

CHAPTER FOUR

4

ANALYZING INVESTING ACTIVITIES

A LOOK BACK

Our discussion of accounting analysis began with the analysis and interpretation of financing activities. We studied the interaction of financing activities with operating and investing activities and the importance of creditor versus equity financing.

A LOOK AT THIS CHAPTER

Our discussion of accounting analysis extends to investing activities in this chapter. We analyze assets such as receivables, inventories, property, equipment, and intangibles. We show how these numbers reflect company performance and financing requirements, and how adjustments to these numbers can improve our analysis.

A LOOK AHEAD

Chapter 5 extends our analysis of investing activities to intercorporate investments. Analyzing and interpreting a company's investing activities requires an understanding of the differences in accounting for various investment classes. Chapter 6 focuses on operating activities and income measurement.

ANALYSIS OBJECTIVES

- Define current assets and their relevance for analysis.
- Explain cash management and its implications for analysis.
- Analyze receivables, allowances for bad debts, and securitization.
- Interpret the effects of alternative inventory methods under varying business conditions.
- Explain the concept of long-term assets and its implications for analysis.
- Interpret valuation and cost allocation of plant assets and natural resources.
- Describe and analyze intangible assets and their disclosures.
- Analyze financial statements for unrecorded and contingent assets.

Managing Operating Assets

Dell Computer's effective inventory management is legendary. *Fortune* (2005) reports "a fundamental difference between Dell and the competition is that at Dell, every single machine is made for a specific order. The others are producing machines to match a sales forecast. The advantages that Dell derives from this model on the factory floor are tangible and enormous. For instance, industry sources say Dell now carries only four days of inventory, while IBM has 20 days and HP has 28. Obviously, low inventory frees up mountains of cash for Dell that is otherwise tied up at IBM and HP."

Dell is also effective at lean manufacturing: Again, *Fortune* (2005) reports that Dell "urges its suppliers—everyone from drive makers to Intel—to warehouse inventory as close to its factories as possible. Any cost that can be

'shared with' (read 'transferred to') those suppliers, is. (Does that remind anyone of a certain large retailer headquartered in Bentonville, Ark.?) Pay a visit to a Dell plant and you can watch workers unload a supplier's components almost right onto the assembly line." Dell uses its suppliers to reduce the

Effective management of operating assets is key

amount of raw materials inventories it maintains and streamlines manufacturing to reduce the amount of work-in-process inventories that are tied up on the factory floor.

Dell conducts its operating activities with 3 to 5 times less long-term operating assets than HP and IBM. Its lower capital

investment frees up cash that is used for more productive purposes. It also reduces overhead costs, such as depreciation, insurance, and maintenance, which improves profitability.

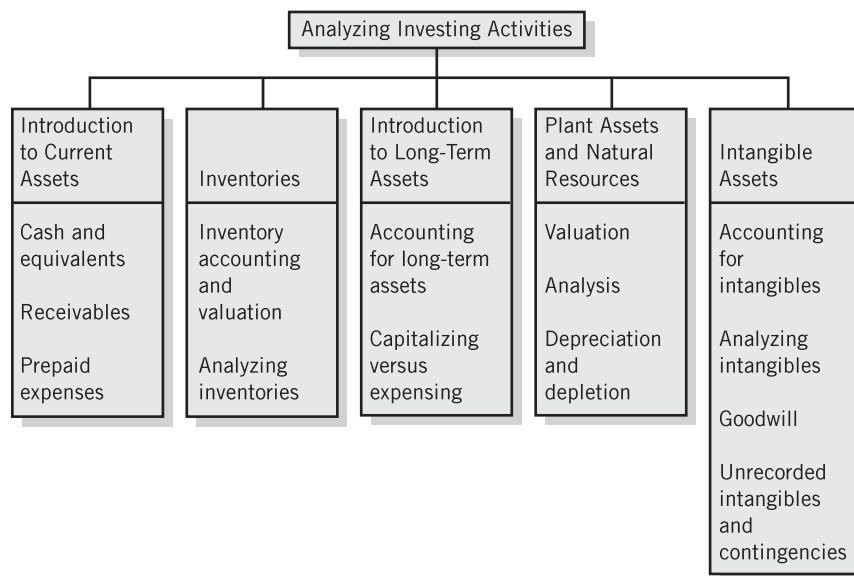
Further, although Dell provides financing of consumer purchases, it does not carry those receivables on its balance sheet. Instead, it has worked out an arrangement with CIT, the consumer finance company, to underwrite and carry its receivables. Dell gets the sales, and CIT handles the credit for a fee.

Effective management of operating assets is key to achieving high performance. Nobody does that better than Dell. This has helped Dell produce a 42% return on its equity, which is 50% higher than IBM and nearly five times higher than HP.

PREVIEW OF CHAPTER 4

Assets are resources controlled by a company for the purpose of generating profit. They can be categorized into two groups—current and noncurrent. **Current assets** are resources readily convertible to cash within the *operating cycle* of the company. Major classes of current assets include cash, cash equivalents, receivables, inventories, and prepaid expenses. **Long-term** (or **noncurrent**) **assets** are resources expected to benefit the company for periods beyond the current period. Major long-term assets include property, plant, equipment, intangibles, investments, and deferred charges. An alternative distinction often useful for analysis is to designate assets as either financial assets or operating assets. **Financial assets** consist mainly of marketable securities and other investments in nonoperating assets. They usually are valued at fair (market) value and are expected to yield returns equal to their risk-adjusted cost of capital. **Operating assets** constitute most of a company's assets. They usually are valued at cost and are expected to yield returns in excess of the weighted-average cost of capital. This chapter discusses accounting issues involving the valuation of assets, other than intercorporate

investments, and their subsequent cost allocation. We explain the implications of asset accounting for credit and profitability analysis and for equity valuation. The content and organization of this chapter follows:



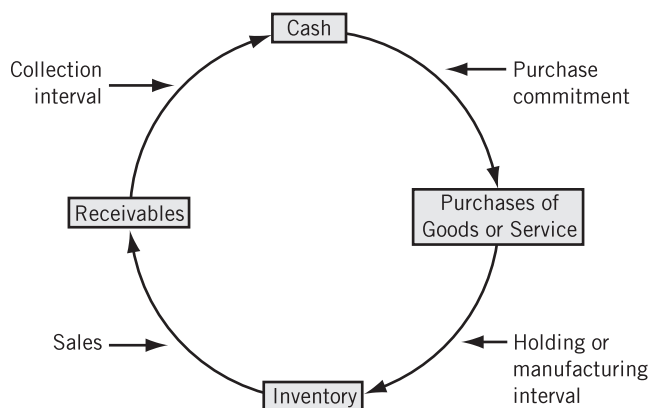
Assets relating to investments in marketable securities and equity investments in consolidated and unconsolidated affiliates, together with investments in derivative securities, are discussed in Chapter 5.

.....INTRODUCTION TO CURRENT ASSETS

Current assets include cash and other assets that are convertible to cash, usually within the operating cycle of the company. An **operating cycle**, shown in Exhibit 4.1, is the amount of time from commitment of cash for purchases until the collection of cash resulting from sales of goods or services. It is the process by which a company converts cash into short-term assets and back into cash as part of its ongoing operating activities. For a manufacturing company, this would entail purchasing raw materials, converting them to finished goods, and then selling and collecting cash from receivables. Cash represents the starting point, and the end point, of the operating cycle. The operating cycle is used to classify assets (and liabilities) as either current or noncurrent. Current assets are expected to be sold, collected, or used within one year or the operating cycle, whichever is longer.¹ Typical examples are cash, cash equivalents, short-term receivables, short-term securities, inventories, and prepaid expenses.

The excess of current assets over current liabilities is called **working capital**. Working capital is a double-edged sword—companies need working capital to effectively operate, yet working capital is costly because it must be financed and can entail other operating costs, such as credit losses on accounts receivable and storage and logistics

¹ Similarly, current liabilities are obligations due to be paid or settled within the longer of one year or the operating cycle.

Operating Cycle**Exhibit 4.1**

costs for inventories. Many companies attempt to improve profitability and cash flow by reducing investment in current assets through methods such as effective credit underwriting and collection of receivables, and just-in-time inventory management. In addition, companies try to finance a large portion of their current assets through current liabilities, such as accounts payable and accruals, in an attempt to reduce working capital.

Because of the impact of current assets (and current liabilities) on liquidity and profitability, analysis of current assets (and current liabilities) is very important in both credit analysis and profitability analysis. We shall discuss these issues at length later in the book. In this chapter, we limit analysis to the accounting aspects of current assets, specifically their valuation and expense treatment.

Cash and Cash Equivalents

Cash, the most liquid asset, includes currency available and funds on deposit. **Cash equivalents** are highly liquid, short-term investments that are (1) readily convertible into cash and (2) so near maturity that they have minimal risk of price changes due to interest rate movements. These investments usually carry maturities of three months or less. Examples of cash equivalents are short-term treasury bills, commercial paper, and money market funds. Cash equivalents often serve as temporary repositories of excess cash.

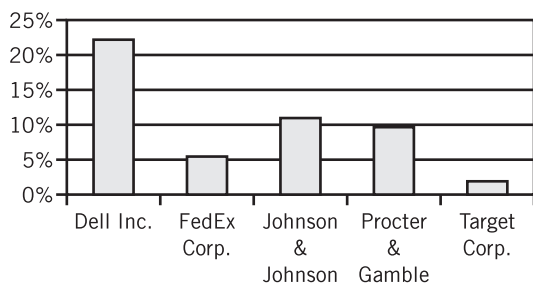
The concept of **liquidity** is important in financial statement analysis. By liquidity, we mean the amount of cash or cash equivalents the company has on hand and the amount of cash it can raise in a short period of time. Liquidity provides flexibility to take advantage of changing market conditions and to react to strategic actions by competitors. Liquidity also relates to the ability of a company to meet its obligations as they mature. Many companies with strong balance sheets (where there exists substantial equity capital in relation to total assets) can still run into serious difficulties because of illiquidity.

Companies differ widely in the amount of liquid assets they carry on their balance sheets. As the graphic indicates, cash and cash equivalents as a percentage of total assets ranges from 2% (Target) to 22% (Dell). These differences can result from a number of factors. In general, companies in a dynamic industry require increased liquidity to take advantage of opportunities or to react to a quickly changing competitive landscape.

**GLOBAL**

A company must disclose restrictions on cash for accounts located in foreign countries.

