detected by examining the columns in the exhibit. As more and more debt is added to the financial structure, the ROE varies in amount, except when the rate of return on assets equals the interest rate. The third point is just an extension of the second—this modification of the ROE can be either a good thing or a bad thing. It can increase or lower ROE.

Before stating the fourth and most important conclusion, let us look at the column when the rate of return on assets equals 8 percent. Notice that in each instance as we vary financial leverage, the ROE stays at 4 percent. Whenever the return on assets is the same as the cost of debt, there is no effect on ROE. Now examine the previous two columns in which the rate of return on assets is zero or 4 percent, amounts that are lower than the cost of debt. In each of these cases, the ROE deteriorates as financial leverage

increases. Shareholders lose more value as the debt level increases. Now let us move to the last two columns in the exhibit and assess what takes place when the rate of return on assets is 12 or 16 percent, amounts that exceed the cost of debt. In each of these two instances, the ROE increases felicitously for the shareholders. As debt increases in the corporate financial structure, the shareholders gain value. Putting it all together, return on equity increases, stays constant, or decreases as the rate of return on assets is greater than, equal to, or less than the cost of debt.

I can sum up this discussion with a chart. Exhibit 2.4 displays the five scenarios in a graph in which the *x*-axis represents the different levels of financial leverage while the *y*-axis represents return on equity. The five different lines in the chart depict the effects of financial leverage on ROE for five specific returns on assets. When the return on assets equals the cost of debt, a straight line indicates that ROE stays constant. When the return on assets is greater than the cost of debt, the lines turn upward as financial leverage increases, thus showing the positive effects of magnifying ROE. When, however, the return on assets is lower than the cost of debt, the lines turn downward as financial leverage increases, which indicates the negative effects on ROE.

Exhibit 2.4 Relationship between Financial Leverage and Return on Equity



The four points along the *x*-axis track changes in the financial leverage. The four points represent 0 percent, 25 percent, 50 percent, and 75 percent financial leverage.

The *y*-axis shows the return on equity (ROE).

The five different lines in the chart depict the effects of financial leverage on return on equity (ROE) for a specific return on assets (ROA).

Corporate managers can try to add value to their shareholders by adding in enough debt to obtain positive magnification of the returns.[3] The trick is not to add in so much debt to run the risk of a negative magnification of those returns. Investors would like managers to find the right amount of debt to add the most value to them, and investors evaluate managers in part on that basis. This analysis, however, assumes that managers tell shareholders the whole truth in the financial statements.

STOCK PRICES AND FINANCIAL LEVERAGE

The theory of finance hypothesizes a relationship between stock returns and stock riskiness.[4] The simplest such model speculates a linear relationship, as shown in Exhibit 2.5. Panel A of this display graphs the *capital market line*. The capital market line asserts that the expected return on a portfolio E (R_p) is a straight-line function of the portfolio's risk as measured by its standard deviation σ (R_p). The *y*-intercept of this line is the risk-free rate (R_f), for example, the return on U.S. treasury bonds, while the slope measures the price per unit of risk. This theory asserts that all assets lie on the straight line, so the price of any asset can be found once its risk is known. For example, given the market risk as σ (R_m), the expected market return is E (R_m).

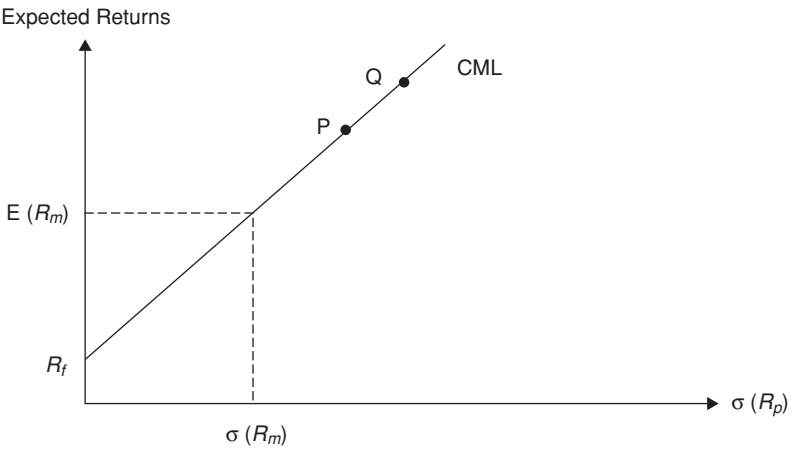
Actually calculating the risk is sometimes difficult, so the process can be standardized by focusing instead on the asset's beta. Panel B of Exhibit 2.5 depicts the *security market line*, which is a graph of the capital asset pricing model, which posits a relationship between the asset's expected return and its risk as measured by beta. This model standardizes the measurement of risk by comparing the asset's standard deviation to the market's risk. The resulting risk metric is termed *beta*. The security market line asserts that the expected return on a portfolio E (R_p) is a straight-line function of the portfolio's risk as measured by its beta β_p. The *y*-intercept of this line is the risk-free rate (R_f), and the slope measures the price per unit of beta. As with the capital market line, this model also claims that all assets lie on the straight line, so the price of any asset can be found once its risk is known. The market has a beta equal to one, yielding the expected market return of E (R_m).

The key thing for purposes of this book is that financial leverage affects the risk of the business enterprise. Adding debt to the financial structure of a firm increases the standard deviation of the stock returns and increases the company's beta. In terms of the graphs in Exhibit 2.5, adding debt to the financial structure moves the firm up the line. For example, if a company is at point P on the capital market line in Panel A or point P on the security market line, then adding debt moves the company to (say) point Q. More debt in the financial structure therefore increases the corporation's financial risk.

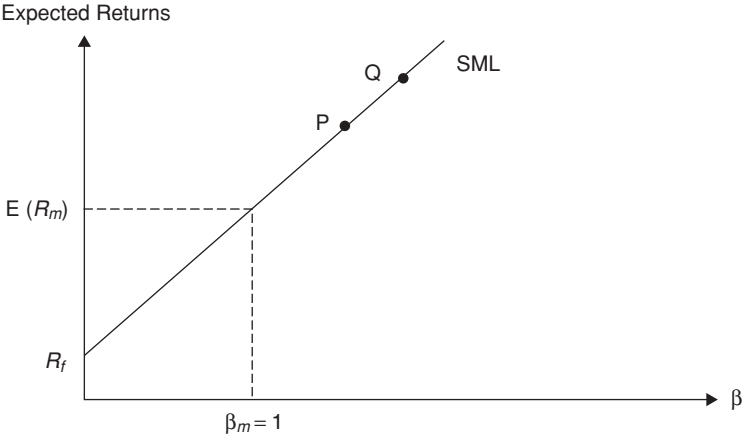
Expected stock returns are a function of the corporate risk, where corporate risk includes not only the operating aspects of the firm but also the financial risk. Investors and creditors will price securities with higher amounts of financial risk so that the investors and creditors can expect higher returns. This process of pricing securities requires information about the capital asset, especially to allow the market to determine the asset's risk. If managers understate the liabilities of the firm, then the investment community might not correctly price the firm's securities. While overpricing securities

Exhibit 2.5 Capital Market Line and Security Market Line

Panel A: Capital Market Line



Panel B: Security Market Line



in the short run might be good for managers, sooner or later investors and creditors learn the truth and the prices plummet.

Before leaving this topic, I should also introduce the concept of *cost of capital*. The *pretax cost of debt* is the interest charges, often expressed in terms of the interest rate. The *after-tax cost of debt* is the interest rate minus the percentage of cash recouped by deducting interest expense on the income tax statement. The *cost of equity* may be thought of as the required rate of return that investors demand because of the stock's

risk, as defined by either the capital market line or the security market line.[5] The firm's *weighted average cost of capital* combines these two elements in proportion to their weights in the financial structure. Thus, the weighted average cost of capital equals the after-tax cost of debt times the financial leverage plus the cost of equity times the ratio of common equities divided by the total equities.

This weighted average cost of capital is important to managers because it represents what the corporation has to pay whenever it taps the investment community for more funds. Initially, as debt is added to the financial structure, the weighted average cost of capital declines because the cost of debt is usually lower than the cost of equity. After a while, however, more debt becomes a concern to the marketplace and the cost of debt rises. As the cost of debt rises, the weighted average cost of capital rises as well. I shall make use of this notion of cost of capital later as I discuss the impact of management deceptions on the firm's cost of capital. In particular, truthfulness lowers the corporate cost of capital while management lies increase this cost of capital.

BANKRUPTCY PREDICTION MODELS

Investors and creditors and their analysts employ accounting numbers in a variety of ways, and one of the enduring practices is the prediction of corporate failure. Bankruptcy is an important event to predict because of the dire consequences when it occurs. Investors and creditors stand a chance to lose some or all of their investment as well as forfeit chances for profits if a business enterprise collapses.

A number of statistical models have been around for decades, and one of the most popular prediction schemes is the Altman model.[6] Edward Altman paired 33 failed and 33 nonfailed firms in an attempt to control for industry and size differences. He then employed a method called discriminant analysis to a list of 22 financial ratios. This method builds the best linear model possible so that it can explain the firms as failed or not failed with as little error as possible. The dependent variable in this model denotes the bankruptcy status, in which a value of 1 denotes a company that has not failed, while a value of 0 denotes that the entity has failed.

Altman started with a list of 22 financial ratios for the independent variables. From this list he chose five that embrace the best possible model:

1. Working capital/total assets
2. Retained earnings/total assets
3. Earnings before interest and taxes/total assets
4. Market value of equity/book value of total debt
5. Sales/total assets

The coefficients for the model are shown in Exhibit 2.6. These coefficients of the function were developed using the data from the first year prior to bankruptcy. The same function was then used to predict corporate failure (regardless of the time frame). Testing the model on the original data and on a fresh set of data, Altman found that the

Exhibit 2.6 Altman's Bankruptcy Prediction Model

Altman (1968 and 1971) applied a statistical method termed *discriminant analysis* to a set of bankrupt firms that were paired to similar nonbankrupt firms. The dependent variable Z denotes the firm's bankruptcy status. A value of $Z = 1$ indicated healthy firms, but a value of $Z = 0$ denoted unhealthy companies.

Altman examined several possible independent variables and derived the following model as his best prediction model.

$$Z = 1.2\,X_1 + 1.4\,X_2 + 3.3\,X_3 + 0.66\,X_4 + 1.0\,X_5$$

where:
X_1 = working capital / total assets
X_2 = retained earnings / total assets
X_3 = earnings before interest and taxes / total assets
X_4 = market value of equity / book value of total debt
X_5 = sales / total assets

To use the model, determine the values of the five independent variables and substitute them into the model and determine the resulting Z-score. Then evaluate this Z-score as follows.

- If $Z > 2.99$ predict healthy.
- If $Z < 1.81$ predict failing.
- Otherwise, it is too close to call.

multiple discriminant analysis model seemed to be a reliable model up to two years prior to bankruptcy.

The model can be used by entering the data into the model given in Exhibit 2.6. Compute what is termed the Z-score by using the equation in the exhibit. Then interpret the Z-score, depending on the resulting value. When the Z-score exceeds 2.99, predict that the business enterprise will not fail. If the Z-score is less than 1.81, then predict bankruptcy. If the value of the Z-score is between 1.81 and 2.99, then the model is unable to categorize the firm as one that is likely to fail or not fail.

The key point to notice in yet another application is the importance of financial risk. One of the most important variables in the Altman model is market value of equity divided by book value of total debts. This measure is merely a variation of the more common debt-to-equity measure of financial risk. The coefficient of this variable is 0.66, which of course is positive. This means that as there is more equity in the financial structure, the less likely the business enterprise will collapse. Alternatively, as debt is added to the financial structure, the lower this variable will be, which in turn lowers the Z-score and indicates that there is greater risk of corporate failure.

BOND RATINGS PREDICTION MODELS

Another example of a model that investors and creditors employ in practice is a model to predict bond ratings. Obviously, such models help to explain how ratings agencies arrive at the particular assessments for particular corporate bonds. Since better bond ratings typically mean lower bond interest rates, these models help to explain bond premiums. They also are important for investors and creditors to assess the quality of new bond issuances and the quality of privately placed bonds that ratings agencies do not review. Finally, these models prove helpful in evaluating those bonds that the rating agencies have not reassessed recently, such as Enron's bonds in 2001.

James Horrigan was the first to investigate this issue.[7] He took a variety of firms whose bonds were relatively stable during a certain period of time and applied multiple linear regression. This method builds the best linear model it can so that it can explain the firm's bond ratings with as little error as possible. In this context the dependent variable *Z* represented the bond ratings at that time. Horrigan explored a number of possible variables for the independent variables. Unique to his study, Horrigan divided each variable by the industry average for that variable; this is one way by which the research can minimize the impact of industry on the financial ratios and make the model more generalizable. Horrigan's best model exploited these variables:

- Subordination status (whether the particular bond was subordinated to another debt issue)
- Total assets
- Common equities/total debts[8]
- Working capital/sales
- Operating profit/sales
- Sales/stockholders' equity

The coefficients for this model are tabulated in Exhibit 2.7. To apply the model, gather the values of the independent variables, multiply them by the coefficients as indicated in the exhibit, and sum up the products. The resulting number is called the *Z*-score. Then interpret the *Z*-score according to the table in the exhibit. For example, if a *Z*-score of 1.8 is obtained, since it lies between 1.602 and 2.094, we would predict that the corporate bond would have a rating of A.

The key point for us is similar to what I said for the Altman model, and that is to recognize another instance in which financial structure is crucial to investors and creditors. One of the most important variables in the Horrigan model is common equities divided by total debts, which is just the reciprocal of the more popular debt-to-equity ratio, so they are both measures of financial risk. The fact that the coefficient of this variable is 0.272, a positive number, implies that as there is more equity in the financial structure, the higher the bond rating will be. Conversely, as debt is added to the financial structure, the lower this independent variable will be, thereby decreasing the *Z*-score, which indicates that the bond rating will be lower.

Exhibit 2.7 Horrigan's Model to Predict Bond Ratings

In 1996 Horrigan ran multiple linear regressions on a sample of firms whose bond ratings were stable within a certain time period. In this case the dependent variable Z stands for bond rating, while the independent variables (the Xs) correspond to various financial dimensions considered important to the bond rating process. Horrigan obtained the following as his best model.

$$Z = 1.197\,X_0 + .034\,X_1 + .272\,X_2 - .501\,X_3 + 4.519\,X_4 - .203\,X_5$$

where X_0 = subordination status (1 if the bond is unsubordinated; 0 if the bond is subordinated)
X_1 = total assets
X_2 = common equities / total debt
X_3 = working capital / sales
X_4 = operating profit / sales
X_5 = sales / stockholders' equity

The financial ratios are divided by the industry averages to minimize the impact of industry on the financial ratios.

To apply the model, determine the values of the six independent variables, substitute them into the model, and determine the resulting Z-score. The Z-score predicts the bond rating as follows.

$2.855 < Z$	AAA
$2.094 < Z < 2.855$	AA
$1.602 < Z < 2.094$	A
$0.838 < Z < 1.602$	BBB
$0.360 < Z < 0.838$	BB
$Z < 0.360$	B or lower

COST OF LYING

Managers have some incentives to lie in the balance sheets issued to the investment community. They know that investors and creditors are evaluating them in part on how much debt is in the financial structure of the enterprise. The ability to raise capital depends on whether investors and creditors perceive the debt level to be too high. Even if they would choose to provide capital, investors and creditors impose a cost of capital that is partly a function of the firm's financial structure. Thus, to obtain capital at a lower cost, managers might choose to distort the accounting numbers in their balance sheets.