Cash and Cash Equivalents as a Percentage of Total Assets



In addition to examining the amount of liquid assets available to the company, analysts must also consider the following:

1. To the extent that cash equivalents are invested in equity securities, companies risk a reduction in liquidity should the market value of those investments decline.
2. Cash and cash equivalents are sometimes required to be maintained as compensating balances to support existing borrowing arrangements or as collateral for indebtedness. For example, eBay, Inc., was required under the terms of a lease to place

\$126 million out of its \$400 million in cash and investment securities as collateral for the term of the lease. These investments were, therefore, not available to meet normal operating needs of the company.

Receivables

Receivables are amounts due to the company that arise from the sale of products or services, or from advances (loaning of money) to other companies. **Accounts receivable** refer to amounts due to the company that arise from sales of products and services. **Notes receivable** refer to formal written promises of indebtedness due. Certain other receivables often require separate disclosure by source, including receivables from affiliated companies, corporate officers, company directors, and employees. Companies can establish receivables without the formal billing of a debtor. For example, costs accumulated under a cost-plus-fixed-fee contract or some other types of contracts are usually recorded as receivables when earned, even though not yet billed to the customer. Also, claims for tax refunds often are classified as receivables. Receivables classified as current assets are expected to be collected within a year or the operating cycle, whichever is longer.

Valuation of Receivables

It is important to analyze receivables because of their impact on a company's asset position and income stream. These two impacts are interrelated. Experience shows that companies do not collect all receivables. While decisions about collectibility can be made at any time, collectibility of receivables as a group is best estimated on the basis of past experience, with suitable allowance for current economy, industry, and debtor conditions. The risk in this analysis is that past experience might not be an adequate predictor of future loss, or that we fail to fully account for current conditions. Losses with receivables can be substantial and affect both current assets and current and future net income.

In practice, companies report receivables at their **net realizable value**—total amount of receivables less an allowance for uncollectible accounts. Management estimates the allowance for uncollectibles based on experience, customer fortunes, economy and industry expectations, and collection policies. Uncollectible accounts are written off against the allowance (often reported as a deduction from receivables in the balance sheet), and the expected loss is included in current operating expenses. Our assessment of earnings quality is often affected by an analysis of receivables and their collectibility. Analysis must be alert to changes in the allowance account—computed relative to sales, receivables, or industry and market conditions.

Analyzing Receivables

While an unqualified opinion of an independent auditor lends assurance to the validity of receivables, our analysis must recognize the possibility of error in judgment as to their ultimate collection. We also must be alert to management's incentives in reporting higher levels of income and assets. In this respect, two important questions confront our analysis of receivables.

Collection Risk. Most provisions for uncollectible accounts are based on past experience, although they make allowance for current and emerging economic, industry, and debtor circumstances. In practice, management likely attaches more importance to past experience—for no other reason than economic and industry conditions are difficult to predict. Our analysis must bear in mind that while a formulaic approach to calculating the provision for bad debts is convenient and practical, it reflects a mechanical judgment that yields errors. Analysis must rely on our knowledge of industry conditions to reliably assess the provision for uncollectibles.

Full information to assess *collection risk* for receivables is not usually included in financial statements. Useful information must be obtained from other sources or from the company. Analysis tools for investigating collectibility include:

- Comparing competitors' receivables as a percentage of sales with those of the company under analysis.
- Examining customer concentration—risk increases when receivables are concentrated in one or a few customers.
- Computing and investigating trends in the average collection period of receivables compared with customary credit terms for the industry.
- Determining the portion of receivables that are renewals of prior accounts or notes receivable.

An interesting case involving valuation of receivables and its importance for analysis is that of Brunswick Corp. In a past annual report, Brunswick made a "special provision for possible losses on receivables" involving a write-off of \$15 million. Management asserted circumstances revealed themselves that were not apparent to management or the auditor at the end of the previous year when a substantial amount of these receivables were reported as outstanding. Management explained these write-offs as follows (dates adapted):

ANALYSIS EXCERPT

Delinquencies in bowling installment payments, primarily related to some of the large chain accounts, continued at an unsatisfactory level. Nonchain accounts, which comprise about 80% of installment receivables, are generally better paying accounts. . . . In the last quarter of 20X6, average bowling lineage per establishment fell short of the relatively low lineage of the comparable period of 20X5, resulting in an aggravation of collection problems on certain accounts. The fact that collections were lower in late 20X6 contributed to management's decision to increase reserves. After the additional provision of \$15 million, total reserves for possible future losses on all receivables amounted to \$66 million.

While it is impossible to precisely define the moment when collection of a receivable is sufficiently doubtful to require a provision, the relevant question is whether our analysis can warn us of an inadequate provision. In year 20X5 of the Brunswick case, our

analysis should have revealed the inadequacy of the bad debt provision (reflected in the ratio of the allowance for uncollectible accounts to gross accounts receivable) in light of known industry conditions. Possibly not coincidentally, Brunswick's income peaked in 20X5—the year benefiting from the insufficient provision (the insufficient allowance for uncollectible accounts resulted in less bad debt expense and higher income).

Our analysis of current financial position and a company's ability to meet current obligations as reflected in measures like the current ratio also must recognize the importance of the operating cycle in classifying receivables as current. The operating cycle can result in installment receivables that are not collectible for several years or even decades being reported in current assets (e.g., wineries). Our analysis of current assets, and their relation to current liabilities, must recognize and adjust for these timing risks.

ANALYSIS VIEWPOINT

. . . YOU ARE THE AUDITOR

Your client reports preliminary financial results showing a 15% growth in earnings. This growth meets earlier predictions by management. In your audit, you discover management reduced its allowance for uncollectible accounts from 5% to 2% of gross accounts receivable. Absent this change, earnings would show 9% growth. Do you have any concern about this change in estimate?

Authenticity of Receivables. The description of receivables in financial statements or notes is usually insufficient to provide reliable clues as to whether receivables are genuine, due, and enforceable. Knowledge of industry practices and supplementary sources of information are used for added assurance. One factor affecting authenticity is the *right of merchandise return*. Customers in certain industries, like the magazine, textbook, or toy industries, enjoy a substantial right of merchandise return. Our analysis must allow for return privileges. Liberal return privileges can impair quality of receivables.

Receivables also are subject to various contingencies. Analysis can reveal whether contingencies impair the value of receivables. A note to the financial statements of O. M. Scott & Sons reveals several contingencies:

ANALYSIS EXCERPT

Accounts receivable: Accounts receivable are stated net after allowances for returns and doubtful accounts of \$472,000. Accounts receivable include approximately \$4,785,000 for shipments made under a deferred payment plan whereby title to the merchandise is transferred to the dealer when shipped; however, the Company retains a security interest in such merchandise until sold by the dealer. Payment to the Company is due from the dealer as the merchandise is sold at retail. The amount of receivables of this type shall at no time exceed \$11 million under terms of the loan and security agreement.

Receivables like these often entail more collection risk than receivables without contingencies.

Securitization of Receivables. Another important analysis issue arises when a company sells all or a portion of its receivables to a third party which, typically, finances the sale by selling bonds to the capital markets. The collection of those receivables provides the source for the yield on the bond. Such practice is called **securitization**. (The sale

of receivables to a bank or commercial finance company is called **factoring**.) Receivables can be sold with or without recourse to a buyer (*recourse* refers to guarantee of collectibility). Sale of receivables *with recourse* does not effectively transfer risk of ownership of receivables from the seller.

Receivables can be kept off the balance sheet only when the company selling its receivables surrenders all control over the receivables to an independent buyer of sufficient financial strength. This means as long as a buyer has any type of recourse or the selling company has any degree of retained interest in the receivables, the company selling receivables has to continue to record both an asset and a compensating liability for the amount sold.

The securitization of receivables is often accomplished by establishing a special purpose entity (SPE), such as the trust in Illustration 4.1, to purchase the receivables from the company and finance the purchase via sale of bonds into the market. Capital One Financial Corporation (discussed in Chapter 3) provides an excellent example of a company securitizing a significant portion of its receivables. The consumer finance company has sold \$42 billion of its \$80 billion loan portfolio and acknowledges that securitization is a significant source of its financing.

ILLUSTRATION 4.1

Syntex Co. securitizes its entire receivables of \$400 million with no recourse by selling the portfolio to a trust that finances the purchase by selling bonds. As a result, the receivables are removed from the balance sheet and the company receives \$400 million in cash. The balance sheet and key ratios of Syntex are shown below under three alternative scenarios: (1) before securitizing the receivables; (2) after securitizing receivables with off-balance-sheet financing (as reported under GAAP); and (3) after securitizing receivables *but* reflecting the securitization as a borrowing (reflecting the analyst's adjustments). Notice how scenario 2, compared to the true economic position of scenario 3, window-dresses the balance sheet by not reporting a portion of current liabilities.

BALANCE SHEET

	Before	After	Adjusted		Before	After	Adjusted
Assets				Liabilities			
Cash	\$ 50	\$ 450	\$ 450	Current liabilities	\$ 400	\$ 400	\$ 800
Receivables	400	0	400	Noncurrent liabilities	500	500	500
Other current assets	150	150	150				
Total current assets	600	600	1,000	Equity	600	600	600
Noncurrent assets	900	900	900				
Total assets	<u>\$1,500</u>	<u>\$1,500</u>	<u>\$1,900</u>	Total liabilities and equity	<u>\$1,500</u>	<u>\$1,500</u>	<u>\$1,900</u>

KEY RATIOS

Current ratio	1.50	1.50	1.25
Total debt to equity	1.50	1.50	2.17

Sears, Roebuck and Company also has employed this technique to remove a sizable portion of its receivables from its balance sheet and provides an example of off-balance-sheet effects of securitization that have been negated under current accounting

standards. The sale of receivables to a SPE only removes them from the balance sheet so long as the SPE is not required to be consolidated with the company selling the receivables. Consolidation (covered in Chapter 5) results in an adding together of the balance sheets of the company and the SPE, thus eliminating the benefits of the securitization.

■■■■■■ RISKY LENDING

Securitization often involves lenders that package loans and sell them to investors, then use the freed-up capital to make new loans. Yet lenders often retain the riskiest piece of the loans because it is the hardest to sell—meaning they could still be on the hook if the loans go bad.