This story seems rather shortsighted, however, because it assumes that investors and creditors are fools who have no idea what is really going on. When they learn about the

deceptions, investors and creditors will raise the cost of capital by adding what I term a *financial reporting risk premium* to this cost.[9] Consider the next scenario.

When banks approve loans and charge interest on their loans, they establish interest rates that depend on at least three factors: (1) the real interest rate, (2) the expected inflation rate, and (3) the risk that the loan applicant will not repay the loan in part or in whole. The real interest rate is the interest rate that would exist in a world without inflation and for a party who has no credit risk. Inflation, of course, implies that future dollars are weaker than current dollars because the currency cannot fetch as much as it once could. Bankers realize that inflation could potentially hurt them because the dollars repaid by borrowers have less value. Because the lenders comprehend the problem, they protect themselves by increasing interest rates to offset the problem of inflation. In addition, banks worry about the credit risk of the loan applicant. Will the party pay off the loan in full and on time? Banks shelter themselves from this credit risk by adding a premium to the interest rate, an amount that depends on the perceived credit risk of the borrower.

Just as creditors adjust the cost of debt—the interest rates—to compensate them for expected inflation and for credit risk, investors do the same. The cost of equity also depends on expected inflation and on financial leverage. Present and potential shareholders want to be remunerated for the risks that they bear.

In the same way that investors and creditors add risk premiums to their required costs to obtain payment for risk taking, they also require recompense for the additional risks they incur because managers might lie in the financial reports. This financial reporting risk premium covers the potential investment losses due to accounting chicanery. During periods when accounting frauds and misstatements are high, as documented in Exhibits 1.1 and 1.2, investors and creditors get scared about other possible cons and ruses and defend their investments by charging higher premiums for this financial reporting risk. Increases in these premiums increase the cost of capital and reduce stock prices and bond prices. When investors perceive a decline in accounting fraud, they will reduce these premiums, thus increasing stock and bond values.

Paul Miller and Paul Bahnson address this same issue, but label it *quality financial reporting*.[10] They advocate a culture change in which managers, directors, and auditors perceive the value of financial reporting and treat investors and creditors as customers of the business enterprise. By treating these customers better with more and more information, the customers would respond by rewarding the firm with higher stock and bond valuations. The clarion for managers to hear is that investors and creditors desire more and better information in financial reports, schedules, footnotes, and management's discussion and analysis. Heeding the clear and piercing call leads to greater wealth for everyone; damping that sound, however, carries a cost to the firm and its managers. I hope there are managers who have ears to hear this music.

SUMMARY AND CONCLUSION

Debt matters. As managers begin to add debt to the financial structure, felicitous benefits take place since the liabilities magnify the returns to shareholders. This result occurs whenever the assets are generating returns that exceed the cost of debt. This good for-

tune has its limits, however, and after that, as managers add more debt, the liabilities begin to magnify the decline in returns. Because of this double-edged sword, investors and creditors scrutinize the financial leverage of any institution.

Such a close inspection by the investment community might tempt some managers to lie about their liabilities. These managers could apply the equity method or operating leases or pension accounting in such a way as to hide the liabilities. The managers might also create special-purpose entities in which they could park the debt. Either way, the managers and their professional advisers are lying to the public. In some cases, as with WorldCom and Adelphia, the managers are downright fraudulent. But even in the more common case in which managers follow generally accepted accounting principles, the managers are still deceiving the investment community, and so they should reject use of these flawed rules.

Lying about debt matters. Whenever investors and creditors are afraid they will be stiffed, they just increase the financial reporting risk premium. The cost of capital goes up and stock prices and bond prices go down. Managers can add value to their firms by telling the truth.

NOTES

1. Some good discussions on financial ratios can be found in: R. A. Brealey and S. C. Myers, *Principles of Corporate Finance,* 7th ed. (New York: McGraw-Hill Irwin, 2002; E. F. Brigham and J. F. Houston, *Fundamentals of Financial Management,* 8th ed. (New York: Dryden, 1998); R. C. Higgins, *Analysis for Financial Management* (New York: Irwin, 2000); J. E. Ketz, R. Doogar, and D. E. Jensen, *Cross-Industry Analysis of Financial Ratios: Comparabilities and Corporate Performance* (New York: Quorum Books, 1990); F. K. Reilly and K. C. Brown, *Investment Analysis and Portfolio Management,* 6th ed. (New York: Dryden, 2000); L. Revsine, D. W. Collins, and W. B. Johnson, *Financial Reporting and Analysis,* 2nd ed. (Upper Saddle River, NJ: Prentice-Hall, 2002); and G. I. White, A. C. Sondhi, and D. Fried, *The Analysis and Use of Financial Statements*, 2nd ed. (New York: John Wiley & Sons, 1998) and 3rd ed. (New York: John Wiley & Sons, 2003).
2. A variety of issues present themselves when constructing financial ratios. Questions arise, for example, whether deferred income taxes are really debt and, even if they are, whether they are incorrectly measured because they are not discounted. I ignore those concerns, for I am more interested in whether managers report truthfully than in the utility of what they present. Texts such as those mentioned in note 1 address the latter issue.
3. For more information about the corporate financial structure, see Brigham and Houston, *Fundamentals of Financial Management,* and Reilly and Brown, *Investment Analysis and Portfolio Management.*
4. I simplify things by assuming that the capital asset pricing model is the correct model. For further discussion, see Brealey and Myers, *Principles of Corporate Finance*; Brigham and Houston, *Fundamentals of Financial Management*; and Reilly and Brown, *Investment Analysis and Portfolio Management.*
5. Here, too, I simplify things by not considering the so-called cost of retained earnings, nor by including flotation costs in the cost of obtaining funds from new equity.
6. See the Altman model, described in E. I. Altman: "Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy," *Journal of Finance* (September 1968:

589–609; *Corporate Bankruptcy in America* (New York: Heath, 1971); and *Corporate Financial Distress and Bankruptcy: A Complete Guide to Predicting and Avoiding Distress and Profiting from Bankruptcy* (New York: John Wiley & Sons, 1993). In the last three decades researchers have made many improvements to the original Altman model. Unfortunately, some of them are quite sophisticated statistically, and so here I rely on the original Altman model, which suffices for our purposes. Details about this line of research can be found in Altman, *Corporate Financial Distress and Bankruptcy* and in White, Sondhi, and Fried, *Analysis and Use of Financial Statements,* 3rd ed.

7. J. O. Horrigan, "The Determination of Long-term Credit Standing with Financial Ratios," *Journal of Accounting Research* (1966 supplement): 44–62.
8. Horrigan actually calls this ratio net worth divided by total debt, but his notion of net worth is what I have termed common equities (common stock plus additional paid-in capital plus retained earnings).
9. For greater discussion about adjusting the cost of capital for risk, see S. P. Pratt, *Cost of Capital: Estimation and Applications*, 2nd ed. (Hoboken, NJ: John Wiley & Sons, 2002), especially Chapters 5 and 8.
10. Miller and Bahnson document a variety of academic studies that support the notion that capital markets reward those corporations that show increases in the quantity and quality of disclosure with higher stock prices; see P. B. W. Miller and P. R. Bahnson, *Quality Financial Reporting* (New York: McGraw-Hill, 2002). Not a single academic study exists that arrives at the opposite conclusion.

Part II

Hiding Financial Risk

CHAPTER THREE

How to Hide Debt with the Equity Method

A variety of accounting methods and techniques exist by which corporate managers can give the illusion that the business entity possesses less debt than it actually has. Chapters 3 through 5 explore three of these schemes: the equity method in this chapter, lease accounting in Chapter 4, and pension accounting in Chapter 5. Chapter 6 explores utilization of special-purpose entities (SPEs) to conceal a firm's true obligations using asset securitizations, borrowing with SPEs, and synthetic leases.

The good news of the first set of accounting techniques (equity method, lease accounting, and pension accounting) for sweeping liabilities under the corporate carpet is that readers of financial statements sometimes can adjust the accounting numbers by incorporating the footnote disclosures into their analysis. Whether readers actually can do this depends on the quality of the disclosures by the organization's chief executive officer (CEO) and chief financial officer (CFO). If these managers care at all about the needs of investors and creditors, they will make sure that such disclosures are forthcoming, that these disclosures quantify what is going on accurately, and that the disclosures are complete.

The process of taking the reported numbers and adjusting them for what is really taking place is called *making analytical adjustments*. The financial statement user would then proceed to analyze the business enterprise in terms of these adjusted numbers rather than the reported numbers that appear in the financial statements. For example, by computing financial ratios with the adjusted numbers, investors obtain a better picture of the corporate health than if they calculated these ratios with the reported numbers.

In the equity method, lease accounting, and pension accounting, when firms give sufficient detail in their footnotes, readers can make analytical adjustments and integrate the hidden debt with the reported liabilities. Combining these items aids investors and creditors in better understanding the company's financial risk.

The bad news of the second set of accounting methods (hiding debt with asset securitizations, SPE borrowings, and synthetic leases) is that no such disclosures currently exist. Too many of the footnotes employ double speak and gobbledy-gook so that no one has the foggiest idea of what is being conveyed. Even when managers are aboveboard and attempt to provide transparent and truthful disclosures, the footnotes involving SPEs

rarely provide enough detail to make analytical adjustments. With the accounting problems at Enron, WorldCom, and similar corporations, the investment community did not have much of a chance because of the virtual impossibility to disentangle the web of footnotes and make any sense of what the firms were doing. Readers might perceive that there is a problem but be unable to rectify the numbers and understand the economic reality. I discuss this matter later in the book.

In this chapter I explore the equity method and discuss how managers can employ this accounting ploy to reduce reported debt. The first section of the chapter summarizes accounting for investments, and the second section compares and contrasts the equity method with the trading-security and available-for-sale methods. The third section indicates the superiority of the equity method over the cost method when the investor can influence significantly the operations of the investee, using Boston Chicken as an exemplar of what not to do. The fourth section explains and illustrates the equity method and consolidation in greater detail. The last section of the chapter discusses the examples of Elan and Coca-Cola and demonstrates how the equity method helped managers at these companies appear to have fewer liabilities than their respective firms actually did. It also gives one pause to consider why WorldCom recently deconsolidated its investment in Embratel. I adjust the statements of Coca-Cola and examine its debt-to-equity ratios, noting that these ratios deteriorate with the inclusion of the hidden debts.

BRIEF OVERVIEW OF ACCOUNTING FOR INVESTMENTS

Let me place the topic into context by giving an overview of accounting for investments. Among other things, this synopsis will help readers understand the panoply of techniques available to managers when accounting for investments.[1]

When an entity buys some investment, it purchases either debt securities or equity securities. Debt securities imply a creditor-debtor relationship, while equity securities represent some type of ownership interest.

Accounting rules require an investor in debt securities to classify them into one of three categories: (1) trading securities, (2) held-to-maturity securities, and (3) available-for-sale securities. Trading securities are those securities that managers plan to hold only a short while and sell in the short run in an attempt to gain trading profits. Held-to-maturity securities are those securities that managers plan to hold until the debt matures. Available-for-sale securities are anything else.

Investors account for trading securities by recording them at fair value in the balance sheet and recognizing changes in fair value in the income statement as gains and losses. Available-for-sale securities are recorded at fair value in the balance sheet and are reported as gains and losses on the income statement only when the investor sells them. Investors put held-to maturity securities on the balance sheet at amortized cost[2] and do not recognize any changes in fair value on the income statement. Of course, interest revenue would appear on the income statement under all three approaches.

Accounting for investments in equity securities proceeds in this way. If the investor does not have significant influence over the investee (often interpreted as having less than 20 percent of the total capital stock of the company), then it classifies the invest-

ment as either trading securities or available-for-sale securities. The criteria for classification and the accounting for these two categories are essentially the same for equity securities as they were for debt securities. The only difference is that the investor would report dividend income instead of interest revenue.

If the firm has significant influence over the activities of the investee but owns no more than 50 percent of the capital stock, then it would apply the equity method. If it holds more than 50 percent of the common stock of the company, then the investing corporation would apply the consolidation method. Under the equity method, the investment account is adjusted for the investor's proportionate share of the investee's income. Under consolidation, the investor eliminates the investments account and replaces it with the assets and the liabilities of the investee. A subtle but important relationship exists between the equity method and consolidation, namely that the investor company will have exactly the same net income whether it employs the equity method or whether it consolidates the statements.

There are two key points to be gleaned from this overview. The first concerns when it is appropriate for an investor to utilize the equity method or to account for the investments as either trading securities or available-for-sale securities—it depends on whether the investor has significant control over the investee. We need to understand why it makes a difference and of what sin Boston Chicken was guilty. The second key point concerns when it is appropriate for an investor to account for an investment with the equity method versus when it should consolidate the investment. Here too we need to understand the difference and investigate Coke's motivation for not consolidating its bottling operations. It also might help us understand why Elan did not consolidate its joint ventures and why WorldCom recently deconsolidated one of its Mexican subsidiaries. Before I discuss these issues, I examine the equity method in greater detail.

EQUITY METHOD VERSUS TRADING-SECURITY AND AVAILABLE-FOR-SALE METHODS

Consider the following hypothetical example. On January 2, Buzzards, Inc., buys 1,000 shares of High Flying stock at $32 per share. This purchase represents a 20 percent interest in High Flying, Ltd. During the year, High Flying earns net income of $23,000 and declares and pays dividends of $1.50 per share. At year end the capital stock of High Flying circulates at $40 per share. How do we do the accounting?

Trading and Available-for-Sale Securities

If Buzzards, Inc., determines that it does not have significant influence over the operating activities at High Flying, then it needs to classify the stock investment either as trading securities or as available for sale. Let us begin by looking at what happens if management at Buzzards, Inc., adopts the former approach. On the balance sheet, the firm should value the stock investment at fair value, which is 1,000 shares at $40 per share, for a total of $40,000. The income statement shows two types of earnings. Buzzards receives dividends from High Flying of 1,000 shares at $1.50 per share, or

$1,500. In addition, Buzzards displays its unrealized holding gain, which is the difference in the fair value of the investment at the end of the year as compared with its fair value at the beginning of the year. In this case, Buzzards has an unrealized holding gain of 1,000 shares times the difference between $40 and $32, or $8,000.

If Buzzards, Inc., considers the investment available for sale, then it also records its value on the balance sheet at the fair value of $40,000. Unlike the previous example, however, the company would show only the dividends income of $1,500. The business enterprise would not show the unrealized holding gain in the income statement.[3]

Whereas the trading-security approach each year breaks out trading gains (or losses) that take place during the year, the available-for-sale tactic does not record any gain or loss until the securities are sold. For example, if Buzzards, Inc., sells the High Flying securities in the second year for $44 per share, the first approach records the gain on the sale as the number of shares times the difference between the price per share and the fair value at which it is recorded. Here that amount is 1,000 shares times $44 minus $40, or 1,000 times $4 for a gain of $4,000 in the second year. The second approach records the gain on the sale as the number of shares sold times the difference between the price per share and the book value per share when the securities were first acquired. In this example, the amount is 1,000 shares times $44 minus $32, or 1,000 times $12 for a gain of $12,000 per share. The contrast is seen as:

	Trading Security	Available for Sale
First year	$ 8,000	$ 0
Second year	4,000	12,000
Total profit	$12,000	$12,000

The two methods give the same income over the time period that the investor owns the stock, but they differ in the year-to-year recognition of gains and losses.

In practice, firms record equity investments far more often as available-for-sale securities than as trading securities because they do not have much say about when to record the gains and losses when the investments are trading securities. Instead, company managers can arrange when to recognize the gains or losses on available-for-sale securities by selling them when they want. If the income statement could use a boost, managers might sell some of these available-for-sale securities to provide that lift. If the income statement looks good, managers might delay any recognition until that rainy day appears, and they achieve this delay by not selling any of the securities. Managers yearn for this type of flexibility so they can "manage" their earnings, but this type of management does not help the investment community.