The consolidation rules regarding SPEs are complicated, and if the SPEs are not properly structured, can result in consolidation of the SPE with the selling company. *SEAS 140*, “Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities,” and FIN 46R, “Consolidation of Variable Interest Entities,” (explained in Chapter 3) established new conditions for a securitization to be accounted for as a sale of receivables and consequent removal from the balance sheet. Essentially, to avoid consolidation (which results in continued reporting of the receivables as an asset on the balance sheet), the company selling the receivables cannot have any recourse or other continuing involvement with the receivables after the sale and the purchasing company must be independent and sufficiently capitalized (usually taken to be at least 10% equity) to finance its operations without outside support. As a result of the standard, Sears now consolidates its receivable trusts, thus recognizing on its balance sheet \$8 billion of previously unconsolidated credit card receivables and related borrowings. The company now accounts for the securitizations as secured borrowings.

Prepaid Expenses

Prepaid expenses are advance payments for services or goods not yet received. Examples are advance payments for rent, insurance, utilities, and property taxes. Prepaid expenses usually are classified in current assets because they reflect services due that would otherwise require use of current assets.

■■■■■■ INVENTORIES

Inventory Accounting and Valuation

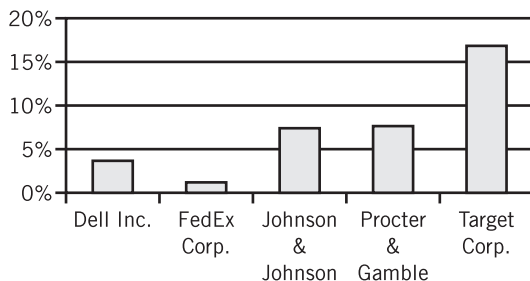
Inventories are goods held for sale as part of a company’s normal business operations. With the exception of certain service organizations, inventories are essential and important assets of companies. We scrutinize inventories because they are a major component of operating assets and directly affect determination of income.

The importance of costing methods for inventory valuation is due to their impact on net income and asset valuation. Inventory costing methods are used to allocate cost of goods available for sale (beginning inventory plus net purchases) between either cost of goods sold (an income deduction) or ending inventory (a current asset). Accordingly, assigning costs to inventory affects both income and asset measurements.

The **inventory equation** is useful in understanding inventory flows. For a merchandising company:

$$\text{Beginning inventories} + \text{Net purchases} - \text{Cost of goods sold} = \text{Ending inventories}$$

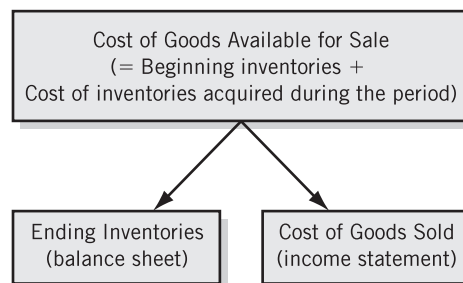
Inventories as a Percentage of Total Assets



This equation highlights the flow of costs within the company. It can be expressed alternatively as shown in the graphic to the right.

The costs of inventories are initially recorded on the balance sheet. As the inventories are sold, these costs are removed from the balance sheet and flow into the income statement as cost of goods sold (COGS). Costs cannot be in two places at the same time; either they remain on the balance sheet (as a future expense) or are recognized currently in the income statement and reduce profitability to match against sales revenue.

An important concept in inventory accounting is the flow of costs. If all inventories acquired or manufactured during the period are sold, then COGS is equal to the cost of the goods purchased or manufactured. When inventories remain at the end of the accounting period, however, it is important to determine which inventories have been sold and which costs remain on the balance sheet. GAAP allows companies several options to determine the order in which costs are removed from the balance sheet and recognized as COGS in the income statement.



Inventory Cost Flows

To illustrate the available cost-flow assumptions, assume that the following reflects the inventory records of a company:

Inventory on January 1, Year 2	40 units @ \$500 each	\$20,000
Inventories purchased during the year	60 units @ \$600 each	<u>36,000</u>
Cost of goods available for sale	100 units	\$56,000

Now, assume that 30 units are sold during the year at \$800 each for total sales revenue of \$24,000. GAAP allows companies three options in determining which costs to match against sales:

First-In, First-Out. This method assumes that the first units purchased are the first units sold. In this case, these units are the units on hand at the beginning of the period. Under FIFO, the company's gross profit is as follows:

Sales	\$24,000
COGS (30 @ \$500 each)	<u>15,000</u>
Gross profit	\$ 9,000

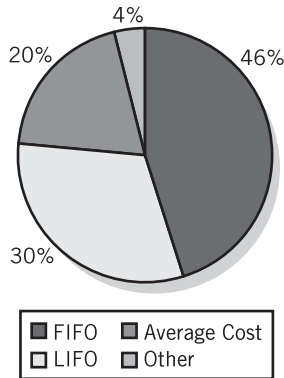
Also, because \$15,000 of inventory cost has been removed, the remaining inventory cost to be reported on the balance sheet at the end of the period is \$41,000.

Last-In, First-Out. Under the LIFO inventory costing assumption, the last units purchased are the first to be sold. Gross profit is, therefore, computed as

Sales	\$24,000
COGS (30 @ \$600 each)	<u>18,000</u>
Gross profit	\$ 6,000

And because \$18,000 of inventory cost has been removed from the balance sheet and reflected in COGS, \$38,000 remains on the balance sheet to be reported as inventories.

Companies Employing Various Inventory Costing Methods



Average Cost. This method assumes that the units are sold without regard to the order in which they are purchased and computes COGS and ending inventories as a simple weighted average as follows:

Sales	\$24,000
COGS (30 @ \$560 each)	<u>16,800</u>
Gross profit	\$ 7,200

COGS is computed as a weighted average of the total cost of goods available for sale divided by the number of units available for sale (\$56,000/100 = \$560). Ending units reported on the balance sheet are \$39,200 (70 units × \$560 per unit).

Analyzing Inventories Inventory Costing Effects on Profitability

To summarize, the financial results of using each of the three alternative methods are:

	Beginning Inventory	Purchases	Ending Inventory	Cost of Goods Sold
FIFO	\$20,000	\$36,000	\$41,000	\$15,000
LIFO	20,000	36,000	38,000	18,000
Average cost	20,000	36,000	39,200	16,800

The income statements under the three methods, then, are as follows:

	Sales	Cost of Goods Sold	Gross Profit
FIFO	\$24,000	\$15,000	\$9,000
LIFO	24,000	18,000	6,000
Average cost	24,000	16,800	7,200

As the examples presented here highlight, gross profit can be affected by the company's choice of its inventory costing method. *In periods of rising prices*, FIFO produces higher gross profits than LIFO because lower cost inventories are matched against sales revenues at current market prices. This is sometimes referred to as *FIFO's phantom profits* as the gross profit is actually a sum of two components: an **economic profit** and a **holding gain**. The economic profit is equal to the number of units sold multiplied by the difference between the sales price and the replacement cost of the inventories (approximated by the cost of the most recently purchased inventories):

$$\text{Economic profit} = 30 \text{ units} \times (\$800 - \$600) = \$6,000$$

The holding gain is the increase in replacement cost since the inventories were acquired and is equal to the number of units sold multiplied by the difference between the current replacement cost and the original acquisition cost:

$$\text{Holding gain} = 30 \text{ units} \times (\$600 - \$500) = \$3,000$$

Of the \$9,000 in reported gross profit, \$3,000 relates to the inflationary gains realized by the company on inventories it purchased some time ago at prices lower than current prices.

Holding gains are a function of the inventory turnover (e.g., how long the goods remain on the shelves) and the rate of inflation. Once a serious problem, these gains have been mitigated during the past decade due to lower inflation and management

scrutiny of inventory quantities through improved manufacturing processes and better inventory controls. In countries with higher inflation rates than the United States, however, FIFO holding gains can still be an issue.

Inventory Costing Effects on the Balance Sheet

In periods of rising prices, and assuming that the company has not previously liquidated older layers of inventories, LIFO reports ending inventories at prices that can be significantly lower than replacement cost. As a result, balance sheets for LIFO companies do not accurately represent the current investment that the company has in its inventories. John Deere, for example, recently reported inventories under LIFO costing nearly \$2 billion. Had these inventories been valued under FIFO, the reported amount would have been \$3 billion, a 50% increase. More than \$1 billion of invested capital was omitted from its balance sheet.

Analysis Research



PREDICTIONS USING INVENTORY LEVELS

Can our analysis use changes in a company's inventory levels to predict future sales and earnings? From one perspective, evidence of increased inventory can reveal management's expected increase in sales. From another, increased inventory can suggest excess inventory due to an unexpected sales decrease. Analysis research indicates we must cautiously interpret changes in inventory levels, even within industries and types of inventories.

For *manufacturing* companies, an increase in finished goods inventory is a predictor of increased sales but

with decreased earnings—that is, evidence suggests companies reduce prices to dispose of undesirable inventory at lower profit margins. Periods subsequent to this increase in finished goods inventory do not appear to fully recover, meaning future sales and earnings do not rebound to previous levels. In contrast, an increase in raw materials or work-in-process inventory tends to foreshadow both increased sales and earnings that persist.

Evidence with *merchandising* companies suggests a slightly different pattern. Specifically, an increase

in merchandise inventory implies future increased sales but with reduced earnings. This pattern is consistent with less demand, subsequently followed by reduced inventory prices to dispose of undesirable inventory—yielding lower profit margins.

These research insights can be useful in our analysis of inventory. Yet we must not ignore the role of inventory methods and estimates in determining inventory dollar levels. We must jointly consider these latter factors and adjust for them, in light of these research implications.

Inventory Costing Effects on Cash Flows

The increase in gross profit under FIFO also results in higher pretax income and, consequently, higher tax liability. In periods of rising prices, companies can get caught in a cash flow squeeze as they pay higher taxes and must replace the inventories sold at replacement costs higher than the original purchase costs. This can lead to liquidity problems, an issue that was particularly acute in the high inflationary period of the 1970s.

One of the reasons frequently cited for the adoption of LIFO is the reduction of tax liability in periods of rising prices. The IRS requires, however, that companies using LIFO inventory costing for tax purposes also use it for financial reporting. This is the **LIFO conformity rule**.

Companies using LIFO inventory costing are required to disclose the amount at which inventories would have been reported had the company used FIFO inventory costing. The difference between these two amounts is called the **LIFO reserve**. Analysts can use this reserve to compute the amount by which cash flow has been

affected both cumulatively and for the current period by the use of LIFO. For example, John Deere reports the following in a recent annual report:

(\$ millions)	2004	2003
Raw materials and supplies.....	\$ 589	\$ 496
Work-in-process	408	388
Finished machines and parts	2,004	1,432
Total FIFO value	3,001	2,316
Less adjustment to LIFO value	1,002	950
Inventories	<u>\$1,999</u>	<u>\$1,366</u>

LIFO inventories are reported on the balance sheet at \$1,999 million. Had the company used FIFO inventory costing, inventories would have been reported at \$3,001 million. The difference of \$1,002 million is the LIFO reserve. This is the amount by which inventories and pretax income have been reduced because the company adopted LIFO. Assuming a 35% tax rate, Deere has saved more than \$350 million (\$1,002 million \times 35%) through the use of LIFO inventory costing. During 2004, the LIFO reserve increased by \$52 million (\$950 million to \$1,002 million). For 2004, then, LIFO inventory costing decreased pretax income by \$52 million and decreased taxes by \$18 million (\$52 million \times 35% tax rate). The net decrease in income is, therefore, \$34 million in that year.

Analysis Research



LIFO RESERVE AND COMPANY VALUE

What is the relation between the LIFO reserve and company value? A common assumption is that the LIFO reserve represents an unrecorded asset. Under this view, the magnitude of the LIFO reserve reflects a current value adjustment to inventory. Analysis research has investigated this issue, with interesting results.

Contrary to the “unrecorded asset theory,” evidence from practice is

consistent with a *negative* relation between the LIFO reserve and company market value. This implies the higher the LIFO reserve is, the lower the company value. Why this negative relation? An “economic effects theory” suggests that companies adopt LIFO if the present value of expected tax savings exceeds the costs of adoption (such as administrative costs). If we assume the present value of tax savings is

related to the anticipated effect of inflation on inventory costs (a reasonable assumption), a negative relation might reflect the decline in the real value of a company due to anticipated inflation. Our analysis must therefore consider the possibility that companies using LIFO and companies using FIFO are inherently different and that adjustments using the LIFO reserve reflect this difference.

Other Issues in Inventory Valuation

LIFO Liquidations. Companies are required to maintain each cost level as a separate inventory pool (e.g., the \$20,000 and \$36,000 inventory pools in our initial example). When a *reduction* in inventory quantities occurs, which can occur as a company becomes leaner or downsizes, companies dip into earlier cost layers to match against current selling prices. For FIFO inventory costing, this does not present a significant problem as ending inventories are reported at the most recently acquired costs and earlier cost layers do not differ significantly from current cost. For LIFO inventories, however, ending inventories can be reported at much older costs that may be significantly lower or higher than current costs. In periods of rising prices, this reduction in inventory quantities, known as **LIFO liquidation**, results in an increase in gross profit

that is similar to the effect of FIFO inventory costing. In periods of *declining* prices, however, the reduction of inventory quantities can lead to a *decrease* in reported gross profit as higher cost inventories are matched against current sales.

The effect of LIFO liquidation can be seen in the inventory footnote of a recent Stride Rite Corporation annual report. The company indicates that reductions in inventory quantities resulted in the sale of products carried at prior years' costs that were different from current costs. As a result of these inventory reductions, net income *increased* by \$47 million and \$141 million in the current and prior year, and *decreased* by \$120 million two years prior, as a result of reductions in inventory quantities. Analysts need to be aware of the effects on profitability of these LIFO liquidations.

Analytical Restatement of LIFO to FIFO. When financial statements are available using LIFO, and if LIFO is the method preferred in our analysis, the income statement requires no major adjustment since cost of goods sold approximates current cost. The LIFO method, however, leaves inventories on the balance sheet at less recent, often understated costs. This can impair the usefulness of various measures like the current ratio or inventory turnover ratio. We already showed that LIFO understates inventory values *when prices rise*. Consequently, LIFO understates the company's debt-paying ability (as measured, for example, by the current ratio), and overstates inventory turnover. To counter this we use an analytical technique for adjusting LIFO statements to approximate a pro forma situation assuming FIFO. This balance sheet adjustment is possible when a company discloses the amount by which current cost exceeds reported cost of LIFO inventories, the LIFO reserve. The following three adjustments are necessary:

- (1) Inventories = Reported LIFO inventory + LIFO reserve
- (2) Increase deferred tax payable by: (LIFO reserve \times Tax rate)
- (3) Retained earnings = Reported retained earnings + [LIFO reserve \times (1 - Tax rate)]

We illustrate these adjustments to restate LIFO inventories to FIFO using Campbell Soup's financial statements from Appendix A—see Illustration 4.2.

Campbell's Soup Note 14 reports "adjustments of inventories to LIFO basis" (the LIFO reserve) are \$89.6 million in Year 11 and \$84.6 million in Year 10. To restate Year 11 LIFO inventories to a FIFO basis we use the following analytical entry (an analytical entry is an adjustment aid for purposes of accounting analysis):

Inventories ^(a)	89.6	
Deferred Tax Payable ^(b)		30.5
Retained Earnings ^(c)		59.1

^(a)Inventories increase by \$89.6 to approximate current cost (note: a low turnover ratio can result in inventories of FIFO not reflecting current cost).

^(b)Since inventories increase, a provision for taxes payable in the future is made, using a tax rate of 34% (from Note 9)—computed as $\$89.6 \times 34\%$. The reason for tax deferral is this analytical entry reflects an accounting method different from that used for tax purposes.

^(c)Higher ending inventories imply lower cost of goods sold and higher cumulative net income flowing into retained earnings (net of tax)—computed as $\$89.6 \times (1 - 34\%)$.

Similarly, to adjust Year 10 LIFO inventories to FIFO, we use the following analytical entry:

Inventories	84.6	
Deferred Tax Payable		28.8
Retained Earnings		55.8

ILLUSTRATION 4.2



ILLUSTRATION 4.3



To assess the impact on Year 11 income from restatement of inventories from LIFO to FIFO for Campbell Soup, we make the following computations:

	YEAR 11		
	Under LIFO	Difference	Under FIFO
Beginning inventory	\$819.8 ^(a)	\$84.6 ^(b)	\$904.4
+ Purchases (P) ^(c)	P	—	P
– Ending inventory	(706.7) ^(d)	(89.6) ^(b)	(796.3)
= Cost of goods sold	P + \$113.1	\$ (5.0) ^(d)	P + \$108.1

^(a) As reported per balance sheet, see Note 14.

^(b) Per financial statement Note 14.

^(c) Because purchases (P) are unaffected by using either LIFO or FIFO, purchases need not be adjusted to arrive at the effect on cost of goods sold or income. If desired, we can compute purchases for Year 11 as: \$4,095.5 (cost of goods per income statement) + \$706.7 (ending inventory) – \$819.8 (beginning inventory) = \$3,982.4.

^(d) Restatement to FIFO decreases cost of goods sold by \$5.0 and, therefore, increases income by $\$5.0 \times (1 - 0.34)$, or \$3.3 using a 34% tax rate.

We also can readily compute income statement impacts from the adjustment of LIFO inventories to FIFO inventories, see Illustration 4.3.

Illustration 4.3 shows us that the income restatement (net of tax) from LIFO to FIFO for Campbell Soup for Year 11 is \$3.3. This amount is reconciled with the adjustments to retained earnings (balance sheet restatement) as implied from the analytical entries (see Illustration 4.2) for Years 10 and 11:

Year 10 Credit to Retained Earnings	–	Year 11 Credit to Retained Earnings	=	Increase in Year 11 Income
\$55.8		\$59.1		\$3.3

Generally, when prices rise, LIFO income is less than FIFO income. However, the net effect of restatement in any given year depends on the combined effects of the change in beginning and ending inventories and other factors including liquidation of LIFO layers.

Analytical Restatement of FIFO to LIFO. The adjustment from FIFO to LIFO, unfortunately, involves an important assumption and may, therefore, be prone to error. Remember that FIFO profits include a holding gain on beginning inventory. It is helpful to think of this gain as the beginning inventory (BI_{FIFO}) multiplied by an inflation rate for the particular lines of inventory that the firm carries. Let us call this rate r . Then, current FIFO profits include a holding gain equal to $BI \times r$. This means that cost of goods sold (FIFO) is understated by $BI_{FIFO} \times r$. Therefore, to compute LIFO cost of goods sold ($COGS_{LIFO}$), simply add $BI_{FIFO} \times r$ to $COGS_{FIFO}$ as follows:

$$COGS_{LIFO} = COGS_{FIFO} + (BI_{FIFO} \times r)$$

Note that this inflation factor, r , is not a general rate of inflation like the CPI or the producer’s price index. It is an inflation index relating to the specific lines of inventory carried by the firm. To the extent that the firm carries a number of product lines, in theory, these must each be estimated separately.

Analysis Research**INVENTORY METHOD CHOICE**

Why are all firms not using LIFO? Or FIFO? Or another method? Can a company's choice of inventory method help direct our analysis of a company? Analysis research on inventory provides answers to some of these questions. Specifically, information on inventory method choice for a company can give us insights into the company and its environment.

For companies choosing LIFO, the following characteristics are common:

- Greater expected tax savings.
- Larger inventory balances.
- Less tax loss carryforwards.
- Lower variability in inventory balances.
- Less likelihood of inventory obsolescence.

- Larger in size.
- Less leveraged.
- Higher current ratios.

Accordingly, knowledge of inventory method choice can reveal information about a company's characteristics or circumstances otherwise obscured by the complexity of data or operations.

How does one estimate r ? There are several possibilities. First, the analyst might use indices published by the U.S. Department of Commerce for the firm's particular industry. Second, to the extent that the firm is involved in a commodity-based business, commodity indices might be used under the assumption that other cost components of its inventory vary proportionately with that of its raw materials. Third, the analyst can examine rates of inflation for the firm's competitors. To the extent that a company carrying similar lines of products can be found that uses LIFO inventory costing, the rate of inflation can be estimated as the increase in the LIFO reserve divided by the competitor's FIFO inventories at the end of the previous year as follows:

$$r = \frac{\text{Change in LIFO reserve}}{\text{FIFO inventories from previous year-end}}$$

Inventory Costing for Manufacturing Companies and the Effect of Production Increases

The cost of inventories for manufacturing consists of three components:

1. Raw materials—the cost of the basic materials used to manufacture the product.
2. Labor—the cost of the direct labor required to transform the product to a finished state.
3. Overhead—the indirect costs incurred in the manufacturing process, such as depreciation of the manufacturing equipment, supervisory wages, and utilities.