Equity Method

The equity method differs from both of these methods because it does not adjust the investments account for fair value changes; instead, the equity method adjusts the investments account for the investor's proportional share in the investee's earnings, which also serves as the investment income. The equity method reduces the investments account

for any dividends it receives. Let us use the Buzzards, Inc., investment in High Flying, Ltd., to illustrate this technique.

Under the equity method, Buzzards initially records the investment at 1,000 shares times $32, the price paid per share; the amount is $32,000, the same as with the previous two accounting methods. During the year, High Flying has income of $23,000 and issues dividends of $1.50 per share.

Buzzards recognizes investment income of 20 percent of $23,000, or $4,600. Its share of the dividends is 1,000 shares time $1.50 per share, or $1,500. The investments account is increased for the investment income and decreased for the dividends. At year end, the investment has a balance of $32,000 plus $4,600 minus $1,500, or $35,100.

There are other aspects of the equity method, but before examining them, let us stop to ask when a firm would not want to employ this method.

BOSTON CHICKEN

Boston Chicken[4] created what it called financed area developers (FADs), which, from an accounting point of view, were just investments of Boston Chicken. In some cases, the corporation had a small equity interest in the FADs, and in other cases it did not. In all cases, the corporation had a right to convert the debt into an equity interest, usually giving Boston Chicken over 50 percent ownership in the FADs.

How should Boston Chicken have accounted for its investments in these FADs? When this question arises, it usually helps to ask what motivates the managers in their choices. The FADs had operating losses during the early years of their existence. If Boston Chicken had accounted for its investments with the equity method, then it would be reporting investment losses. By using a different method, Boston Chicken did not have to report any investment losses.[5] Thus, managers at Boston Chicken had incentives not to employ the equity method until the operating losses disappeared. Once the FADs started earning money, Boston Chicken could exercise the options and start adding the FADs' share of these profits into investment income.

Not surprisingly, managers did just that. They argued that Boston Chicken had less than 20 percent ownership in these FADs, so it did not have to apply the equity method. This argument errs because Accounting Principles Board (APB) Opinion No. 18 says that the threshold is whether the investor has significant control over the investee. The board issued the 20 percent demarcation only as a rule of thumb to help accountants determine which accounting method to employ.

In this case, clearly the managers of Boston Chicken had control over the operations of the FADs and assisted Boston Chicken in expanding its relationships with its franchisees. More important, Boston Chicken held options to convert the FADs' debt or small equity positions into large and often majority ownership positions. The options are clearly the key to understanding what is going on. The Securities and Exchange Commission (SEC) later acted against these managers, principally because of the existence of these options.

DETAILS ABOUT THE EQUITY METHOD AND CONSOLIDATION

To learn more about the equity method and to introduce the consolidation method, let us take a close look at an academic illustration. Later I present some real-world cases. Suppose that Publius Corporation acquires 80 percent of the capital stock of Serpentino Inc. on January 1 for $100,000. Before the purchase, the two companies have the balance sheets depicted in Exhibit 3.1. To effect the transaction, Publius borrows $52,000 with a note payable. Publius gives this amount plus $48,000 cash to obtain the 80 percent interest in Serpentino. Under any of the accounting methods, the investment is initially recorded on the books of Publius for $100,000.

Exhibit 3.2 portrays the new balance sheet of Publius, reports the old balance sheet of Serpentino, and displays the consolidated balance sheet. Serpentino's balance sheet, of course, stays the same. The assets in Publius's balance sheet differ because of the $100,000 investment and the net decrease in cash of $48,000. The liabilities in its balance sheet show an increase in notes payable of $52,000. Shareholders' equity stays the same. (Whenever a company buys more than 50 percent equity of another firm, the acquirer is termed the *parent* and the investee the *subsidiary*.)

Exhibit 3.1 Balance Sheets of Investor and Investee Prior to Acquisition (in Dollars)

	Publius Corporation	Serpentino Inc.
Cash	50,000	2,000
Accounts Receivable	16,000	5,000
Inventory	40,000	10,000
Land	100,000	40,000
Buildings	200,000	50,000
Accumulated Depreciation	(50,000)	(7,000)
Total Assets	356,000	100,000
Accounts Payable	10,000	5,000
Wages Payable	10,000	5,000
Mortgage Payable	100,000	30,000
Minority Interest		
Common Stock	50,000	5,000
Additional Paid-in Capital	86,000	20,000
Retained Earnings	100,000	35,000
Liabilities and Stockholders' Equity	356,000	100,000

Note: Parentheses denote negative numbers.

Exhibit 3.2 Balance Sheets Immediately after Purchase (in Dollars)

	Publius Corporation	Serpentino Inc.	Consolidated
Cash	2,000	2,000	4,000
Accounts Receivable	16,000	5,000	21,000
Inventory	40,000	10,000	50,000
Land	100,000	40,000	140,000
Buildings	200,000	50,000	274,000
Accumulated Depreciation	(50,000)	(7,000)	(57,000)
Investment in Serpentino	100,000		
Goodwill			28,000
Total Assets	408,000	100,000	460,000
Accounts Payable	10,000	5,000	15,000
Wages Payable	10,000	5,000	15,000
Notes Payable	52,000		52,000
Mortgage Payable	100,000	30,000	130,000
Minority Interest			12,000
Common Stock	50,000	5,000	50,000
Additional Paid-in Capital	86,000	20,000	86,000
Retained Earnings	100,000	35,000	100,000
Liabilities and Stockholders' Equity	408,000	100,000	460,000

Note: Parentheses denote negative numbers.

Differences between Equity Method and Consolidation at Date of Acquisition

Think about what Publius receives in exchange for its $100,000 cash. The reported net assets (assets minus liabilities, which equals stockholders' equity) of the investee or subsidiary are $60,000. Assets of Serpentino equal $100,000, liabilities equal $40,000 (accounts payable of $5,000 plus wages payable of $5,000 plus mortgage payable of $30,000), and so shareholders' equity equals $60,000. The latter number is obtained either by subtracting liabilities from assets ($100,000 minus $40,000 equals $60,000) or by adding the components of shareholders' equity (common stock of $5,000 plus additional paid-in capital of $20,000 plus retained earnings of $35,000).

Now assume that all assets and liabilities of Serpentino have fair values equal to book values, except for buildings, which have a fair value of $73,000 but a book value of $43,000 (*book value* equals the cost of the asset less its accumulated depreciation, which equals $50,000 minus $7,000). This assumption implies that Publius is acquiring

80 percent of net assets with a fair value of $90,000 (reported book value of $100,000 plus the fair value increment of the buildings of $30,000 minus the fair value of the liabilities, $40,000). Publius is therefore buying net assets worth $72,000.

Accountants term the difference between what is paid for the investment and the fair value of the net assets acquired *goodwill*. In this case, goodwill equals $100,000 minus $72,000, or $28,000.

Minority interest reflects the equity interests in Serpentino by the other shareholders in the corporation, the minority shareholders. Given that Publius owns 80 percent of Serpentino, the minority shareholders have claim to 20 percent of the net assets of the entity. In this case, minority interest is 20 percent of $60,000, or $12,000.[6]

If Publius Corporation prepares a consolidated balance sheet at the date of acquisition, it removes the investments in Serpentino and the shareholders' equity of Serpentino. It adds the goodwill of $28,000 and the minority interest of $12,000. Then the company combines all of the other accounts. Consolidated cash is the parent's cash ($2,000) plus the subsidiary's cash ($2,000) for $4,000, and so forth.

The key point shows up when we compare some financial ratios computed on numbers of Publius's balance sheet versus what values these ratios take on when they are based on the consolidated balance sheet. In particular, differences appear for the financial leverage ratios. The results are:

Financial Ratio	Equity Method	Consolidated #1	Consolidated #2
Debt/total assets	.42	.46	.49
Debt/equity	.73	.85	.95
Long-term debt/equity	.42	.52	.55

There are two columns for the consolidated method, depending on one's viewpoint about the nature of minority interest. Some people perceive that minority interest is part of equity, and that is how it is treated in the first consolidated column. Others, however, claim that, from the parent's point of view, minority interest is like debt and should be analyzed as if it were debt. That is how the ratios were computed in the second consolidated column.

The thing to notice is that the equity method understates the financial leverage of the entity because it excludes the subsidiary's debts from the analysis. Whatever measure of financial leverage is considered, the equity method presents results that look better than the consolidated numbers. When minority interest is treated as a liability, this consequence becomes exacerbated. These results always occur because the equity method in essence nets the debts of the subsidiary with its assets in the parent's investment account.

Differences between Equity Method and Consolidation after Acquisition

To illustrate the income effects from applying these two methods, look at these two companies one year after acquisition. Income statements, statements of retained earnings, and balance sheets are presented in Exhibit 3.3. Before reviewing them, two things must be done. First, with respect to the subsidiary's buildings, the parent company has

Exhibit 3.3 Financial Statements One Year after Purchase (in Dollars)

	Publius Corporation	Serpentino Inc.	Consolidated
Income Statement			
Sales	100,000	40,000	140,000
Cost of Sales	(60,000)	(20,000)	(80,000)
Other Expenses	(20,000)	(10,000)	(35,400)
Investment Income	2,600		
Minority Interest Net Income			(2,000)
Net Income	22,600	10,000	22,600
Retained Earnings			
Beginning	100,000	35,000	100,000
Net Income	22,600	10,000	22,600
Dividends	(14,000)	(5,000)	(14,000)
Ending	108,600	40,000	108,600
Balance Sheet			
Cash	9,000	5,000	14,000
Accounts Receivable	20,000	6,000	26,000
Inventory	39,000	12,000	51,000
Land	100,000	40,000	140,000
Buildings	200,000	50,000	274,000
Accumulated Depreciation	(55,000)	(8,000)	(65,400)
Investment in Serpentino	98,600		
Goodwill			25,000
Total Assets	411,600	105,000	464,600
Accounts Payable	12,000	8,000	20,000
Wages Payable	8,000	3,000	11,000
Notes Payable	52,000		52,000
Mortgage Payable	95,000	29,000	124,000
Minority Interest			13,000
Common Stock	50,000	5,000	50,000
Additional Paid-in Capital	86,000	20,000	86,000
Retained Earnings	108,600	40,000	108,600
Liabilities and Stockholders' Equity	411,600	105,000	464,600

Note: Parentheses denote negative numbers.

to depreciate the full fair value of the building. The subsidiary already depreciates the book value of the building, so the parent only has to pick up the incremental amount. Assume the building has a 10-year life and no salvage value and Publius uses the straight-line formula. The fair value increment over the book value of the building is $30,000 by assumption; the parent's portion of this is 80 percent of $30,000, or $24,000. The depreciation of the excess therefore will be $2,400 per year, calculated as $24,000 minus the salvage value of $0, all divided by 10 years. Under the equity method, this extra depreciation is subtracted from the investment income; under consolidation, it is added to the depreciation expense.

In addition, we have to ask whether goodwill has at least its original fair value. If not, an impairment loss must be recognized.[7] Assume that goodwill has a fair value of $25,000 at the end of the year, which represents an impairment loss of $28,000 minus $25,000, which equals $3,000. The equity method subtracts this amount from investment income, while the consolidation method displays it as an impairment loss. We add both the extra depreciation and the impairment loss to "other expenses."

Investment income begins with 80 percent of Serpentino's income, which equals 80 percent of $10,000, or $8,000. From this quantity the accountant subtracts out the extra depreciation and the impairment loss, so investment income comes to $8,000 minus $2,400 minus $3,000, which equals $2,600. Note that this amount is shown in the income statement of Publius in Exhibit 3.3.

In a consolidated income statement, we also need to compute what is called *minority interest net income (MINI)*. The MINI is computed as the minority shareholders' interest in the subsidiary's income. In this example, MINI equals 20 percent of $10,000, or $2,000. The consolidated income eliminates the parent's investment income account and recognizes the extra depreciation, the impairment loss, and MINI. All other items are merely added together. Sales, for example, become $100,000 plus $40,000, or $140,000. Keep in mind that the account "Other expenses" not only combines those of the two firms but also includes the extra depreciation and the impairment loss.

An important corollary of this discussion is that consolidated net income always equals the parent's net income. The equity method is designed to make this result occur. Because of this effect, consolidated retained earnings will always match the parent's retained earnings.

The balance sheet proceeds pretty much as before, bearing in mind that buildings must be increased by the extra $24,000 and accumulated depreciation by the $2,400 and that goodwill now has a fair value of $25,000. Also note that minority interest is 20 percent of the subsidiary's equity of $65,000, or $13,000. The parent's investment account and the subsidiary's stockholders' equity accounts are eliminated. Finally, all remaining accounts are combined.

The first key point is that the consolidated net income always equals the parent's net income. Even so, return metrics such as return on assets or return on sales usually differ because assets and sales are not the same under these two formats. However, even though consolidated net income equals the parent's net income, having two formats can interfere with an analyst's or an investor's assessment of the growth rate in sales or operating expenses.

The second key point, as before, is that the equity method understates the financial leverage of the business enterprise. The equity method nets out the subsidiary's liabilities, so these liabilities are not part of the corporate debt. The consolidated method, however, correctly includes these liabilities in the balance sheet; so financial ratios computed on these numbers properly reveal the hidden financial risk. For our hypothetical illustration, the results are:

Financial Ratio	Equity Method	Consolidated #1	Consolidated #2
Debt/total assets	.40	.44	.47
Debt/equity	.68	.80	.90
Long-term debt/equity	.38	.48	.48

As before, two columns are shown for the consolidated method, depending on one's viewpoint about minority interest. Again, the equity method understates the financial leverage of the enterprise, because this method omits from the balance sheet the liabilities of the subsidiary. This is why the equity method belongs to that class of accounting tricks called off-balance sheet financing.

HIDING DEBT WITH THE EQUITY METHOD

Enough hypotheticals—let us turn our attention to some examples in practice. I shall examine the procedures applied by Elan, Coca-Cola, and WorldCom, with the greatest attention on Coca-Cola.

Elan

Managers at Elan[8] either did not learn the lessons from Boston Chicken or they learned the wrong lessons. Elan, the New York Stock Exchange (NYSE) pharmaceutical company from Ireland, invented a number of joint ventures and chose to account for them with the equity method. By itself that might be proper, for a number of these joint ventures are structured so that Elan has less than a majority stake in them. The problem, however, is that many of the contracts contain option clauses that allow Elan to obtain additional equity in the joint ventures so that it is conceivable, even likely, that Elan controls the operating, investing, and financing decisions of these joint ventures.

The SEC first started investigating Elan in 1999 because of these joint ventures with call options. Interestingly, the SEC returned to this issue in July 2002 because Elan continues to apply this rule in a ridiculous manner.

More specifically, footnote 4 of the 1998 financial statements stated that Elan had an equity venture with Axogen Limited and NeuroLab and that Elan had the option to purchase the rest of Axogen's shares and NeuroLab's shares. Apparently Elan's management team ignored the existence of the option when they performed their accounting tasks. Why? I could not find separate financial statements for Axogen or for NeuroLab,

but my bet is that Elan loaded them up with debt and hoped to keep these items off the balance sheet, at least for a while.

The accounting profession did not have a rule on how to handle accounting for investments when call options are part of the contract, but does the profession really have to regulate every possible human action? Some common sense along with a duty to pursue fair reporting to the investment community and a commitment to "substance over form" would seem more than enough to tip the scales toward recognizing the economic truth in this case. Clearly, Elan ran the show for these joint ventures and controlled their every move. The company should consolidate these joint ventures.