Companies can estimate the first two components fairly accurately from design specifications and time and motion studies on the assembly line. Overhead is often the largest component of product cost and the most difficult to measure at the product level. In total, overhead must be allocated to all products produced. But which products get what portion of the total? Accountants generally subscribe to the notion that those products consuming most of the resources (e.g., requiring the most costly production machinery or the most engineering time) should be allocated most of the overhead. Inventory costing for manufacturing companies is generally covered in managerial accounting courses and is beyond the scope of this text. Analysts need to be aware,

■■■■■■■■ eBAY TO THE RESCUE

At least 71 large companies, including Bloomingdale's, Dell Computer, Home Depot, IBM, and Motorola, now sell outdated inventory, ranging from tractors to laptops, on eBay. The reason: They can recoup 45¢ on the dollar instead of the 15¢ to 20¢ they would get otherwise from liquidators.

however, that overhead cost allocation is not an exact science and is highly dependent on the assumptions used.

Analysts also need to understand the effect of production levels on profitability. Overhead is allocated to all units produced. Instead of expensing these costs as period expenses, they are included in the cost of inventories and remain on the balance sheet until the inventories are sold, at which time they are reflected as cost of goods sold in the income statement. If an increase in production levels causes ending inventories to increase, more of the overhead costs remain on the balance sheet and profitability increases. Later, if inventory quantities decrease, the income statement is burdened by not only the current overhead costs, but also previous overhead costs that have been removed from inventories in the current year, thus lowering profits. Analysts need to be aware, therefore, of the effect of changing production levels on reported profits.

Lower of Cost or Market

The generally accepted principle of inventory valuation is to value at the **lower of cost or market**. This simple phrase masks the complexities and variety of alternatives to which it is subject. It can significantly affect periodic income and inventory values. The lower-of-cost-or-market rule implies that if inventory declines in market value below its cost for any reason, including obsolescence, damage, and price changes, then inventory is written down to reflect this loss. This write-down is effectively charged against revenues in the period the loss occurs. Because write-ups from cost to market are prohibited (except for recovery of losses up to the original cost), inventory is conservatively valued.

Market is defined as current replacement cost through either purchase or reproduction. However, market value must not be higher than net realizable value nor less than net realizable value reduced by a normal profit margin. The upper limit of market value, or net realizable value, reflects completion and disposal costs associated with sale of the item. The lower limit ensures that if inventory is written down from cost to market, it is written down to a figure that includes realization of a normal gross profit on subsequent sale. **Cost** is defined as the acquisition cost of inventory. It is computed using one of the accepted inventory costing methods—for example, FIFO, LIFO, or average cost. Our analysis of inventory must consider the impact of the lower-of-cost-or-market rule. When prices are rising, this rule tends to *undervalue* inventories regardless of the cost method used. This depresses the current ratio. In practice, certain companies voluntarily disclose the current cost of inventory, usually in a note.

■■■■■■■■ ANALYSIS EXCERPT

Toro Company's initial venture into snowblowers was less than successful. Toro reasoned that snowblowers were a perfect complement to its lawnmower business, especially after higher than normal snowfall in recent years. Toro reacted and produced snowblowers as if snow was both a growth business and fell as reliably as grass grows. When, in its launch year, winter yielded a less than normal snowfall, both Toro and its dealers were bursting with excess inventory. Many dealers were so financially pressed that they were unable to finance lawnmower inventories for the summer season.

ANALYSIS EXCERPT

Regina Company recently experienced an unusually high rate of returns due to poor product quality. Early analytical clues to this problem included a near twofold increase in both finished goods inventories and receivables when sales increases were much less than expected. Yet many investors, creditors, and others were seemingly surprised when news of this problem became public.

ANALYSIS VIEWPOINT**. . . YOU ARE THE BUYING AGENT**

You are trying to reach agreement with a supplier on providing materials for manufacturing. To make its case for a higher price, the supplier furnishes an income statement revealing a historically low 20% gross margin. In your analysis of this statement, you discover a note stating that market value of inventory declined by \$2 million this period and, therefore, ending inventory is revalued downward by that amount. Is this note relevant for your price negotiations?

.....INTRODUCTION TO LONG-TERM ASSETS

To this point, we have explained the analysis of current assets. The remainder of this chapter focuses on long-term assets. Long-term assets are resources that are used to generate operating revenues (or reduce operating costs) for more than one period. The most common type of long-term asset is *tangible fixed assets* such as property, plant, and equipment. Long-term assets also include *intangible assets* such as patents, trademarks, copyrights, and goodwill. This section discusses conceptual issues pertaining to long-term assets. We then separately discuss accounting and analysis issues relating to tangible assets and natural resources, intangible assets, and unrecorded assets.

Accounting for Long-Term Assets

This section explains the concept of long-term assets and the processes of capitalization, allocation, and impairment.

Capitalization, Allocation, and Impairment

The process of long-term asset accounting involves three distinct activities: capitalization, allocation, and impairment. **Capitalization** is the process of deferring a cost that is incurred in the current period, but whose benefits are expected to extend to one or more future periods. It is capitalization that creates an asset account. **Allocation** is the process of periodically expensing a deferred cost (asset) to one or more future expected benefit periods. This allocation process is called *depreciation* for tangible assets, *amortization* for intangible assets, and *depletion* for natural resources. **Impairment** is the process of writing down the book value of the asset when its expected cash flows are no longer sufficient to recover the remaining cost reported on the balance sheet. This section discusses each of these three accounting activities.

Capitalizing versus Expensing: Financial Statement and Ratio Effects

Capitalization is an important part of accounting. It affects both financial statements and their ratios. It also contributes to the superiority of earnings over cash flow as a measure of financial performance. This section examines the effects of capitalization (and subsequent allocation) versus immediate expensing for income measurement and ratio computation.

Effects of Capitalization on Income

Capitalization has two effects on income. First, it postpones recognition of expense in the income statement. This means capitalization yields higher income in the acquisition period but lower income in subsequent periods as compared with expensing of costs. Second, capitalization yields a smoother income series. Why does immediate expensing yield a volatile income series? The answer is volatility arises because capital expenditures are often “lumpy”—occurring in spurts rather than continually—while revenues from these expenditures are earned steadily over time. In contrast, allocating asset cost over benefit periods yields an accrual income number that is a more stable and meaningful measure of company performance.

Effects of Capitalization for Return on Investment

Capitalization decreases volatility in income measures and, similarly, return on investment ratios. It affects both the numerator (income) and denominator (investment bases) of the return on investment ratios. In contrast, expensing asset costs yields a lower investment base and increases income volatility. This increased volatility in the numerator (income) is magnified by the smaller denominator (investment base), leading to more volatile and less useful return ratios. Expensing also introduces bias in income measures, as income is understated in the acquisition year and overstated in subsequent years.

Effects of Capitalization on Solvency Ratios

Under immediate expensing of asset costs, solvency ratios, such as debt to equity, reflect more poorly on a company than warranted. This occurs because the immediate expensing of costs understates equity for companies with productive assets.

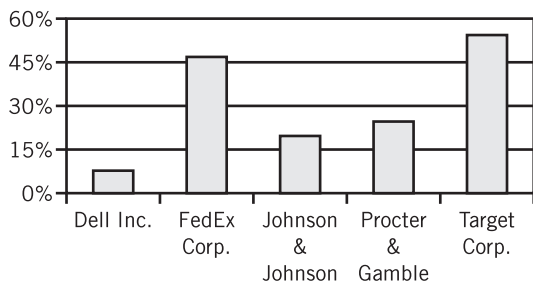
Effects of Capitalization on Operating Cash Flows

When asset costs are immediately expensed, they are reported as operating cash outflows. In contrast, when asset costs are capitalized, they are reported as investing cash outflows. This means that immediate expensing of asset costs both overstates operating cash outflows and understates investing cash outflows in the acquisition year in comparison to capitalization of costs.

.....PLANT ASSETS AND NATURAL RESOURCES

Property, plant, and equipment (or plant assets) are noncurrent tangible assets used in the manufacturing, merchandising, or service processes to generate revenues and cash flows for *more than one period*. Accordingly, these assets have expected useful lives

Property, Plant, and Equipment as a Percentage of Total Assets



extending over more than one period. These assets are intended for use in operating activities and are not acquired for sale in the ordinary course of business. Their value or service potential diminishes with use, and they are typically the largest of all operating assets. *Property* refers to the cost of real estate; *plant* refers to buildings and operating structures; and *equipment* refers to machinery used in operations. Property, plant, and equipment are also referred to as *PPE assets*, *capital assets*, and *fixed assets*.

Valuing Plant Assets and Natural Resources

This section describes the valuation of plant assets and natural resources.

Valuing Property, Plant, and Equipment

The historical cost principle is applied when valuing property, plant, and equipment. Historical cost valuation implies a company initially records an asset at its purchase cost. This cost includes any expenses necessary to bring the asset to a usable or serviceable condition and location such as freight, installation, taxes, and set-up. All costs of acquisition and preparation are capitalized in the asset's account balance. Justification for the use of historical cost primarily relates to its **objectivity**. Historical cost valuation of plant assets, if consistently applied, usually does not yield serious distortions. This section considers some special concerns that arise when valuing assets.

Valuing Natural Resources

Natural resources, also called **wasting assets**, are rights to extract or consume natural resources. Examples are purchase rights to minerals, timber, natural gas, and petroleum. Companies report natural resources at historical cost plus costs of discovery, exploration, and development. Also, there often are substantial costs subsequent to discovery of natural resources that are capitalized on the balance sheet, and are expensed only when the resource is later removed, consumed, or sold. Companies typically allocate costs of natural resources over the total units of estimated reserves available. This allocation process is called *depletion* and is discussed in Chapter 6.

Depreciation

A basic principle of income determination is that income benefiting from use of long-term assets must bear a proportionate share of their costs. Depreciation is the allocation of the costs of plant and equipment (land is not depreciated) over their useful lives. Although added back in the statement of cash flows as a noncash expense, depreciation does *not* provide funds for replacement of an asset. This is a common misconception. Funding for capital expenditures is achieved through operating cash flow and financing activities.

Rate of Depreciation

The rate of depreciation depends on two factors: useful life and allocation method.