Coca-Cola

Coca-Cola has referred to its product as the real thing, but what about its balance sheet? Is it the real thing? Critics often have complained about the firm's strategy to devise affiliates with just under 50 percent ownership but completely under the control of the parent company.[9] This strategy allows Coke to apply the equity method for its investments in affiliates instead of consolidating their results with the mother firm.

I shall attempt to unpack what is really going on by consolidating the results of Coca-Cola Enterprises, one of the main bottlers for the group. Unfortunately, I do not have enough data to consolidate the other bottlers and franchisees and various affiliates with the parent company. The financial statements for Coca-Cola Enterprises and some data about the intercompany transactions are available so that the results can be consolidated with some degree of reliability.

I do not have fair values of the assets and liabilities of Coca-Cola Enterprises. This is not critical, however, because I shall assume that the fair value differentials (fair value less book value) have been completely depreciated. This seems reasonable given that Coca-Cola has owned these bottlers for several decades. Goodwill, on the other hand, can be estimated as the difference between the carrying amount in the investments account and the book values of the net assets of Coca-Cola Enterprises. I invoke the assumption that goodwill is either unimpaired or that any impairment has been accounted for by the parent corporation.

With these assumptions, we proceed to consolidate Coca-Cola Enterprises with Coca-Cola. Exhibit 3.4 presents the results for these two corporations separately and then for the two combined as one entity for the years 2000 and 2001. Panel A gives the income statements for 2001, even as panel C displays the income statements for 2000. While the consolidated entity shows the same income as Coke by itself, notice that the line items differ remarkably. Operating revenues, cost of goods sold, gross profit, and operating expenses diverge from one another and perhaps could lead readers of the financial statements to interpret the results differently. Notice also that while Coke is bigger than Coca-Cola Enterprises, interest expense for the latter is much bigger than for the parent. This fact suggests that Coke is parking most of the liabilities with the subsidiary.

Panels B and D of Exhibit 3.4 contain the balance sheets for 2001 and 2000. As suggested by the income statements, the most striking feature of the balance sheets crops up in the liability section. In particular, notice that Coca-Cola Enterprises has long-term

Exhibit 3.4 Financial Statements of Coca-Cola (in Millions of $)

Panel A: Income Statement for the Year Ending December 31, 2001

	Coke (Parent)	Bottlers (Subsidiary)	Consolidated Entity
Net Operating Revenues	20,092	15,700	30,663
Cost of Goods Sold	(6,044)	(9,740)	(11,078)
Gross Profit	14,048	5,960	19,585
SG&A Expenses	(8,696)	(5,359)	(13,632)
Operating Income	5,352	601	5,953
Interest Income	325	0	325
Interest Expense	(289)	(753)	(1,042)
Investment Income	152	0	275
Other Income	130	2	132
Minority Interest Net Income	0	0	198
Income before Taxes	5,670	(150)	5,841
Income Taxes	(1,691)	131	1,560
Net Income before Accounting Change	3,979	(19)	4,281
Cumulative Effect of Accounting Change	(10)	(302)	(312)
Net Income	3,969	(321)	3,969

Panel B: Balance Sheet as of December 31, 2001

	Coca-Cola (Parent)	Bottlers (Subsidiary)	Consolidated Entity
Current Assets			
Cash and Marketable Securities	1,934	284	2,218
Trade Accounts Receivable	1,844	1,540	3,384
Amounts Due from Affiliate	38	0	0
Inventories	1,055	690	1,745
Prepaid Expenses and Other Assets	2,300	362	2,592
	7,171	2,876	9,939

Note: Parentheses denote negative numbers.

Exhibit 3.4 ***(Continued)***

Panel B: ***(Continued)***

	Coca-Cola (Parent)	Bottlers (Subsidiary)	Consolidated Entity
Investments			
Equity Method Investments			
Coca-Cola Enterprises	788	0	0
Coca-Cola Amatil Limited	432	0	432
Other	3,908	0	3,908
Cost Method Investments	294	0	294
Other Assets	2,792	0	2,282
	8,214	0	6,916
Property, Plant, and Equipment (Net)	4,453	6,206	10,659
Intangible Assets (Including Goodwill)	2,579	14,637	16,933
Total Assets	22,417	23,719	44,447
Current Liabilities			
Accounts Payable and Accrued	4,530	2,648	7,140
Debts			
Deferred Cash Payments	0	70	0
Notes Payable and Current Debt	3,899	1,804	5,703
	8,429	4,522	12,843
Noncurrent Liabilities			
Long-Term Debt	1,219	10,365	11,584
Other Noncurrent Liabilities	961	1,166	2,127
Deferred Cash Payments	0	510	0
Deferred Taxes	442	4,336	4,778
	2,622	16,377	18,489
Shareholders' Equity			
Minority Interest	0	0	1,712
Preferred Stock	0	37	37
Common Equity	11,366	2,783	11,366
	11,366	2,820	13,115
Total Liabilities and Equity	22,417	23,719	44,447

Exhibit 3.4 *(Continued)*

Panel C: Income Statement for the Year Ending December 31, 2000

	Coke (Parent)	Bottlers (Subsidiary)	Consolidated Entity
Net Operating Revenues	19,889	14,750	29,727
Cost of Goods Sold	(6,204)	(9,083)	(10,924)
Gross Profit	13,685	5,667	18,803
SG&A Expenses	(9,994)	(4,541)	(13,986)
Operating Income	3,691	1,126	4,817
Interest Income	345	0	345
Interest Expense	(447)	(791)	(1,238)
Investment Income	(289)	0	(386)
Other Income	99	(2)	97
Minority Interest Net Income	0	0	(139)
Income before Taxes	3,399	333	3,496
Income Taxes	1,222	97	1,319
Net Income before Accounting Change	2,177	236	2,177
Cumulative Effect of Accounting Change	0	0	0
Net Income	2,177	236	2,177

Panel D: Balance Sheet as of December 31, 2000

	Coca-Cola (Parent)	Bottlers (Subsidiary)	Consolidated Entity
Current Assets			
Cash and Marketable Securities	1,892	294	2,186
Trade Accounts Receivable	1,757	1,297	3,054
Amounts Due from Affiliate	0	47	0
Inventories	1,066	602	1,668
Prepaid Expenses and Other Assets	1,905	391	2,296
	6,620	2,631	9,204
Investments			
Equity Method Investments			
Coca-Cola Enterprises	707	0	0
Coca-Cola Amatil Limited	617	0	617
Other	3,922	0	3,922

Note: Parentheses denote negative numbers.

Exhibit 3.4 ***(Continued)***

Panel D: ***(Continued)***

	Coca-Cola (Parent)	Bottlers (Subsidiary)	Consolidated Entity
Cost Method Investments	519	0	519
Other Assets	2,364	0	2,364
	8,129	0	7,422
Property, Plant, and Equipment (Net)	4,168	5,783	9,951
Intangible Assets (Including Goodwill)	1,917	13,748	15,227
Total Assets	20,834	22,162	41,804
Current Liabilities			
Accounts Payable and Accrued	4,505	2,321	6,779
Debts			
Deferred Cash Payments	0	0	0
Notes Payable and Current Debt	4,816	773	5,589
	9,321	3,094	12,368
Noncurrent Liabilities			
Long-Term Debt	835	10,348	11,183
Other Noncurrent Liabilities	1,004	1,112	2,116
Deferred Cash Payments	0	0	0
Deferred Taxes	358	4,774	5,132
	2,197	16,234	18,431
Shareholders' Equity			
Minority Interest	0	0	1,645
Preferred Stock	0	44	44
Common Equity	9,316	2,790	9,316
	9,316	2,834	11,005
Total Liabilities and Equity	20,834	22,162	41,804

liabilities about seven times the size of the long-term debts of Coke itself. Whereas the parent company has a moderate financial structure, the subsidiary clearly has a more aggressive financial structure.

The financial ratios reveal the discrepancy between the equity method and consolidation. Exhibit 3.5 communicates the financial ratios for the parent when applying the equity method and the consolidated results. Readers cannot help but notice that virtually all ratios are negatively impacted when we move from the equity method to the consolidation method. Financial leverage is the hardest hit. Debt to equity doubles, while debt to tangible equity goes from a positive number to a negative number. Times interest earned shrinks to less than half. Long-term debt to equity and long-term debt to assets mushroom.

The return metrics are also negatively impacted. While the net income of the parent equals consolidated net income, the denominators have increased. Return on sales, return on assets, and return on tangible or total equity show decreases. Both sales and cost of goods sold increase, but the net effect is a decline in the gross margins.

Exhibit 3.5 Financial Ratios of Coca-Cola Equity Method versus Consolidation

	2001		2000	
Financial Ratios	**Equity**	**Consolidated**	**Equity**	**Consolidated**
Current Ratio	0.85	0.77	0.71	0.74
Debt to Equity	0.97	2.39	1.24	2.80
Debt to Tangible Equity	1.26	(8.21)	1.56	(7.29)
Debt to Assets	0.49	0.70	0.55	0.74
Debt to Tangible Assets	0.56	1.14	0.61	1.16
Gross Profit	0.70	0.64	0.69	0.63
Return on Sales	0.20	0.13	0.11	0.07
Return on Assets	0.18	0.09	0.10	0.05
Return on Tangible Assets	0.20	0.14	0.12	0.08
Return on Equity	0.35	0.30	0.23	0.20
Return on Tangible Equity	0.45	(1.04)	0.29	(.52)
Times Interest Earned	20.62	6.61	8.60	3.82
Inventory Turnover	5.73	6.35	5.82	6.55
Receivables Turnover	10.90	9.06	11.32	9.73
LTD to Equity	0.11	0.88	0.09	1.02
LTD to Assets	0.05	0.26	0.04	0.27

Note: Parentheses denote negative numbers.

Even the current ratio, inventory turnover, and receivables turnover deteriorate.

In short, there is no good news in Coke's consolidated numbers. Accordingly, it is easy to understand why Coke would want to generate a different impression by not consolidating these corporations.

This leads us to the real question: Should Coca-Cola in fact consolidate the results of its bottlers and company-owned franchisees? The firm argues no because the rules say not to. Statement of Financial Accounting Standards (SFAS) No. 94 requires consolidation only when the parent company owns more than 50 percent of the investee. The difficulty of this position is that it is patently unfair to the readers of the financial statements and does not reflect the substance of what is going on. Coca-Cola runs the shop in these investees; it controls everything that matters. If the business enterprise offered financial statements that were fair to the investment community—as Arthur Andersen of old argued should be done (see Chapter 11)—then Coca-Cola would consolidate these operations and quit playing games with investors and creditors.

WorldCom

That paragon of accounting we know as WorldCom apparently has been at it again—with an interesting twist. WorldCom owns 52 percent of the voting stock of Embratel, a Brazilian telecommunications company—and correctly has consolidated the results of Embratel with its own. Managers at WorldCom now argue that this consolidation is inappropriate because they do not own a majority of all the stock, just a majority of the voting stock.[10] In fact, these managers are now arguing that WorldCom owns less than 20 percent of Embratel, so it should apply the equity method instead.

Not only is such a deconsolidation unusual, but also it makes one curious about the real reasons for pursuing such a tack. I do not have the data necessary to contrast the impact of consolidating and not consolidating Embratel with WorldCom, but I have to wonder about the debt level of Embratel. Given the culture of today's managers, my guess is that WorldCom cares little about the accuracy or fairness of the accounting, but again its managers are trying to paint a pretty picture for investors and creditors. Given past actions of managers at this corporation, more data and disclosures should be offered to prove that they are not trying to pull another one on us.

SUMMARY AND CONCLUSION

A number of accounting tricks fall under the umbrella of off-balance sheet accounting, and the equity method is one of them. The equity method hides liabilities because it nets the assets and liabilities of the investee. Since assets are almost always greater than liabilities, this net amount goes on the left-hand side of the balance sheet. This accounting thus hides all of the investee's debts.

When a corporation controls the operations of another company, it should consolidate the operations of both. When the parent applies the equity method instead, we can be sure that it is hiding debt. Where possible, as in the case of Coca-Cola and Coca-Cola Enterprises, readers of financial statements can perform their own analytical adjustments

and obtain the consolidated income statement and consolidated balance sheet. Analyzing this adjusted set of statements often reveals more than the actual financial report.

Of course, it would help immensely if managers accounted for these transactions properly and fairly. The investment community does not want a mere meeting the letter of the law but also an attempt to meet the spirit of the accounting standards.

NOTES

1. The purpose here is only to give a brief overview of the accounting for investments. Greater details can be found in: D. E. Kieso, J. J. Weygandt, and T. D. Warfield, *Intermediate Accounting,* 10th ed. (New York: John Wiley & Sons, 2001), pp. 917–970; L. Revsine, D. W. Collins, and W. B. Johnson, *Financial Reporting and Analysis,* 2nd ed. (Upper Saddle River, NJ: Prentice-Hall, 2002), pp. 817–882; and G. I. White, A. C. Sondhi, and D. Fried, *The Analysis and Use of Financial Statements,* 3rd ed. (New York: John Wiley & Sons, 1998), pp. 670–726. The applicable accounting rules are found in Accounting Principles Board, *The Equity Method of Accounting for Investments in Common Stock*, APB Opinion No. 18 (New York: AICPA, 1971); and the Financial Accounting Standards Board, *Accounting for Certain Investments in Debt and Equity Securities,* SFAS No. 115 (Norwalk, CT: FASB,1993). Also to be recommended are: P. R. Delaney, B. J. Epstein, J. A. Adler, and M. F. Foran, *GAAP 2000: Interpretation and Application of Generally Accepted Accounting Principles 2000* (New York: John Wiley & Sons, 2000), pp. 357–398; G. Georgiades, *Miller GAAP Financial Statement Disclosures Manual* (New York: Aspen, 2001), section 35.01; and B. D. Jarnagin, *2001 U.S. Master GAAP Guide* (Chicago: CCH, 2000), pp. 321–330.
2. The face value of the debt is how much the investor receives at maturity, ignoring interest. At the issuance date, debt can have fair values above or below this face value because the coupon rate on the debt differs from the market interest rate for securities with similar risk. The investment community calls the difference a *premium* when the fair value exceeds the face value and a *discount* when the face value is greater than the fair value. Accountants amortize (reduce over time eventually to a zero balance) the premium or discount, which affects the computation of interest revenue and interest expense. "Amortized cost" of a held-to-maturity debt security is the face value of the security plus (minus) the unamortized premium (discount).
3. The firm would report the unrealized gain in the statement of comprehensive income. For details, see Kieso et al., *Intermediate Accounting,* pp. 929–930.
4. See A. Bedipo-Memba, "Boston Chicken Files for Protection, Lays Off 500, Shuts 178 Restaurants," *Wall Street Journal,* October 6, 1998; and J. E. Ketz, "Is There an Epidemic of Underauditing?" *Journal of Corporate Accounting and Finance* (Fall 1998): 25–35.
5. Statement of Financial Accounting Standards No. 115 was published in 1993, the same year that Boston Chicken went public. It is not clear why Boston Chicken reported its investments at cost instead of at fair value.
6. Notice that minority interest is computed on the book value of the net assets of Serpentino (20 percent of $60,000) whereas the majority position is based on the fair value of the net assets of Serpentino (80 percent of $90,000). Why the accounting profession measures the parent's share at fair value and the minority's share at historical cost is beyond me.
7. Financial Accounting Standards Board, *Goodwill and Other Intangible Assets,* FASB No. 142 (Norwalk, CT: FASB, 2001).

8. J. E. Ketz and P. B. W. Miller, "Elan Managers Play the Market for a Sucker," *Accounting Today,* November 22–December 12, 1999, pp. 14, 17.
9. B. McKay, "Coca-Cola: Real Thing Can Be Hard to Measure," *Wall Street Journal,* January 23, 2002, p. C16; and White et al., *Analysis and Use of Financial Statements,* pp. 722–726.
10. S. Pulliam and J. Sandberg, "New WorldCom Report to SEC Will Acknowledge More Flaws," *Wall Street Journal,* September 19, 2002.

CHAPTER FOUR

How to Hide Debt with Lease Accounting

Lease accounting has been a disaster for a very long time. Leases, of course, involve a *lessor* who legally owns some property and a *lessee* who would like to utilize that property. The lessor agrees to lend the property to the lessee, while the lessee agrees to make certain payments. Because of this work's focus on hiding liabilities from the balance sheet, I shall concentrate on the accounting by lessees and downplay issues of concern about lessors. As shall be seen, corporate managers can deceive investors and creditors by reporting leases as operating leases and pretend that they do not have any lease obligations. Similar issues will pop up in Chapter 6 with synthetic leases.

When leases first evolved, managers quickly advocated treating them as what are called today operating leases. *Operating leases* essentially are rentals. The argument continues that accounting for these operating leases involves a simple recognition of rental expense and the payment of the cash or recognition of a payable. While this method appears acceptable when one rents something for a short period of time, such as a day, a week, or even a month, it stretches credulity to make this argument when the rental period extends for a substantial time.

I shall not reconstruct the tortured history of what happened next.[1] Suffice it to say that the Financial Accounting Standards Board (FASB) issued Statement No. 13 in 1976, and there have been dozens of modifications and interpretations since. This accounting rule was clearly superior to its predecessors since it required more leases to be capitalized than had been previously. *Capital leases* are those leases that in substance are really purchases of the property. The lease contract serves merely as a legal mechanism by which the transaction is effected. In other words, leasing is simply one way of financing the purchase of the piece of property. Accounting for capital leases proves straightforward inasmuch as the property is treated as belonging to the lessee and the liability is considered to be assumed by the lessee. And, in the words of Shakespeare, there's the rub. Managers do not like to show these liabilities, especially when they become huge. So managers expend much time and effort in an attempt to keep these liabilities off the balance sheet.

Actually, we do not have to presume that the leasing activity is de facto a purchase of the leased item. Instead, we could invoke a property rights argument. The essence of

this approach is to observe that a lease gives the lessee a right to employ the property any way desired, constrained only by the contract made with the lessor. The lessee obtains an intangible asset that gives it the right to use certain property for a specified period of time, and this asset should appear on the balance sheet. Likewise the lessee makes a firm commitment to pay for this lease, and this obligation should be recorded on its books. Leases involve transactions that obtain property rights in exchange for a commitment to pay cash for a specified period of time.

Unfortunately, too many leases are still off the balance sheet. The mission in this chapter is to put them back on the balance sheet via analytical adjustments. Recall from Chapter 3 that an analytical adjustment entails taking the reported numbers and adjusting them for economic reality—for the truth. Financial statement readers then analyze the corporation in terms of these adjusted numbers rather than the reported numbers that appear in the financial statements. In this case, investors or creditors should ignore financial reports of those companies using operating leases and should replace those reported numbers with those that would occur if the business enterprise correctly accounted for them as capitalized leases. Investors or creditors could then compute financial ratios with these adjusted numbers and thereby obtain a better—and more accurate—picture of the corporate health than if they calculated these ratios with the reported numbers.

This chapter investigates lease accounting and describes how corporate managers try to argue that their leases are operating leases for the purpose of hiding lease liabilities from investors and creditors. The first section covers the concept of present value. The second section summarizes lease accounting with a relatively straightforward illustration. The third section depicts some common and easy ways for managers to thwart FASB's intentions in Statement No. 13. The fourth section describes an elementary way to adjust these reported numbers into more useful numbers that yield a more truthful representation of a firm's financial activities, including the assumptions required for conducting this type of analysis. I illustrate this process with Delta Airlines. The next section introduces the rest of the airline industry, discusses the considerable number of operating leases that exist in it, and considers why this industry maintains so many operating leases. Then I carry out the analytical adjustment process explained earlier, revealing the results when analytical adjustments are made for airline corporations and contrasting these results with the reported numbers.

PRESENT VALUE

Readers familiar with the topic of the time value of money and who can calculate future and present value can skip this section. Here I explain these notions and give some details about computing present value so that we can value a lease obligation. These ideas will also help in later chapters dealing with pension accounting, securitizations, borrowings with special-purpose entities (SPEs), and synthetic leases.

A dollar is not always worth one dollar if a time difference exists for when the dollar is obtained. One dollar received today is worth more than one dollar received some time in the future because an individual can place the dollar received today into a sav-

ings account and earn interest on that dollar. The dollar received today grows into a larger amount than the dollar received in the future by the amount of interest earned on the original dollar; this concept is known as the *time value of money.*

Interest, of course, is the price of credit. Interest is the return that a lender obtains by allowing someone to rent his or her money; alternatively, interest is the cost that a borrower pays to rent someone's money. *Principal* is the amount on which interest is determined. *Simple interest* is the interest on a constant principal. By definition, interest is computed with the formula:

$$I = PRT$$

where I stands for interest, P stands for principal, R stands for the rate of interest, and T stands for the amount of time. The rate of interest and time must be measured in the same units of time.

Compound interest is the interest in those situations in which the principal varies. This situation takes place, for example, when a consumer does not pay off a previous loan balance. Any unpaid past interest is added to the old principal to obtain a new, higher principal. Thus, interest is paid on the original principal plus all unpaid past interest. Again, the rate of interest and time must be measured in the same units of time.

When analyzing a set of cash flows, we frequently desire to know its equivalent amount in terms of today or some time in the future. The former is referred to as the *present value* of the cash flows and the latter as the *future value* of the cash flows.

An *annuity* is a set of cash flows of equal amounts (called *rents*[2]) and occurring at equal intervals of time. An *ordinary annuity* is an annuity in which the cash flows occur at the end of the period (e.g., mortgages). An *annuity due* has the cash flows occurring at the beginning of the period (e.g., apartment leases).

With these definitions in mind, we can focus on the main aspects of future and present value. Exhibit 4.1 encompasses these concepts by providing diagrams of the different situations, a formula for each one, and a discussion of how to compute the amounts in practice with tables or financial calculators or Excel (or a similar spreadsheet package).

Future Value of a Single Sum

Suppose we have $1,000 and want to put it in the bank at a rate of interest of 8 percent per year. We want to know how much it will be worth in three years when we hope to use the money to make some purchase. The principal of $1,000 grows in this way.

Year	Amount at Beginning	Interest	Amount at End
1	$1,000.00	$80.00	$1,080.00
2	1,080.00	86.40	1,166.40
3	1,166.40	93.31	1,259.71

The interest for the first year is computed as $1,000 times 8 percent times one year for $80. The interest is added to the amount at the beginning so we have $1,080 at the end of the year. This amount, of course, becomes the amount at the beginning of the next year. The interest in the second year equals the new principal, $1,080, times 8 per-

cent times one year for $86.40. When we add the interest to $1,080, the balance now becomes $1,166.40. Repeating the process for year 3, we find the interest is $93.31 and the ending balance is $1,259.71, which is the answer to the original question.

Panel A in Exhibit 4.1 provides a diagram of this example. There is only one cash flow, and we want to find the balance if we leave the amount in the bank account for three years. An alternative way to solve the problem is to use the formula:

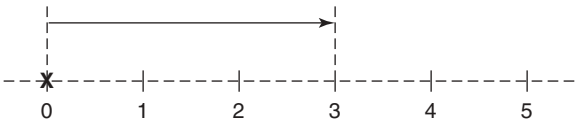
$$FVSS = X\ (1 + r)^n$$

where *FVSS* denotes the future value of a single sum, *X* denotes the cash flow, *r* denotes the interest rate, and *n* denotes the number of periods over which the cash accumulates. The future value equals $1,000 times $(1 + .08)^3$, which is $1,000 times 1.25971, which is $1,259.71. If we have a financial calculator or a spreadsheet at our disposal, we merely enter $X = \$1{,}000$, $n = 3$, and $r = 8$ percent. (Specifics obviously depend on the machine and software.)

Exhibit 4.1 Future and Present Value Concepts

Panel A: Future Value of a Single Sum

Diagram of cash flows



Formula

Let X = some cash flow that occurs now and assume that the interest rate is r. Then the future value at time n of the single sum is: $FVSS = X\ (1 + r)^n$.

Tables and Calculators and Spreadsheets

In practice a table can be employed that has calculated the future value interest factor, that is, $(1 + r)^n$; simply find the number in the interest rate column and the time period row. Then multiply this interest factor by X to obtain the future value.

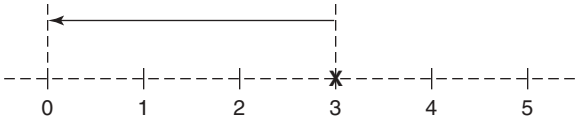
A financial calculator or a spreadsheet package such as Excel can be used (apply the function FV). Just plug in X, r, and n, and the calculator or spreadsheet spits out the future value of a single sum. The trick for both financial calculators and spreadsheets is to understand that they are constructed to allow computations for either single sums or annuities. For a single sum, tell the financial calculator or the spreadsheet program that the "payment" is zero (i.e., it is not an annuity) and the "present value" is the cash flow.

Exhibit 4.1 *(Continued)*

A caveat! In all situations, n and r must be compatible—in other words, they must use the same time frame. If stated in different time units, they must be adjusted and put into the same time units before using the formula or future value tables or calculator or spreadsheet.

Panel B: Present Value of a Single Sum

Diagram of cash flows



Formula

Let X = some cash flow that occurs at time n and assume that the interest rate is r. Then the present value of the single sum is: $PVSS = X\ (1 + r)^{-n}$.

Note: The interest factor for present value of a single sum $(1 + r)^{-n}$ is the reciprocal of the interest factor for future value of a single sum $(1 + r)^{n}$.

Tables, Calculators, and Spreadsheets

In practice, a table can be employed that has calculated the present value interest factor, that is, $(1 + r)^{-n}$; simply find the number in the interest rate column and the time period row. Then multiply this interest factor by X to obtain the present value.

A financial calculator or a spreadsheet package such as Excel can be used (apply the function PV). Just plug in X, r, and n, and the calculator or spreadsheet spits out the present value of a single sum. The trick for both financial calculators and spreadsheets is to understand that they are constructed to allow computations for either single sums or annuities. For a single sum, tell the financial calculator or the spreadsheet program that the "payment" is zero (i.e., it is not an annuity) and the "future value" is the cash flow.

A caveat! In all situations, n and r must be compatible—in other words, they must use the same time frame. If stated in different time units, they must be adjusted and put into the same time units before using the formula or future value tables or calculator or spreadsheet.

Panel C: Future Value of an Ordinary Annuity

Diagram of cash flows

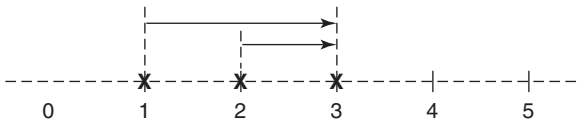


Exhibit 4.1 *(Continued)*

Panel C: *(Continued)*

Formula

$FVOA = X\ \{[(1 + r)^n - 1] / r\}$. With annuities, the cash flows X are called the rents.

Tables and Calculators and Spreadsheets

In practice a table can be employed that has calculated the future value interest factor; simply find the number in the interest rate column and the time period row. Then multiply this interest factor by X to obtain the future value of the ordinary annuity.

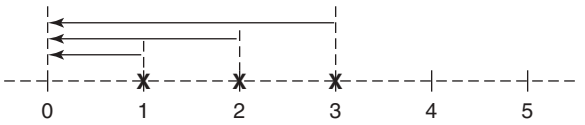
A financial calculator or a spreadsheet package such as Excel can be used (apply the function FV). Just plug in X, r, and n, and the calculator or spreadsheet spits out the future value of an ordinary annuity. The trick for both financial calculators and spreadsheets is to understand that they are constructed to allow computations for either single sums or annuities. For an annuity, tell the financial calculator or the spreadsheet program that the "payment" is the rent (i.e., it *is* an annuity) and the "present value" is zero.

Financial calculators and spreadsheets programs typically assume that the annuity is an ordinary annuity. If it is annuity due, then change one variable or button and the package will do the rest.

A caveat! In all situations, n and r must be compatible—in other words, they must use the same time frame. If stated in different time units, they must be adjusted and put into the same time units before using the formula or future value tables or calculator or spreadsheet.

Panel D: Present Value of an Ordinary Annuity

Diagram of cash flows



Formula

$$PVOA = X\ \{[1 - (1 + r)^{-n}] / r\}.$$

Note: If a *perpetuity* (i.e., the rents go on forever), then PVOA = X / r.

Tables and Calculators and Spreadsheets

In practice, a table can be employed that has calculated the present value interest factor; simply find the number in the interest rate column and the time period row. Then multiply this interest factor by X to obtain the present value of the ordinary annuity.

Exhibit 4.1 *(Continued)*

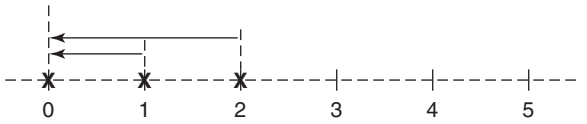
A financial calculator or a spreadsheet package such as Excel can be used (apply the function PV). Just plug in *X*, *r*, and *n*, and the calculator or spreadsheet spits out the present value of an ordinary annuity. The trick for both financial calculators and spreadsheets is to understand that they are constructed to allow computations for either single sums or annuities. For an annuity, tell the financial calculator or the spreadsheet program that the "payment" is the rent (i.e., it *is* an annuity) and the "future value" is zero.

Financial calculators and spreadsheets programs typically assume that the annuity is an ordinary annuity. If it is an annuity due, then change one variable or button and the package will do the rest.

A caveat! In all situations, *n* and *r* must be compatible—in other words, they must use the same time frame. If stated in different time units, they must be adjusted and put into the same time units before using the formula or future value tables or calculator or spreadsheet.

Panel E: Present Value of an Annuity Due

Diagram of cash flows



Formula

$$PVAD = X\ \{\{[1 - (1 + r)^{-n+1}] / r\} + 1\ \}.$$

Tables and Calculators

In practice, a table can be employed that has calculated the present value interest factor; simply find the number in the interest rate column and the time period row. Then multiply this interest factor by *X* to obtain the future value of the ordinary annuity.

A financial calculator or a spreadsheet package such as Excel can be used (apply the function PV). Just plug in *X*, *r,* and *n*, and the calculator or spreadsheet spits out the present value of an annuity due. The trick for both financial calculators and spreadsheets is to understand that they are constructed to allow computations for either single sums or annuities. For an annuity, tell the financial calculator or the spreadsheet program that the "payment" is the rent (i.e., it *is* an annuity) and the "future value" is zero.

Financial calculators and spreadsheets programs typically assume that the annuity is an ordinary annuity. Since this is an annuity due, change one variable or button and the package will do the rest. In Excel, the variable is called "type." If "type" equals zero or is omitted, then the program takes the cash flows as forming an ordinary annuity. To tell Excel that an annuity is due, make "type" equal to one.

A caveat! In all situations, *n* and *r* must be compatible—in other words, they must use the same time frame. If stated in different time units, they must be adjusted and put into the same time units before using the formula or future value tables or calculator or spreadsheet.