Useful Life. The useful lives of assets vary greatly. Assumptions regarding useful lives of assets are based on economic conditions, engineering studies, experience, and information about an asset's physical and productive properties. Physical deterioration is an important factor limiting useful life, and nearly all assets are subject to it. The frequency and quality of maintenance bear on physical deterioration. Maintenance can extend useful life but cannot prolong it indefinitely. Another limiting factor is obsolescence, which impacts useful life through technological developments, consumption patterns, and economic forces. Ordinary obsolescence occurs when technological developments make an asset inefficient or uneconomical before its physical life is complete. Extraordinary obsolescence occurs when revolutionary changes occur or radical shifts in demand ensue. High-tech equipment is continually subject to rapid obsolescence. The integrity of depreciation, and that of income determination, depends on reasonably accurate estimates and timely revisions of useful lives. These estimates and revisions are ideally not influenced by management's incentives regarding timing of income recognition.

Allocation Method. Once the useful life of an asset is determined, periodic depreciation expense depends on the allocation method. Depreciation varies significantly depending on the method chosen. We consider the two most common classes of methods: straight-line and accelerated.

- **Straight-line.** The straight-line method of depreciation allocates the cost of an asset to its useful life on the basis of equal periodic charges. Exhibit 4.2 illustrates depreciation of an asset costing \$110,000, with a useful life of 10 years and a salvage value of \$10,000 (salvage value is the amount for which the asset is expected to be sold at the end of its useful life). Each of the 10 years is charged with one-tenth of the asset's cost less the salvage value—computed as $(\$110,000 - \$10,000)/10$ years.

Straight-Line Depreciation

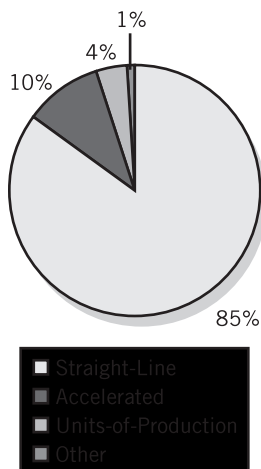
End of Year	Depreciation	Accumulated Depreciation	Asset Book Value
			\$110,000
1	\$10,000	\$ 10,000	100,000
2	10,000	20,000	90,000
⋮	⋮	⋮	⋮
9	10,000	90,000	20,000
10	10,000	100,000	10,000

Exhibit 4.2



The rationale for straight-line depreciation is the assumption that physical deterioration occurs uniformly over time. This assumption is likely more valid for fixed structures such as buildings than for machinery where utilization is a more important factor. The other determinant of depreciation, obsolescence, is not necessarily uniformly applicable over time. Yet in the absence of information on probable rates of depreciation, the straight-line method has the advantage of simplicity. This attribute, perhaps more than

Companies Employing Various Depreciation Methods



any other, accounts for its popularity. As the marginal graphic shows, straight-line depreciation is used by approximately 85% of publicly traded companies for financial reporting purposes (accelerated methods of depreciation are used for tax returns as we discuss below).

Our analysis must be aware of conceptual flaws with straight-line depreciation. Straight-line depreciation implicitly assumes that depreciation in early years is identical to that in later years when the asset is likely less efficient and requires increased maintenance. Another flaw with straight-line depreciation, and one of special interest for analysis, is the resulting distortion in rate of return. Namely, straight-line depreciation yields an increasing bias in the asset's rate of return pattern over time. To illustrate, assume the asset in Exhibit 4.2 yields a constant income of \$20,000 per year before depreciation. Straight-line depreciation yields an increasing bias in the asset's rate of return as shown here:

End of Year	Income before Depreciation	Depreciation	Net Income	Beginning Year Book Value	Return on Book Value
1	\$20,000	\$10,000	\$10,000	\$110,000	9.1%
2	20,000	10,000	10,000	100,000	10.0
3	20,000	10,000	10,000	90,000	11.1
⋮	⋮	⋮	⋮	⋮	⋮
10	20,000	10,000	10,000	10,000	100.0

While increasing maintenance costs can decrease income before depreciation, they do not negate the overall effect of an increasing return over time. Certainly, an increasing return on an aging asset is not reflective of most businesses.

- Accelerated.** Accelerated methods of depreciation allocate the cost of an asset to its useful life in a decreasing manner. Use of these methods is encouraged by their acceptance in the Internal Revenue Code. Their appeal for tax purposes is the acceleration of cost allocation and the subsequent deferral of taxable income. The faster an asset is written off for tax purposes, the greater the tax deferral to future periods and the more funds immediately available for operations. The conceptual support for accelerated methods is the view that decreasing depreciation charges over time compensate for (1) increasing repair and maintenance costs, (2) decreasing revenues and operating efficiency, and (3) higher uncertainty of revenues in later years of aged assets (due to obsolescence).

The two most common accelerated depreciation methods are declining balance and sum of the years' digits. The *declining-balance method* applies a constant rate to the declining asset balance (carrying value). In practice, an approximation to the exact rate of declining-charge depreciation is to use a multiple (often two times) of the straight-line rate. For example, an asset with a 10-year useful life is depreciated at a double-declining-balance rate of 20% computed as $[2 \times (1/10)]$. The *sum-of-the-years'-digits method* applies a decreasing fraction to asset cost less salvage value. For example, an asset depreciated over a five-year period is written off by applying a fraction whose denominator is the sum of the five years' digits ($1 + 2 + 3 + 4 + 5 = 15$) and whose numerator is the remaining life from the beginning of the period. This yields a fraction of $4/15$ for the first year, $3/15$ for the second year, progressing to $1/15$ in the fifth and final year.

Exhibit 4.3 illustrates these accelerated depreciation methods applied to an asset costing \$110,000, with a salvage value of \$10,000 and a useful life of 10 years. Because an asset is never depreciated below its salvage value, companies take care to ensure that

MACRS

U.S. tax rules use a Modified Accelerated Cost Recovery System (MACRS) for asset depreciation. MACRS assigns assets to classes where depreciable life and rate are defined.

Accelerated Depreciation**Exhibit 4.3**

End of Year	DEPRECIATION		CUMULATIVE DEPRECIATION	
	Double-Declining	Sum-of-the-Years'-Digits	Double-Declining	Sum-of-the-Years'-Digits
1	\$22,000	\$18,182	\$ 22,000	\$ 18,182
2	17,600	16,364	39,600	34,546
3	14,080	14,545	53,680	49,091
4	11,264	12,727	64,944	61,818
5	9,011	10,909	73,955	72,727
6	7,209	9,091	81,164	81,818
7	5,767	7,273	86,931	89,091
8	4,614	5,455	91,545	94,546
9	4,228*	3,636	95,773	98,182
10	4,227*	1,818	100,000	100,000

*Reverts to straight-line

declining-balance methods do not violate this. When depreciation expense using the declining-balance method falls below the straight-line rate, it is common practice to use the straight-line rate for the remaining periods.

- **Special.** Special methods of depreciation are found in certain industries like steel and heavy machinery. The most common of these methods links depreciation charges to *activity* or intensity of asset use. For example, if a machine has a useful life of 10,000 running hours, the depreciation charge varies with hours of running time rather than the period of time. It is important when using *activity methods* (also called unit-of-production methods) that the estimate of useful life be periodically reviewed to remain valid under changing conditions.

Depletion

Depletion is the allocation of the cost of natural resources on the basis of rate of extraction or production. The difference between depreciation and depletion is that depreciation usually is an allocation of the cost of a productive asset over time, while depletion is an allocation of cost based on unit exploitation of natural resources like coal, oil, minerals, or timber. Depletion depends on production—more production yields more depletion expense. To illustrate, if an ore deposit costs \$5 million and contains an estimated 10 million recoverable tons, the depletion rate per ton of ore mined is \$0.50. Production and sale of 100,000 tons yields a depletion charge of \$50,000 and a net balance in the asset account at year-end of \$4.95 million. Our analysis must be aware that, like depreciation, depletion can produce complications such as reliability, or lack thereof, of the estimate of recoverable resources. Companies must periodically review this estimate to ensure it reflects all information.

Impairment

Plant assets and natural resources are typically depreciated over their useful lives. Depreciation is based on the principle of *allocation*. That is, the cost of a long-lived asset is allocated to the various periods when it is used. The purpose of depreciation is income

determination; it is a method for matching costs of long-lived assets to revenues generated from their use. It is important to note that depreciation is not a *valuation* exercise. In other words, the carrying value of a depreciated asset (i.e., the asset's cost less accumulated depreciation) is not designed to reflect the current value of that asset.

Does accounting make any attempts to reflect the current value of the asset on the balance sheet? Current accounting does so, but on a conservative basis. That is, when the depreciated amount of an asset is estimated to be higher than its current estimated value (often, its market value), then its amount on the balance sheet is written down to reflect its current value. Such a write-down (or write-off) is termed **impairment**. Current accounting rules for impairment of long-lived assets are specified under *SEAS 121* and its successor *SEAS 144*. We shall discuss impairment in detail under nonrecurring items in Chapter 6.

At present, accounting does not allow a write-up of an asset's value to reflect its current market value. However, this is expected to change as standard setters eventually move toward a comprehensive model of fair value accounting (see Chapter 2).

Analyzing Plant Assets and Natural Resources

Valuation of plant assets and natural resources emphasizes objectivity of historical cost. Unfortunately, historical costs are not especially relevant in assessing replacement values or in determining future need for operating assets. Also, they are not comparable across different companies' reports and are not particularly useful in measuring opportunity costs of disposal or in assessing alternative uses of funds. Further, in times of changing price levels, they represent a collection of expenditures reflecting different purchasing power.

Analysis Research



WRITE-DOWN OF ASSET VALUES

Asset write-downs are increasingly conspicuous due to their escalating number and frequency in recent years. Are these write-downs good or bad signals about current and future prospects of a company? What are the implications of these asset write-downs for financial analysis? Are write-downs relevant for security valuation? Do write-downs alter users' risk exposures? Analysis research is beginning to provide us insights into these questions.

Evidence shows that companies that previously recorded write-downs are more likely to report current and future write-downs. This result adds further complexity to our analysis and interpretation of earnings. Research also examines whether companies take advantage of the discretionary nature of asset write-downs to manage earnings toward a target figure. Evidence on this question shows management tends to time asset write-downs for a period when the company's financial performance is

already low relative to competitors. While this evidence is consistent with companies loading additional charges against income in years when earnings are unfavorable (referred to as a *big bath*), it is also consistent with management taking an appropriate reduction in asset value due to decreasing earnings potential. Regardless, our analysis of a company's financial statements that include write-downs must consider their implications in light of current business conditions and company performance.