Present Value of a Single Sum

Suppose instead we have a lump sum of money that will come to us in three years and want to know its value in today's terms. Because of the time value of money, the lump sum will be worth less in today's terms, the difference being the interest over the three-year period. For example, suppose we will receive $1,259.71 three years from now. What is it worth today? What is its present value? We can use the same chart as we did with the future value of a single sum and work backward. Accordingly, the present value of $1,259.71 discounted back one, two, or three years is, respectively, $1,166.40, $1,080, and $1,000. The answer to the original question is that the $1,259.71 to be received in three years is worth $1,000 today, given an interest rate of 8 percent.

Panel B of Exhibit 4.1 describes the present value of a single sum. Notice in the diagram that there is only one cash flow that takes place in three years, and we want to know its value in today's terms. Compare and contrast the diagrams in panels A and B. There is only one cash flow in each, reflecting our assumption of a single flow. The difference is that in panel A, the cash flow occurs at time zero and we are looking for the value in the future, whereas in panel B the cash flow occurs at time equal to three and we are searching for the value today. The distinction in the two diagrams demonstrates the difference between future value and present value.

An alternative way to solve the problem is to use the formula:

$$PVSS = X\,(1 + r)^{-n}$$

where *PVSS* stands for the present value of a single sum, *X* stands for the cash flow, *r* stands for the interest rate, and *n* stands for the number of periods. The present value equals $1,259.71 times $(1 + .08)^{-3}$ or $1,259.71 times .793832241, which is $1,000. If we have a financial calculator or a spreadsheet at our disposal, we merely enter X = $1,259.71, $n = 3$, and $r = 8$ percent and solve for the present value.

Future Value of an Ordinary Annuity

Often in practice there is not just one cash flow but several. These problems can be solved by taking the present or future value, as the case may be, of each cash flow and then adding up the results. If the cash flows are of the same amount and occur periodically, then a shortcut is possible, which we explore here.

For example, assume that the rent equals $1,000 and the rate of interest is 8 percent per year and cash flows occur at the end of the year. How much will be in the account at the end of three years?

Year	Amount at Beginning	Interest	Amount at End
1	$ 0.00	$ 0.00	$1,000.00
2	1,000.00	80.00	2,080.00
3	2,080.00	166.40	3,246.40

Since cash flows take place at the end of the year, there is no cash at the beginning of year one and no interest. The cash at the end of year one is the first installment of

cash flows, $1,000. This amount earns $80 interest during the second year. The amount in the account at the end of year two is the beginning amount $1,000 plus the interest of $80 plus the second installment of cash $1,000, for a total of $2,080. This amount earns $166.40 interest during the third year, so the amount at the end of year three is the beginning amount $2,080 plus the interest of $166.40 plus the third and last installment of cash $1,000, for a total of $3,246.40.

As stated earlier, an annuity is just a group of single sums. We can solve this example by summing the future values of each cash flow. When we do this, we achieve the same answer.

Year	Future Value of Separate Single Sums
1	$1{,}000 \times (1 + .08)^2 = \$1{,}166.40$
2	$1{,}000 \times (1 + .08)^1 = \quad 1{,}080.00$
3	$1{,}000 \times (1 + .08)^0 = \quad 1{,}000.00$
	$\$3{,}246.40$

Panel C of Exhibit 4.1 discloses information about the future value of an ordinary annuity. There are three cash flows at the end of years one, two, and three. We take each of them forward to the end of year three so that we can obtain the future value of this set of cash flows at this point in time.

To solve the question directly, we can make use of the formula:

$$FVOA = X\ \{[(1 + r)^n - 1] / r\}$$

where *FVOA* is the future value of an ordinary annuity, *X* is the rent (the equal and periodic cash flows), *r* is the interest rate, and *n* is the number of periods (and the number of cash flows). In our example, the formula yields:

$$FVOA = 1{,}000 \times \frac{(1 + .08)^3 - 1}{0.08}$$

which gives the answer $3,246.40. If we have a financial calculator or a spreadsheet at our disposal, we merely enter $X = \$1{,}000$, $n = 3$, and $r = 8$ percent and solve for the future value of the ordinary annuity.

Some problems have the cash flows taking place at the beginning of the period, and we could modify these statements to account for the future value of an annuity due. We do not cover that possibility, for we never encounter this scenario in this book.

Present Value of an Ordinary Annuity

Let us draw on the same illustration, in which the rent equals $1,000 and the rate of interest is 8 percent per year and cash flows occur at the end of the year. Instead of asking how much will be in the account at the end of three years, let us now ask what this ordinary annuity is worth today. What is its present value?

Since an annuity is just a group of single sums, we solve this inquiry by finding the present value of each separate cash flow and then add them up. When we do this, we learn that the present value is $2,577.10.

Year	Present Value of Separate Single Sums
1	$1{,}000 \times (1 + .08)^{-1} = \$ \ 925.93$
2	$1{,}000 \times (1 + .08)^{-2} = \ 857.34$
3	$1{,}000 \times (1 + .08)^{-3} = \ 793.83$
	$2,577.10

A diagram for present value of ordinary annuity is displayed in panel D of Exhibit 4.1. There are three cash flows that take place at time one, two, and three. Each of them is "discounted back" to the present; that is, we find the present value of each of the cash flows.

We can solve the question directly by applying the formula:

$$PVOA = X \{[1 - (1 + r)^{-n}] / r\}$$

where *PVOA* denotes the present value of an ordinary annuity, *X* denotes the rent (the equal and periodic cash flows), *r* denotes the interest rate, and *n* denotes the number of periods (and the number of cash flows). In our example, the formula gives:

$$PVOA = 1{,}000 \times \frac{1 - (1 + .08)^{-3}}{.08}$$

which gives the answer $2,577.10. If we have a financial calculator or a spreadsheet, we plug in *X* of $1,000, *n* of 3, and *r* of 8 percent and solve for the present value of the ordinary annuity.

If the cash flows occur forever, they form what is called a *perpetuity*. The present value of a perpetuity is $PVOA = X/r$. We make use of this fact in the chapter on pension accounting.

Present Value of an Annuity Due

Leases typically have the cash flows occurring at the beginning of the period, so these cash flows constitute an annuity due. They are treated in a manner quite similar to the previous case of finding the present value of an ordinary annuity. Once again we assume that the rent equals $1,000 and the rate of interest is 8 percent per year, but now cash flows occur at the beginning of the year. What is this annuity due worth today? What is its present value?

As before, we note that an annuity is just a group of single sums, so we solve this question by computing the present value of each cash flow and then adding up the present values. It turns out that the present value is $2,783.27.

Year	Present Value of Separate Single Sums
1	$1{,}000 \times (1 + .08)^{-0} = \$1{,}000.00$
2	$1{,}000 \times (1 + .08)^{-1} = \ 925.93$
3	$1{,}000 \times (1 + .08)^{-2} = \ 857.34$
	$2,783.27

A diagram for present value of an annuity due is contained in Exhibit 4.1, panel E. Like panel D, there are three cash flows. Unlike panel D, these three cash flows occur

at time zero, one, and two. To solve the problem, calculate the present value of each of the cash flows.

We can solve the question directly by applying the formula:

$$PVAD = X\ \{\{[1 - (1 + r)^{-n+1}] / r\} + 1\}$$

where *PVAD* represents the present value of an annuity due, *X* represents the rent (the equal and periodic cash flows), *r* represents the interest rate, and *n* represents the number of periods (and the number of cash flows). In this instance the formula returns:

$$PVAD = 1000 \times \left[\frac{1 - (1 + .08)^{-3+1}}{.08} + 1\right]$$

which gives the answer $2,783.27. With a financial calculator or a spreadsheet, we would insert *X* of $1,000, *n* of 3, and *r* of 8 percent and solve for the present value of the annuity due.

BRIEF OVERVIEW OF LEASE ACCOUNTING[3]

Accounting for lessees, as stated earlier, breaks down into two categories. Either the leases are operating leases or they are capital leases. We account for operating leases by recognizing a rental expense and either a cash payment or a current liability. Accountants treat capital leases in a manner similar to that of a long-term asset by putting an asset on the balance sheet as well as the long-term liability. Periodically, accountants would recognize interest on the long-term liability, and they depreciate the leased asset. On the income statement, we show rental expense for an operating lease versus interest expense plus depreciation for a capital lease. The balance sheet difference is starker—there is no asset or liability for an operating lease, while a capital lease would report a leased asset (less its amortization or depreciation) and a lease obligation.

Before I illustrate these disparities, let me first demonstrate the similarity between accounting for the purchase of an asset, which is financed by a notes payable (or some other financial instrument), and accounting for a capital lease. Assume that on January 1, 2003, van der Wink, Inc., obtains an automobile. In the first case, the corporation buys the automobile and finances it with a car loan. The automobile costs $60,560, has a life of five years, and has a salvage value of zero. The loan calls for five equal annual payments of $15,000, payable at the beginning of the year. (Of course, in practice such loans are typically monthly. The assumption of annual payments greatly reduces the arithmetic but has no impact on the points to be made.) Exhibit 4.2 contains the details of this transaction and its accounting.

The repayment schedule, also termed a *loan amortization schedule*, can be found in panel A of Exhibit 4.2. In the business world, a cash payment or receipt first attends to the interest component; any residual amount is then applied to reduce the outstanding balance. The first payment occurs at the very beginning, so there is no interest, and the entire $15,000 reduces the principal, which becomes $60,560 minus $15,000, or $45,560.

Interest accrues on this amount, computed with the usual formula $I = PRT$ = $45,560 times 12 percent times one year, for an amount of $5,467. This is added to the balance, making the outstanding debt $51,027. (Alternatively, the accountant may record it as interest payable. The key thing is to note that the full liability includes the principal of $45,560 and the interest of $5,467.) On January 1, 2004, the lessee pays $15,000, which covers the interest and a portion of the principal ($9,533). The balance becomes $36,027, which equals $45,560 minus $9,533. Interest accrues on this to the tune of $4,324, so the outstanding debt at the end of the second year is $40,351. The process continues until the loan is paid off.

Panel B of Exhibit 4.2 compares the journal entries for a purchase financed with notes payable versus a capital lease. As can be seen, the entries essentially are the same for all periods. They chronicle the same amount of interest expense and the same amount of depreciation in each of the five years. Further, as panel C shows, they divulge the same amount of total liabilities on the balance sheet. The point is this: Recording a lease as a capital lease makes it look like a purchase with debt financing of some sort.

Exhibit 4.2 Comparison of Purchase and Lease Financing

Assume that on January 1 van der Wink Inc. purchases or leases an automobile for five years from Golan Inc. The car costs $60,560 and will be financed by five annual payments of $15,000, each at the beginning of the year. The interest rate implicit in the lease is 12 percent.

We verify this is the situation by noting that

$$\frac{15,000}{1.00} + \frac{15,000}{1.12} + \frac{15,000}{(1.12)^2} + \frac{15,000}{(1.12)^3} + \frac{15,000}{(1.12)^4} = 60,560$$

Panel A: The Repayment Schedule

Payment January 1 in Year	Cash Payment	Principal Reduction	Obligation at Beginning of Year (after Payment)	Interest Expense	Obligation at End of Year
2003	$15,000	$15,000	$45,560	$5,467	$51,027
2004	15,000	9,533	36,027	4,324	40,351
2005	15,000	10,676	25,351	3,042	28,393
2006	15,000	11,958	13,393	1,607	15,000
2007	15,000	13,393	0	0	0

Exhibit 4.2 ***(Continued)***

Panel B: Comparison of Journal Entries for Purchase and Lease Financing

Purchase Financing			Lease Financing		
Car	$60,560		Car	$60,560	
Notes Payable		$60,560	Lease Payable		$60,560
Notes Payable	$15,000		Lease Payable	$15,000	
Cash		$15,000	Cash		$15,000
Depreciation	$12,112		Depreciation	$12,112	
Accumulated Depreciation		$12,112	Accumulated Depreciation		$12,112
Notes Payable	$ 9,533		Lease Payable	$ 9,533	
Interest Expense	$ 5,467		Interest Expense	$ 5,467	
Cash		$15,000	Cash		$15,000
Depreciation	$12,112		Depreciation	$12,112	
Accumulated Depreciation		$12,112	Accumulated Depreciation		$12,112
Notes Payable	$10,676		Lease Payable	$10,676	
Interest Expense	$ 4,324		Interest Expense	$ 4,324	
Cash		$15,000	Cash		$15,000
Depreciation	$12,112		Depreciation	$12,112	
Accumulated Depreciation		$12,112	Accumulated Depreciation		$12,112
Notes Payable	$11,958		Lease Payable	$11,958	
Interest Expense	$ 3,042		Interest Expense	$ 3,042	
Cash		$15,000	Cash		$15,000
Depreciation	$12,112		Depreciation	$12,112	
Accumulated Depreciation		$12,112	Accumulated Depreciation		$12,112
Notes Payable	$13,393		Lease Payable	$13,393	
Interest Expense	$ 1,607		Interest Expense	$ 1,607	
Cash		$15,000	Cash		$15,000
Depreciation	$12,112		Depreciation	$12,112	
Accumulated Depreciation		$12,112	Accumulated Depreciation		$12,112

Exhibit 4.2 *(Continued)*

Panel C: Comparison of Balance Sheet—Liability Effects

	Notes Payable	Lease Payable
December 31, 2003	$51,027	$51,027
December 31, 2004	40,351	40,351
December 31, 2005	28,393	28,393
December 31, 2006	15,000	15,000
December 31, 2007	0	0

Exhibit 4.3 contrasts the accounting for a capital lease and an operating lease. The case remains the same, so panel A's repayment schedule is unaffected. Note, however, the acute disparity in the bookkeeping and in the effects shown on the income statement and the balance sheet in panels B and C of Exhibit 4.3. Treating the lease as an operating lease involves annual rent expense of $15,000 but does not disclose the property rights the corporation has in the lease or any of its financial commitments. As before, treating the lease as a capital lease results in depreciation expense each year of $12,112 and a varying amount of interest expense. Panel D depicts the amount of liability shown on the balance sheet for a capital lease.

Investors and creditors think long-term leases (say, anything over one year in duration) are capital leases for three reasons.

1. Virtually all long-term leases look like and smell like purchases. There is little difference between them economically speaking.
2. The lessee possesses significant control over the property during the lease period, and this control is quite similar to the rights an owner of the property has.
3. When the lessee signs the contract, the entity commits itself to a particular set of cash payments over the life of the lease. This commitment looks like and smells like debt.

For these reasons, investors and creditors often argue that all long-term leases should be capitalized.[4]

Exhibit 4.3 helps us to understand why some managers prefer treating long-term leases as operating leases. While the two methods recognize the same total expenses over the life of the lease, the two differ in when they show them. If the lease is recorded as an operating lease, then the firm incurs $75,000 expense over the five years, all of it rental expense of $15,000 annually. If the lease is recorded as a capital lease, the corporation would show depreciation expense of $60,560 (annual amount of $12,112) and interest expense of $14,440, so it too adds up to $75,000. The interest expense declines over time, starting at $5,467 in 2003 and reaching zero in 2007. In other words, capital leases show higher expenses in the early years of the lease and lower expenses in the

Exhibit 4.3 Contrast between Capital and Operating Lease Accounting

Assume that on January 1 van der Wink Inc. purchases or leases an automobile for five years from Golan Inc. The car costs $60,560 and will be financed by five annual payments of $15,000, each at the beginning of the year. The interest rate implicit in the lease is 12 percent.

We verify this is the situation by noting that

$$\frac{15,000}{1.00} + \frac{15,000}{1.12} + \frac{15,000}{(1.12)^2} + \frac{15,000}{(1.12)^3} + \frac{15,000}{(1.12)^4} = 60,560$$

Panel A: The repayment schedule

Payment January 1 in Year	Cash Payment	Principal Reduction	Obligation at Beginning of Year (after Payment)	Interest Expense	Obligation at End of Year
2003	$15,000	$15,000	$45,560	$5,467	$51,027
2004	15,000	9,533	36,027	4,324	40,351
2005	15,000	10,676	25,351	3,042	28,393
2006	15,000	11,958	13,393	1,607	15,000
2007	15,000	13,393	0	0	0

Panel B: Comparison of Journal Entries for Purchase and Lease Financing

Operating Lease			Lease Financing		
			Car	$60,560	
			Lease Payable		$60,560
Rent Expense	$15,000		Lease Payable	$15,000	
Cash		$15,000	Cash		$15,000
			Depreciation	$12,112	
			Accumulated Depreciation		$12,112
Rent Expense	$15,000		Lease Payable	$ 9,533	
Cash		$15,000	Interest Expense	$ 5,467	
			Cash		$15,000
			Depreciation	$12,112	
			Accumulated Depreciation		$12,112

Exhibit 4.3 ***(Continued)***

Panel B: ***(Continued)***

Operating Lease			Lease Financing		
Rent Expense	$15,000		Lease Payable	$10,676	
Cash		$15,000	Interest Expense	$ 4,324	
			Cash		$15,000
			Depreciation	$12,112	
			Accumulated Depreciation		$12,112
Rent Expense	$15,000		Lease Payable	$11,958	
Cash		$15,000	Interest Expense	$ 3,042	
			Cash		$15,000
			Depreciation	$12,112	
			Accumulated Depreciation		$12,112
Rent Expense	$15,000		Lease Payable	$13,393	
Cash		$15,000	Interest Expense	$ 1,067	
			Cash		$15,000
			Depreciation	$12,112	
			Accumulated Depreciation		$12,112

Panel C: Comparison of Balance Sheet—Liability Effects

	Operating Lease	Lease Payable
December 31, 2003	$0	$51,027
December 31, 2004	0	40,351
December 31, 2005	0	28,393
December 31, 2006	0	15,000
December 31, 2007	0	0

latter years. Since managers often prefer to show lower expenses in the early years, they prefer operating leases. In addition, because operating leases show no assets on the books, the company will have higher returns on assets. Most important of all, the corporation discloses no liabilities for operating leases, but if it reported a capital lease, it might have to show some large additions to the financial structure of the firm.

When the FASB issued Statement No. 13, it improved financial reporting significantly over what it had been; nonetheless, it still compromised on reporting fully and completely the financial commitments of corporate entities. It invented four criteria for the recognition of a lease as a capital lease. If any one of the following criteria is met, then the business enterprise must account for the lease as a capital lease.

For easy reference, these criteria are listed in Exhibit 4.4.

The reason for the first criterion is obvious—a purchase in fact does occur in the future, and there seems no good reason for not recognizing the transaction today. The second concerning an option by the lessee to purchase the property at a very low price is likewise easy to understand. If the lessor, at the end of the lease term, offers the lessee the property at an unreasonably low price, such as $1, then we may assume that the lessee is rational and will exercise the option and purchase the property. This makes the lease a de facto purchase. The third criterion says that if the lessee obtains property rights for most of the life of the property, then the lessee has in essence purchased the item. The FASB uses as the cutoff 75 percent of the resource's life. Last, the FASB claims that if the lessee pays virtually the same price as a purchase price, then the transaction by the lessee is equivalent to a purchase. The FASB applies as the cutoff 90 percent of the property's fair value. Clearly, the two cutoff points are arbitrary, but they serve as a means to classify some leases as capital leases.

Efforts by the FASB to distinguish operating from capital leases have been an improvement over the old rules; however, they serve as fodder for managers to manipulate. For example, there are many leases in practice in which the present value of the minimum lease payments is 89.99 percent of the property's assets values. Certified public accountants (CPAs) and lawyers design the contracts to avoid classification as a capital lease, and in doing so they throw out any sense of decency. While they may meet the technical rules, obviously they have no intention of providing investors and creditors with useful information. More tricks are available, as we shall discover when we look at leases in more depth.

Exhibit 4.4 Lease Criteria

Criteria for a capital lease (any one):

1. Passage of title to the lessee
2. Bargain purchase option
3. Lease term equals or is greater than 75 percent of the useful life of the asset
4. Present value of the minimum lease payments equals or is greater than 90 percent of the fair value of the property

If any one of these criteria is met, then the lease is treated as a capital lease.

If all four criteria fail, then the lease is treated as an operating lease.

MORE DETAILS ABOUT LEASE ACCOUNTING

Lease accounting is rich in nuances, so this text cannot investigate every aspect of leases. I shall, however, delve into three major details about lease accounting that illustrate how lessees can hide debt with lease accounting. These details concern:

1. The interest rate used to discount the cash flows when performing the 90 percent test
2. The role of residual values
3. Contingencies

When a lessor issues a lease, it knows the fair value of the property and the rate of return required on the investment. Armed with these data, the lessor can then determine the monthly rentals that will generate this rate of return.[5] This rate of return is referred to as the *implicit rate of return*.

When a lessee signs a contract with the lessor, the lessee may or may not have knowledge of the implicit rate of return embedded in the lease. Because lessees may be ignorant of this rate, the FASB introduces the concept of the *borrower's incremental borrowing rate*, which is the rate of interest that the lessee would have incurred to borrow over a similar time period the funds necessary to purchase the property. Then the FASB says that if the lessee does not know the implicit rate, the lessee will discount the minimum lease payments at the incremental borrowing rate; if the lessee does know the implicit rate, then the lessee will discount the minimum lease payments at the lower of the implicit interest rate or the lessee's incremental borrowing rate.

Since lower rates imply higher present values, the consequence of the latter rule is to make it more likely that the 90 percent rule is met. Returning to the example in Exhibit 4.3, we can recompute the present values at other interest rates to see what happens. Here is a sample.

Interest Rate	Present Value
6%	$66,976
9%	63,596
12%	60,560
15%	57,825
18%	55,351
21%	53,107

Now let us think like a manager. Keep in mind that the incremental borrowing rate often is higher than the implicit rate, although not always. To make the example more concrete, assume that the incremental borrowing rate is 21 percent. If we do not want this lease capitalized, what can we do? The most obvious thing is to tell the lessor that we do not want to know what the implicit rate is (recall that the implicit rate is 12 percent as shown in Exhibits 4.2 and 4.3); in fact, if the lessor tells us, then the deal is off. Ignorance allows us to discount the cash flows at 21 percent, and this gives us a present value ($53,107) that is only 88 percent of the fair value of $60,560. Voilà! Ignorance

allows us to avoid capitalization and not disclose the financial commitment to investors and creditors.

A second detail of lease accounting concerns the residuals. Like the salvage value used when computing depreciation expense, the *residual value* is the estimated value of the property at the end of the lease term. These residual values may or may not be guaranteed and uncreatively are termed *guaranteed residual values* and *unguaranteed residual values*. These ideas are relevant to the process because the FASB considers guaranteed residual values part of the minimum lease payments; after all, with the existence of a guaranteed residual value, either the lessee returns the property with a value at or greater than the residual value or it must pay for any deficiencies. Unguaranteed residual values, though, never require a payment from the lessee, so the FASB says that they are not part of the minimum lease payments.

Suppose we have a lease that has an implicit rate of 12 percent and has $15,000 of annual payments on January 1 of each year for four years with a residual value of $15,000 at the end of the four-year lease term. The fair value again is $60,560, for the lessor expects to receive the residual value, and includes the residual value in its computation of the present value. To the lessee, however, there is a major difference between what happens if the residual is guaranteed or not. If guaranteed, then the present value equals $60,560, which is 100 percent of the fair value, so the lease is capitalized. If unguaranteed, then the present value is $51,027, which is only 84 percent of the fair value. The lease is not capitalized. By not guaranteeing the residual value, the lessee unearths yet another way to avoid capitalization and not disclose the financial commitment to investors and creditors.[6]

The third and last detail we shall entertain involves contingencies. Think of a firm that leases floor space in a mall and that has average sales of $1 million per month. Given the nature of the business, the sales are relatively stable from month to month. The lessor wants to charge $50,000 per month for use of the store, but the lessee wants to avoid capitalization of the lease and offers the following counterproposal. The lease will require payment of $10,000 per month plus 4 percent of the sales. According to the accounting rules, contingent rental fees are excluded from the minimum lease payments, so this clause would reduce the minimum lease payment per month from $50,000 to $10,000 and substantially reduce the present value of this stream of cash flows. In this way managers of this business enterprise can avoid reporting its financial commitments from leasing activities.

There are other ways to avoid lease capitalization, but these three ways are dominant and relatively easy to implement. By using the incremental borrowing rate, by not guaranteeing the residual value, and by employing contingent rental fees, a lessee probably can account for the lease as an operating lease.

ADJUSTING OPERATING LEASES INTO CAPITAL LEASES

As with the equity method in Chapter 3, operating leases accompanied by good disclosures allow knowledgeable investors and financial analysts the opportunity to adjust the

reported numbers to numbers that are more meaningful. These analytical adjustments will transform the reported numbers by assuming that the operating leases are in fact capital leases and adjusting, as appropriate, various balance sheet and income statement accounts. Investors and financial analysts can construct these adjustments because the FASB and the Securities and Exchange Commission (SEC) require certain disclosures by those entities that have operating leases. If we assume these disclosures are proper and if we make some other assumptions about asset lives, tax rates, and cash flow patterns, we can generate these more useful numbers.[7]

I have chosen the airline industry to illustrate these analytical adjustments. The industry is good for this purpose because it has regularly attempted to avoid reporting its financial commitments under leasing arrangements. The results from 2001, however, will be somewhat skewed as a result of the September 11 attack on the World Trade Center. The industry leases most of its aircraft from others, in part because financial institutions can purchase aircraft on more favorable terms than the airline companies. As a result of FASB Statement No. 13 and its amendments, some of these leases are capitalized, but a significant portion are not. These operating leases constitute a significant amount of unrecognized debt, and I shall demonstrate how financial statements can be adjusted to take this into account. I illustrate this method with Delta Air Lines and then discuss what these adjustments reveal for six major firms in the industry.

Analytical Adjustments of Delta Air Lines

Like other enterprises in the airline business, Delta leases many of its airplanes and associated pieces of equipment. Delta capitalizes some of these leases and treats others as operating leases. I begin with the reported numbers (the units are millions of dollars) in the financial statements, given in Exhibits 4.5 and 4.6, and proceed with the adjustment process. This process consists of seven steps:

1. Find the lease cash payments.
2. Choose an appropriate interest rate.
3. Compute the leased assets and the lease obligations as the present value of the lease cash payments using an appropriate interest rate.
4. Choose an appropriate life for the leased assets and estimate their present age. With these assumptions, calculate the depreciation expense and the accumulated depreciation.
5. Estimate the interest expense.
6. Estimate the change in the income tax expense and deferred income taxes.
7. Obtain the adjusted income statement and the adjusted balance sheet.

The FASB requires those that employ operating leases to disclose the future cash commitments; specifically, the company should reveal the amounts of the cash flows for each of the next five years and then give a cumulative number for the remaining cash

Exhibit 4.5 Delta Air Lines Balance Sheets (in Millions of Dollars for Period Ended December)

	2001	2000
Current Assets:		
Cash and Cash Equivalents	2,210	1,364
Short-Term Investments	5	243
Accounts Receivable, Net	368	406
Expendable Parts and Supplies Inventories, Net	181	170
Deferred Income Taxes	518	345
Fuel Hedge Contracts, at Fair Market Value	55	319
Prepaid Expenses and Other	230	358
Total Current Assets	3,567	3,205
Property and Equipment:		
Flight Equipment	19,427	17,371
Less: Accumulated Depreciation	5,730	5,139
Flight Equipment, Net	13,697	12,232
Flight Equipment under Capital Leases	382	484
Less: Accumulated Amortization	262	324
Flight Equipment under Capital Leases, Net	120	160
Ground Property and Equipment	4,412	4,357
Less: Accumulated Depreciation	2,355	2,313
Ground Property and Equipment, Net	2,057	2,058
Advance Payments for Equipment	223	390
Total Property and Equipment, Net	16,097	14,840
Other Assets:		
Investments in Debt and Equity Securities	96	339
Investments in Associated Companies	180	222
Cost in Excess of Net Assets Acquired, Net	2,092	2,149
Operating Rights and Other Intangibles, Net	94	102
Restricted Investments for Boston Airport Terminal Project	475	0
Other Noncurrent Assets	1,004	1,074
Total Other Assets	3,941	3,886
Total Assets	23,605	21,931

Exhibit 4.5 ***(Continued)***

	2001	2000
Current Liabilities:		
Current Maturities of Long-Term Debt	260	62
Short-Term Obligations	765	0
Current Obligations under Capital Leases	31	40
Accounts Payable and Miscellaneous Accrued Liabilities	1,617	1,634
Air Traffic Liability	1,224	1,442
Income and Excise Taxes Payable	1,049	614
Accrued Salaries and Related Benefits	1,121	1,170
Accrued Rent	336	283
Total Current Liabilities	6,403	5,245
Noncurrent Liabilities:		
Long-Term Debt	7,781	5,797
Long-Term Debt Issued by Massachusetts Port Authority	498	0
Capital Leases	68	99
Postretirement Benefits	2,292	2,026
Accrued Rent	781	721
Deferred Income Taxes	465	1,220
Other	464	388
Total Noncurrent Liabilities	12,349	10,251
Deferred Credits:		
Deferred Gains on Sale and Leaseback Transactions	519	568
Manufacturers' and Other Credits	310	290
Total Deferred Credits	829	858
Series B ESOP Convertible Preferred Stock	452	460
Unearned Compensation under ESOP	(197)	(226)
Total Employee Stock Ownership Plan Preferred Stock	255	234
Shareowners' Equity:		
Common Stock	271	271
Additional Paid-in Capital	3,267	3,264
Retained Earnings	2,930	4,176
Accumulated Other Comprehensive Income	25	360
Treasury Stock at Cost	(2,724)	(2,728)
Total Shareowners' Equity	3,769	5,343
Total Liabilities and Shareowners' Equity	23,605	21,931

Note: Parentheses denote negative numbers.

Exhibit 4.6 Delta Air Lines Income Statements (in Millions of Dollars for Period Ended December)

	2001	2000	1999
Operating Revenues:			
Passenger	12,964	15,657	13,949
Cargo	506	583	561
Other, Net	409	501	373
Total Operating Revenues	13,879	16,741	14,883
Operating Expenses:			
Salaries and Related Costs	6,124	5,971	5,194
Aircraft Fuel	1,817	1,969	1,421
Depreciation and Amortization	1,283	1,187	1,057
Other Selling Expenses	616	688	626
Passenger Commissions	540	661	784
Contracted Services	1,016	966	824
Landing Fees and Other Rents	780	771	723
Aircraft Rent	737	741	622
Aircraft Maintenance Materials and Outside Repairs	801	723	594
Passenger Service	466	470	498
Asset Writedowns and Other Nonrecurring Items	1,119	108	469
Stabilization Act Compensation	(634)	0	0
Other	816	849	753
Total Operating Expenses	15,481	15,104	13,565
Operating Income (Loss)	(1,602)	1,637	1,318
Other Income (Expense):			
Interest Expense, Net	(410)	(257)	(126)
Net Gain from Sale of Investments	127	301	927
Miscellaneous Income (Expense), Net	(47)	27	(26)
Fair Value Adjustments of SFAS 133 Derivatives	68	(159)	0
Total Other Income (Expense)	(262)	(88)	775
Income (Loss) before Income Taxes and Accounting Change	(1,864)	1,549	2,093
Income Tax Benefit (Provision)	648	(621)	(831)
Net Income (Loss) before Accounting Change	(1,216)	928	1,262
Cumulative Effect of Accounting Change	0	(100)	(54)
Net Income (Loss)	(1,216)	828	1,208

Note: Parentheses denote negative numbers.

flows. Delta provides these data in footnote 10 of its 2001 annual report. In that footnote, we learn that the minimum rental commitments are:

Year	Cash Flow
2002	$1,271
2003	1,238
2004	1,197
2005	1,177
2006	1,144
After 2006	8,068

We assume that the cash flows after 2006 occur at the same level as 2006 until a residual remains; that amount goes in the last year. Accordingly, the future cash flows are:

Year	Cash Flow
2002	$1,271
2003	1,238
2004	1,197
2005	1,177
2006	1,144
2007	1,144
2008	1,144
2009	1,144
2010	1,144
2011	1,144
2012	1,144
2013	1,144
2014	60

Notice that the cash flows in the seven years from 2007 to 2013 are seven times $1,144, or $8,008. That leaves only $60 as a cash flow in the year 2014.