Write-up of plant assets to market is not acceptable accounting. Yet, conservatism permits a write-down if a permanent impairment in value occurs. A write-down relieves future periods of charges related to operating activities. Amerada Hess Corp. reports the following asset write-down in its annual report:

ANALYSIS EXCERPT

The Corporation recorded a special charge to earnings of \$536,692,000 (\$432,742,000 after income taxes, or \$5.12 per share). The special charge consists of a \$146,768,000 write-down in the book value of certain ocean-going tankers and a \$389,924,000 provision for marine transportation costs in excess of market rates.

While realities of business dictate numerous uncertainties, including accounting estimation errors, our analysis demands scrutiny of such special charges. Accounting rules for impairments of long-term assets require companies to periodically review events or changes in circumstances for possible impairments. Nevertheless, companies can still defer recognition of impairments beyond the time when management first learns of them. In this case, subsequent write-downs can distort reported results. Under current rules, companies use a “recoverability test” to determine whether an impairment exists. That is, a company must estimate future net cash flows expected from the asset and its eventual disposition. If these expected net cash flows (undiscounted) are less than the asset’s carrying amount, it is impaired. The impairment loss is measured as the excess of the asset’s carrying value over fair value, where fair value is the market value or present value of expected future net cash flows.

Analyzing Depreciation and Depletion

Most companies use long-term productive assets in their operating activities and, in these cases, depreciation is usually a major expense. Managers make decisions involving the depreciable base, useful life, and allocation method. These decisions can yield substantially different depreciation charges. Our analysis should include information on these factors both to effectively assess earnings and to compare analysis of companies’ earnings.

One focus of analysis is on any revisions of useful lives of assets. While such revisions can produce more reliable allocations of costs, our analysis must approach any revisions with concern, because such revisions are sometimes used to shift or smooth income across periods. The following General Motors revision had a major earnings impact:

ANALYSIS EXCERPT

The corporation revised the estimated service lives of its plants and equipment and special tools. . . . These revisions, which were based on . . . studies of actual useful lives and periods of use, recognized current estimates of service lives of the assets and had the effect of reducing . . . depreciation and amortization charges by \$1,236.6 million or \$2.55 per share.

In this case, GM’s “studies of actual useful lives” were less than precise since three years later GM took a \$2.1 billion charge to cover expenses of closing several plants and for other plants not to be closed for several years. Further analysis suggests evidence of earnings management by a newly elected chairman who explained this as “a major element in GM’s long-term strategic plan to improve the competitiveness and profitability of its North American operations.” That is, by charging \$2.1 billion of plant costs to current earnings that otherwise would be depreciated in future periods, GM reduces future expenses and increases future income.

The quality of information in annual reports regarding allocation methods varies widely and is often less complete than disclosures in SEC filings. More detailed information typically includes the method or methods of depreciation and the range of useful lives for various asset categories. However, even this information is of limited usefulness. It is difficult to infer much from allocation methods used without quantitative information on the extent of their use and the assets affected. Basic information on ranges of useful lives and allocation methods contributes little to our analysis as evidenced in the following disclosure from Dow Chemical, which is typical:

ANALYSIS EXCERPT	
Property at December 31	Estimated Useful Lives
Land	—
Land and waterway improvements	15–25 years
Buildings	5–55 years
Machinery and equipment	3–20 years
Utility and supply lines	5–20 years
Other property	3–30 years

There is usually no disclosure on the relation between depreciation rates and the size of the asset pool, nor between the rate used and the allocation method. While use of the straight-line method enables us to approximate future depreciation, accelerated methods make this approximation less reliable unless we can obtain additional information often not disclosed.

Another challenge for our analysis arises from differences in allocation methods used for financial reporting and for tax purposes. Three common possibilities are:

1. Use of straight-line for both financial reporting and tax purposes.
2. Use of straight-line for financial reporting and an accelerated method for tax. The favorable tax effect resulting from higher tax depreciation is offset in financial reports with interperiod tax allocation discussed in Chapter 6—the favorable tax effect derives from deferring tax payments, yielding cost-free use of funds.
3. Use of an accelerated method for both financial reporting and tax. This yields higher depreciation in early years, which can be extended over many years with an expanding company.

Disclosures about the impact of these differing possibilities are not always adequate. Adequate disclosures include information on depreciation charges under the alternative allocations. If a company discloses deferred taxes arising from accelerated depreciation for tax, our analysis can approximate the added depreciation due to acceleration by dividing the deferred tax amount by the current tax rate. We discuss how to use these expanded disclosures for the composition of deferred taxes in Chapter 6.

In spite of these limitations, our analysis should not ignore depreciation information, nor should it focus on income before depreciation. Note, depreciation expense derives from cash spent *in the past*—it does not require any current cash outlay. For this reason, a few analysts refer to income before depreciation as *cash flow*. This is an unfortunate oversimplification because it omits many factors constituting cash flow. It is, at best, a poor estimate because it includes only selected inflows without considering a company's commitment to outflows like plant replacement, investments, or dividends. Another

misconception from this cash flow simplification is that depreciation is but a “bookkeeping expense” and is different from expenses like labor or material and, thus, can be dismissed or accorded less importance than other expenses. Our analysis must not make this mistake. One reason for this misconception is the absence of any current cash outflow. Purchasing a machine with a five-year useful life is, in effect, a prepayment for five years of services. For example, take a machine and assume a worker operates it for eight hours a day. If we contract with this worker for services over a five-year period and pay for them in advance, we would allocate this pay over five years of work. At the end of the first year, one-fifth of the pay is expensed and the remaining four-fifths of pay is an asset for a claim on future services. The similarity between the labor contract and the machine is apparent. In Year 2 of the labor contract, there is no cash outlay, but there is no doubt about the reality of labor costs. Depreciation of machinery is no different.

Analyzing depreciation requires evaluation of its adequacy. For this purpose we use measures such as the ratio of depreciation to total assets or the ratio of depreciation to other size-related factors. In addition, there are several measures relating to plant asset age that are useful in comparing depreciation policies over time and across companies, including the following:

Average total life span = Gross plant and equipment assets/Current year depreciation expense.

Average age = Accumulated depreciation/Current year depreciation expense.

Average remaining life = Net plant and equipment assets/Current year depreciation expense.

These measures provide reasonable estimates for companies using straight-line depreciation but are less useful for companies using accelerated methods. Another measure often useful in our analysis is:

$$\textit{Average total life span} = \textit{Average age} + \textit{Average remaining life}$$

Each of these measures can help us assess a company’s depreciation policies and decisions over time. Average age of plant and equipment is useful in evaluating several factors including profit margins and future financing requirements. For example, capital-intensive companies with aged facilities often have profit margins not reflecting the higher costs of replacing aging assets. Similarly, the capital structures of these companies often do not reflect the financing necessary for asset replacement. Finally, when these analytical measures are used as bases of comparison across companies, care must be exercised because depreciation expense varies with the allocation method and assumptions of useful life and salvage value.

Analyzing Impairments

Three analysis issues arising with impairment are: (1) evaluating the appropriateness of the amount of the impairment, (2) evaluating the appropriateness of the timing of the impairment, and (3) analyzing the effect of the impairment on income.

Evaluating the appropriateness of the amount of impairment is the most difficult analysis task. Here are some issues that an analyst can consider. First, identify the asset class is being written down or written off. Next, measure the percentage of the asset that is being written off. Then evaluate whether the write-off amount is appropriate for the asset class. For this, footnote information detailing reasons for taking the impairment write-off can help. Also, if the write-off is occurring because of an industrywide downturn or market crash, it is useful to compare the percentages of the write-off with those taken by other companies in the industry.

Evaluating the timing of the impairment write-off is also important. It is important to note whether the company is taking timely write-offs or delaying taking write-offs.

Once again comparison with other companies in the industry can help. Also, one needs to note whether a company is bunching large write-offs in a single period as part of a “big bath” earnings management strategy.

Finally, dealing with the effects of write-offs on income is an important issue that an analyst needs to examine. We discuss this issue in detail in Chapter 6.

.....INTANGIBLE ASSETS

Intangible assets are rights, privileges, and benefits of ownership or control. Two common characteristics of intangibles are high uncertainty of future benefits and lack of physical existence. Examples of important types of intangibles are shown in Exhibit 4.4. Intangible assets often (1) are inseparable from a company or its segment, (2) have indefinite benefit periods, and (3) experience large valuation changes based on competitive circumstances. Historical cost is the valuation rule for *purchased* intangibles. Still, there is an important difference between accounting for tangible and intangible assets. That is, if a company uses materials and labor in constructing a tangible asset, it capitalizes these costs and depreciates them over the benefit period. In contrast, if a company spends monies advertising a product or training a sales force—creating *internally generated* intangibles—it cannot usually capitalize these costs even when benefits for future periods are likely. Only purchased intangibles are recorded on the balance sheet. This accounting treatment is due to conservatism—presumably from increased uncertainty of realizing the benefits of intangibles such as advertising and training vis-à-vis the benefits of tangible assets such as buildings and equipment.

Exhibit 4.4

Selected Categories of Intangible Assets

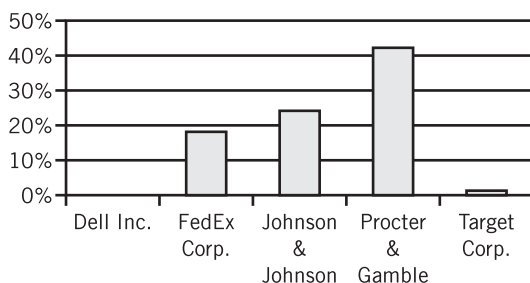
- Goodwill
- Patents, copyrights, tradenames, and trademarks
- Leases, leaseholds, and leasehold improvements
- Exploration rights and natural resource development costs
- Special formulas, processes, technologies, and designs
- Licenses, franchises, memberships, and customer lists

Accounting for Intangibles

Identifiable Intangibles

Identifiable intangibles are intangible assets that are separately identified and linked with specific rights or privileges having limited benefit periods. Candidates are patents, trademarks, copyrights, and franchises. Companies record them at cost and amortize them over their benefit periods. The writing off to expense of the entire cost of identifiable intangibles at acquisition is prohibited.

Intangibles as a Percentage of Total Assets



Unidentifiable Intangibles

Unidentifiable intangibles are assets that are either developed internally or purchased but are not identifiable and often possess indefinite benefit periods. An example is goodwill. When one company acquires another company

or segment, it needs to allocate the amount paid to all identifiable assets (including identifiable intangible assets) and liabilities according to their fair market values. Any excess remaining after this allocation is allocated to an unidentifiable intangible asset called goodwill. Goodwill can be a sizable asset, but it is recorded only upon purchase of another entity or segment (internally developed goodwill is not recorded on the balance sheet). Its makeup varies considerably—it can refer to an ability to attract and retain customers or to qualities inherent in business activities such as organization, efficiency, and effectiveness. Goodwill implies earning power. Stated differently, goodwill translates into future excess earnings, where this excess is the amount above normal earnings. Excess earnings are similar to *residual income* (*abnormal earnings*) described in Chapter 1.