The second step in this adjustment process is to ascertain an interest rate with which to discount these cash flows. If the managers tell us the rate for discounting the capital leases, then that would be a good rate to use. Otherwise, we need to search the footnotes for a description of the firm's debts and the interest rates and attempt to find a comparable financial risk, using the interest rate associated with that debt. Delta does not inform us of the rate used in discounting the cash flows in its capital leases, so we go to footnote 8, which describes its debt. After reading that footnote, we shall assume that an appropriate rate is 7.5 percent.

From step 1, we have the cash flows, and from step 2, we have an approximate interest rate. We shall assume that the cash flows occur annually at the end of the year. Discounting the cash flows of the operating leases at 7.5 percent, we obtain a present value of $10,439 as the capitalized value. We use this capitalized value as the value of

the property and the value of the total lease obligation. The latter can be partitioned into the current and noncurrent portions by looking at next year's (2002) cash payment, which will be $1,271. The present value of $1,271 equals $1,182, and this becomes the incremental current liability. The rest of the obligation is $10,439 less $1,182, or $9,257, and it represents the addition to long-term liabilities.

We shall assume a life of 15 years for the aircraft, which seems consistent with the firm's depreciation policy. That means straight-line depreciation will be $10,439 divided by 15 years, for $696 per annum. These are not new leases, by assumption, so we guess how old they are. The easiest way to compute the average age of the assets is to divide the cost of the property and equipment already on the books by their depreciation. Using this ratio, we calculate the average age of Delta's aircraft as 5.17 years, so accumulated depreciation is 5.17 times $696, or $3,597. The analyst adds this year's depreciation of $696 to the income statement; the incremental depreciation will also affect retained earnings. The rest of the accumulated depreciation ($3,597 less $696 equals $2,901) reflects depreciation from previous years and will require an adjustment to deferred income taxes; we discuss this modification when we talk about what happens to income tax expense.

While we take out rental expense of $1,300 and add in depreciation expense of $696, we also have to estimate the interest expense. This fifth step is a bit trickier since it requires knowing the beginning balance in leases, but no one can figure this out without knowing what leases have terminated and begun during the year. We overcome this problem by assuming that all of the leases were in operation at the beginning of the year and are continuing after this year. With this assumption, the only thing that can affect the lease balance would be interest expense (which adds to the balance) and cash payments (which naturally reduce the amount owed.) Thus,

$$\text{Lease obligation}_{\text{BOY}} + .075\ \text{Lease obligation}_{\text{BOY}} - \text{cash payment} = \text{Lease obligation}_{\text{EOY}}$$

where BOY denotes "beginning of the year" and EOY "end of the year." Substituting into this equation the cash payment of $1,300 and the end-of-year balance in the lease obligation of $10,439, we compute the beginning-of-the-year balance as $10,920. Now we can estimate interest expense as 7.5 percent of $10,920, or $819.

Step 6 concerns income tax expense. From the adjustments made thus far, the impact on earnings before taxes is to increase it $1,300 for rent expense and decrease it $696 for depreciation and $819 for interest. The net impact on earnings before taxes is thus a decrease of $215. The tax rate is about 35 percent, which we glean from the tax footnote, so the change in income tax expense is a decrease of 35 percent of $215, or $75. Even though income tax expense varies, nothing here modifies the tax liabilities to the federal, state, local, and international authorities; therefore, the decrease in income tax expense of $75 corresponds with a decrease of $75 in deferred income taxes. In addition, the change in previous years' depreciation must also affect deferred taxes. Since we increase old depreciation by $2,901, we have a further decrease in deferred income taxes of 35 percent of $2,901, or $1,015.

Putting this together, net income in 2001 lowers by $140, computed as (parentheses denote a decrease in the account):

Rent expense	$ (1,300)
Interest expense	819
Depreciation expense	696
Income tax expense	(75)
Net income	$ (140)

The assets of Delta Air Lines increase by $6,842:

Leased assets	$10,439
Accumulated depreciation	3,597
	$ 6,842

Liabilities and stockholders also change by $6,842.

Current liabilities	$ 1,182
Long-term liabilities	9,257
Deferred income taxes	(1,090)
Total liabilities	$ 9,349
Retained earnings (plug)	(2,507)
Debt plus equities	$ 6,842

These effects are summarized in Exhibit 4.7. In addition, we adjust Delta's numbers for 2000 and report them in the exhibit.

Whew! What a lot of work! Admittedly, we had to make a number of assumptions to get to this point, but at least we are including the effects of all of the leasing financial commitments contracted by Delta Air Lines. If the managers would do this in the first

Exhibit 4.7 Adjustments to Delta's Financial Statements (Capitalizing All Leases) (in Millions of Dollars for Period Ended December)

	As Reported		Adjusted	
	2001	**2000**	**2001**	**2000**
Total Assets	23,605	21,931	30,447	28,528
Current Debts	6,403	5,245	7,585	6,454
Long-Term Debts	12,349	10,251	20,523	18,460
Total Debts	19,581	16,354	28,930	25,772
Stockholders' Equity	4,024	5,577	1,517	3,197
Interest Expense (Revenue)	(410)	(257)	409	602
Net Income	(1,216)	828	(1,356)	652

place, investors and financial analysts would not have to guess these details. While some of these assumptions may be incorrect, we are at least in the ballpark when all leases are capitalized. More precise models exist for adjusting leases, but they are even more complex. The real question is whether these analytical adjustments have been worth the work. Have they provided any new insights into Delta?

Results of Capitalizing Leases

The process of adjusting operating leases as if the firm had applied capital lease accounting was conducted for 2001 and 2000 for American Airlines, Continental, Delta, Northwest, Southwest, and United. The results are contained in Exhibit 4.8. This exhibit reports several financial ratios calculated with the reported numbers and with the adjusted numbers.

As can be observed, the current ratio declines in all cases. This is understandable since current assets stay constant for each company while current liabilities increase as a consequence of the additional lease obligation.

Return on assets generally shows little change. Return on equity sometimes reveals small changes, as with Southwest, but at other times shows bigger changes, as with American Airlines in 2001. Interestingly, some adjusted return-on-equity values show increases, such as Continental in 2000. This increase occurs because the equity is reduced to a rather small number.

Exhibit 4.8 Results of Capitalizing Leases for Six Airline Companies

	As Reported		Adjusted	
	2001	**2000**	**2001**	**2000**
American Airlines				
Current Ratio	0.90	0.65	0.77	0.53
Return on Assets	–0.06	0.03	–0.04	0.02
Return on Equity	–0.43	0.15	–1.18	0.17
Debt to Equity	6.95	3.21	25.31	9.69
Debt to Common Equity	N/A	72.41	N/A	N/A
Debt to Total Capital	0.82	0.72	0.93	0.88
Continental Airlines				
Current Ratio	0.67	0.83	0.53	0.65
Return on Assets	–0.03	0.02	–0.01	0.02
Return on Equity	–0.07	0.30	–0.58	0.46
Debt to Equity	7.43	6.54	40.02	48.20
Debt to Common Equity	7.43	6.54	40.02	48.20
Debt to Total Capital	0.88	0.83	0.99	0.96

Exhibit 4.8 *(Continued)*

	As Reported		Adjusted	
	2001	**2000**	**2001**	**2000**
Delta Air Lines				
Current Ratio	0.56	0.61	0.47	0.50
Return on Assets	–0.06	0.03	–0.04	0.03
Return on Equity	–0.31	0.15	–0.69	0.20
Debt to Equity	4.87	2.93	14.54	8.06
Debt to Common Equity	5.20	3.06	16.67	8.70
Debt to Total Capital	0.83	0.75	0.95	0.90
Northwest Airlines				
Current Ratio	0.91	0.57	0.79	0.49
Return on Assets	–0.01	0.04	–0.02	0.02
Return on Equity	–1.47	0.25	N/A	N/A
Debt to Equity	43.98	9.65	N/A	N/A
Debt to Common Equity	N/A	42.67	N/A	N/A
Debt to Total Capital	0.98	0.91	1.05	1.01
Southwest Airlines				
Current Ratio	1.13	0.64	1.00	0.51
Return on Assets	0.06	0.10	0.06	0.08
Return on Equity	0.13	0.18	0.14	0.20
Debt to Equity	1.24	0.93	1.84	1.67
Debt to Common Equity	1.24	0.93	1.84	1.67
Debt to Total Capital	0.55	0.48	0.66	0.64
United Airlines				
Current Ratio	0.63	0.73	0.53	0.61
Return on Assets	–0.07	0.01	–0.06	0.00
Return on Equity	–0.67	0.01	–3.02	–0.14
Debt to Equity	6.85	3.16	43.07	11.23
Debt to Common Equity	7.25	3.39	53.82	12.92
Debt to Total Capital	0.87	0.76	0.99	0.93

Debt-to-equity ratios generally display increases, but some values are not meaningful. For instance, observe the Northwest panel in Exhibit 4.8. Equity turns negative once the analytical adjustments are completed. Once that happens, the ratio does not take on any meaningful value.

The last ratio in Exhibit 4.8 is perhaps the most telling, given the purposes of this book. In all cases, the debt-to-total capital (or total assets) ratio goes up. Southwest has

the lowest debt/total assets on both reported and adjusted numbers. Northwest, however, has the highest debt/total assets on both sets of numbers. While Northwest's values are very high to begin with, the adjusted values unambiguously demonstrate that the airline is technically insolvent.

We can also discern that changes in the debt-to-total capital ratio range from 10 to 15 percentage points (except for Northwest, which already possesses incredibly high amounts of debt in its financial structure). By employing analytical adjustments, however, we have uncovered the true economic picture and have discovered the legerdemain. While a lot of work, these analytical adjustments prove useful in perceiving what is really going on.

United Airlines declared corporate bankruptcy on December 9, 2002.[8] The ratios in Exhibit 4.8 tell us why—United has very little equity and has been heading in the wrong direction, even before September 11. The adjusted debt-to-total capital ratio shows that equity makes up only 1 percent of the firm's financial structure. By the time United managers filed for Chapter 11, the true equity was probably negative. US Airways filed for bankruptcy on August 11[9]; it too was overladen with debt. In the meantime, most of the remaining firms in the industry are trying to restructure their business, for example, by asking workers to delay pay raises.[10]

SUMMARY AND CONCLUSION

Lease obligations matter. Because debt is important to investors and creditors, many managers of business enterprises have engaged in schemes to underreport the truth. The FASB attempted to deal with lease accounting but left many opportunities for creative accounting. The good news is that if the managers report the truth in the footnotes, investors and creditors and their agents can transform the financial statements into a set of numbers that are more accurate and more revealing. Doing so requires making a number of assumptions and clearly takes some work, but the adjusted data are usually worth it.

Use of operating lease accounting "gains" the managers an understatement of their firm's financial structure by 10 to 15 percentage points. Given that investors and creditors and their analysts can unravel this truth, it seems likely that the investment community charges the airline industry for the costs necessary to transform reported numbers into the truth and for the risks that something might be missing that would help in the unraveling process. Appropriately, investors and creditors charge a premium for the financial reporting risk. The cost of capital goes up and stock prices and bond prices go down.

Meeting the spirit of Statement No. 13 and not merely the mangled letter of the law would be very refreshing. Are any managers willing to quit playing games with lease accounting? Are any directors, general counsel, and auditors willing to assist them?

NOTES

1. A short history of lease accounting is given by H. I. Wolk, J. R. Francis, and M. G. Tearney, *Accounting Theory: A Conceptual and Institutional Approach,* 3rd ed. (Cincinnati, OH: South-Western Publishing,1992), pp. 510–544.

2. These cash flows are called rents because the major application when these formulas were first conceived was in the renting or leasing business. Renters or lessees would pay (say) monthly cash flows, and these were called rents. So today the cash flows are called rents, whether the application is renting or something else.
3. Details about lease accounting can be found in: D. E. Kieso, J. J. Weygandt, and T. D. Warfield, *Intermediate Accounting,* 10th ed. (New York: John Wiley & Sons, 2001), pp. 1189–1252; L. Revsine, D. W. Collins, and W. B. Johnson, *Financial Reporting and Analysis,* 2nd ed. (Upper Saddle River, NJ: Prentice-Hall, 2002), pp. 575–628; and G. I. White, A. C. Sondhi, and D. Fried, *The Analysis and Use of Financial Statements,* 2nd ed. (New York: John Wiley & Sons, 1998), pp. 531–547. Also worth reading are P. R. Delaney, B. J. Epstein, J. A. Adler, and M. F. Foran, *GAAP 2000: Interpretation and Application of Generally Accepted Accounting Principles 2000* (New York: John Wiley & Sons, 2000), pp. 515–572; G. Georgiades, *Miller GAAP Financial Statement Disclosures Manual* (New York: Aspen, 2001), section 17.01; and B. D. Jarnagin, *2001 U.S. Master GAAP Guide* (Chicago: CCH, 2000), pp. 739–870.
4. The Association for Investment Management and Research (AIMR) is a professional organization of chartered financial analysts. The AIMR promotes the capitalization of all leases: *Financial Reporting in the 1990s and Beyond* (Charlottesville, VA: AIMR, 1993), pp. 49–50.
5. In Excel, this monthly (or quarterly or whatever) rental is easily found by applying the PPMT function. Financial calculators also can solve for the monthly rental by inputting the fair value of the property (which is the present value), the interest rate, and the number of periods in the lease.
6. Lessors like guaranteed residual values, for the guarantees provide some protection against abuse from lessees. Lessees, as stated, prefer not to have guaranteed residual values. Both parties can be satisfied by hiring third parties to come in and insure the residual value to the lessor. It is incredible to what lengths some managers will go just for the sake of deceiving investors and creditors about the extent of their financial structure.
7. In *Analysis and Use of Financial Statements,* 2nd ed., White, Sondhi, and Fried discuss one process for making these analytical adjustments, though they restrict themselves only to obtaining the present value of the operating leases (pp. 541–547). We extend their technique by considering distributive effects as well by including the value of the leased property less its accumulated depreciation in the assets section of the balance sheet, dividing the present value of the operating leases into a current and a long-term portion in the liabilities section, replacing rent expense with interest expense and depreciation on the income statement, and considering the changes to income tax expense and deferred income taxes.
8. "UAL Files for Creditor Shield But Vows to Keep Flying," *Wall Street Journal,* December 9, 2002.
9. C. H. Sieroty, "US Airways Files for Chapter 11," *Washington Times,* August 11, 2002; M. Maynard, "US Airways to Cut Costs $1.8 Billion a Year," *New York Times,* December 22, 2002.
10. S. McCartney, "American Air Asks Workers to Forgo Pay Raises in 2003," *Wall Street Journal,* December 9, 2002.