Amortization of Intangibles

When costs are capitalized for identifiable tangible and intangible assets, they must be subsequently amortized over the benefit periods for these assets. The length of a benefit period depends on the type of intangible, demand conditions, competitive circumstances, and any other legal, contractual, regulatory, or economic limitations. For example, patents are exclusive rights conveyed by governments to inventors for a specific period. Similarly, copyrights and trademarks convey exclusive rights for specific periods. Leaseholds and leasehold improvements are benefits of occupancy that are contractually set by the lease. Also, if an intangible materially declines in value (applying the recoverability test), it is written down. As discussed in Chapter 5, under current accounting standards goodwill is not amortized but is tested annually for impairment.

Analyzing Intangibles

Analysts often treat intangibles with suspicion when analyzing financial statements. Many analysts associate intangibles with riskiness. We encourage caution and understanding when evaluating intangibles. Intangibles often are one of the more valuable assets a company owns, and they can be seriously misvalued.

Analysis of goodwill reveals some interesting cases. Since goodwill is recorded only when acquired, most goodwill likely exists off the balance sheet. Yet, we know that goodwill is eventually reflected in superearnings. If superearnings are not evident, then goodwill, whether purchased or not, is of little or no value. To illustrate this point, consider the write-off of goodwill reported by Viacom.

ANALYSIS EXCERPT

As a result of the impairment test, the Company recorded an impairment charge of \$18.0 billion in the fourth quarter recorded in the Company's Consolidated Statement of Operations for the year ended December 31, 2004. The \$18.0 billion reflects charges to reduce the carrying value of goodwill at the Radio segment of \$10.9 billion and the Outdoor segment of \$7.1 billion as well as a reduction of the carrying value of intangibles of \$27.8 million related to the FCC licenses at the Radio segment.

Our analysis of intangibles other than goodwill also must be alert to management's latitude in amortization. Since less amortization increases reported earnings, management might amortize intangibles over periods exceeding their benefit periods. We are probably confident in assuming any bias is in the direction of a lower rate of amortization. We can adjust these rates if armed with reliable information on intangibles' benefit periods.

In analyzing intangibles, we must be prepared to form our own estimates regarding their valuation. We must also remember that goodwill does not require amortization and that auditors have a difficult time with intangibles, especially goodwill. They particularly find it difficult to assess the continuing value of unamortized intangibles.

Our analysis must be alert to the composition, valuation, and disposition of goodwill. Goodwill is written off when the superior earning power justifying its existence disappears. Disposition, or write-off, of goodwill is frequently timed by management for a period when it has the least impact on the market.

ANALYSIS VIEWPOINT

... YOU ARE THE ENVIRONMENTALIST

You are testifying at congressional hearings demanding substantially tougher pollution standards for paper mills. The industry's spokesperson insists tougher standards cannot be afforded and continually points to an asset to liability ratio of slightly above 1.0 as indicative of financial vulnerability. You counter by arguing the existence of undervalued and unrecorded intangible assets for this industry. The spokesperson insists any intangibles are worthless apart from the company, that financial statements are fairly presented and certified by an independent auditor, and that intangible assets are irrelevant to these hearings. How do you counter the spokesperson's arguments?

Unrecorded Intangibles and Contingencies

Our discussion of assets is not complete without tackling intangible and contingent assets not recorded in a balance sheet. One important asset in this category is internally generated goodwill. In practice, expenditures toward creating goodwill are expensed when incurred. To the extent goodwill is created and is salable or generates superior earning power, a company's current income is understated due to expenses related to goodwill development. Similarly, its assets would fail to reflect this future earning power. Our analysis must recognize these cases and adjust assets and income accordingly.

Another important category of unrecorded assets relates to service or idea elements. Examples are television programs carried at amortized cost (or nothing) but continuing to yield millions of dollars in licensing fees (such as *Seinfeld*, *Star Trek*) and current drugs taking years to develop but whose costs were written off many years earlier. Other examples are developed brands (trade names) like Coca-Cola, McDonald's, Nike, and Kleenex. Exhibit 4.5 shows value estimates for some major brands.

Exhibit 4.5

Valuation of Brands (Source: Interbrand Website)



Rank 2004	Brand Value (\$ millions)
1 Coca-Cola	\$67,394
2 Microsoft	61,372
3 IBM	53,791
4 GE	44,111
5 Intel	33,499
6 Disney	27,113
7 McDonald's	25,001
8 Nokia	24,041
9 Toyota	22,673
10 Marlboro	22,128

GUIDANCE ANSWERS TO ANALYSIS VIEWPOINTS

AUDITOR

Yes, as an auditor you are concerned about changes in estimates, especially when those changes exactly coincide with earlier predictions from management. An auditor must be certain the estimate of uncollectible accounts is reasonable in light of current industry, economic, and customer conditions.

BUYING AGENT

Yes, a buying agent should not necessarily compensate suppliers for potentially poor purchasing decisions. The supplier's 20% reported gross margin "buries" the \$2 million market adjustment in its cost of goods sold. The buyer should remove the market adjustment from cost of goods sold and place it among operating expenses in the income statement. Accordingly, the supplier's gross margin would be \$2 million greater and, hence, the buyer has a legitimately stronger negotiating position for a lower price.

ENVIRONMENTALIST

This is a challenging case. On one hand, the spokesperson's claim that intangibles are irrelevant is in error—intangible assets confer substantial economic benefits to companies

and often make up a major part of assets. Moreover, the spokesperson's reliance on auditors to certify the fairness of financial statements according to accepted accounting principles is misguided. Because accounting principles do not permit capitalization of internally generated intangibles, and do not require adjustment of intangibles to market values, and do not value many intangibles (human resources, customer/buyer relationships), an auditor's certification is insufficient evidence on the worth of intangibles. On the other hand, the spokesperson is correct in questioning the value of intangibles apart from the company. Absent the sale of a company or a segment, the cash inflow from intangibles is indirect—from above-normal earnings levels. Also, most lending institutions do not accept intangibles as collateral in making credit decisions. In sum, resolution of these hearings must recognize the existence of intangibles, the sometimes high degree of uncertainty regarding value and duration of intangibles, the limited worth of intangibles absent liquidation of all or part of a company, and finally the need for a "political" decision reflecting the needs of society.

QUESTIONS

- 4-1. Companies typically report compensating balances that are required under a loan agreement as unrestricted cash classified within current assets.
 - a. For purposes of financial statement analysis, is this a useful classification? Explain.
 - b. Describe how you would evaluate compensating balances.
- 4-2.
 - a. Explain the concept of a company's operating cycle and its meaning.
 - b. Discuss the significance of the operating cycle to classification of current versus noncurrent items in a balance sheet. Cite examples.
 - c. Is the operating cycle concept useful in measuring the current debt-paying ability of a company and the liquidity of its working capital components?
 - d. Describe the impact of the operating cycle concept for classification of current assets in the following industries: (1) tobacco, (2) liquor, and (3) retailing.
- 4-3.
 - a. Identify the main concerns in analysis of accounts receivable.
 - b. Describe information, other than that usually available in financial statements, that we should collect to assess the risk of noncollectibility of receivables.
- 4-4.
 - a. What is meant by the factoring or securitization of receivables?
 - b. What does selling receivables with recourse mean? What does it mean to sell them without recourse?
 - c. How does selling receivables (particularly with recourse) potentially distort the balance sheet?
- 4-5.
 - a. Discuss the consequences for each of the acceptable inventory methods in recording costs of inventories and in determination of income.
 - b. Comment on the variation in practice regarding the inclusion of costs in inventories. Give examples of at least two sources of such cost variations.
- 4-6.
 - a. Describe the importance of the level of activity on the unit cost of goods produced by a manufacturer.
 - b. Allocation of overhead costs requires certain assumptions. Explain and illustrate cost allocations and their links to activity levels with an example.

- 4-7. Explain the major objective(s) of LIFO inventory accounting. Discuss the consequences of using LIFO in both measurement of income and the valuation of inventories for the analysis of financial statements.
- 4-8. Discuss current disclosures for inventory valuation methods and describe how these disclosures are useful in our analysis. Identify additional types of inventory disclosures that would be useful for analysis purposes.
- 4-9. Companies typically apply the lower-of-cost-or-market (LCM) method for inventory valuation.
- Define *cost* as it applies to inventory valuation.
 - Define *market* as it applies to inventory valuation.
 - Discuss the rationale behind the LCM rule.
 - Identify arguments against the use of LCM.
- 4-10. Compare and contrast the effects of LIFO and FIFO inventory costing methods on earnings in an inflationary period.
- 4-11. Manufacturers report inventory in the form of raw materials, work-in-process, and finished goods. For each category, discuss how an increase might be viewed as a positive or a negative indicator of future performance depending on the circumstances that led to the inventory build up.
- 4-12. Comment on the following: Depreciation accounting is imperfect for analysis purposes.
- 4-13. Analysts cannot unequivocally accept the depreciation amount. One must try to estimate the age and efficiency of plant assets. It is also useful to compare depreciation, current and accumulated, with gross plant assets, and to make comparisons with similar companies. While an analyst cannot adjust earnings for depreciation with precision, an analyst doesn't require precision. Comment on these statements.
- 4-14. Identify analytical tools useful in evaluating depreciation expense. Explain why they are useful.
- 4-15. Analysts must be alert to what aspects of goodwill in their analysis of financial statements?
- 4-16. Explain when an expenditure should be capitalized versus when it should be expensed.
- 4-17. Distinguish between a "hard asset" and a "soft asset." Cite several examples.
- 4-18. The net income of companies that explore for natural resources can sometimes bear little relation to the asset amounts reported on the balance sheet for natural resources.
- Explain how the lack of a relation between income and natural resource assets can occur.
 - Describe circumstances when a more economically sensible relation is likely to exist.
- 4-19. From the view of a user of financial statements, describe objections to using historical cost as the basis for valuing tangible assets.
- 4-20.
- Identify the basic accounting procedures governing valuation of intangible assets.
 - Distinguish between accounting for internally developed and purchased goodwill (and intangibles).
 - Discuss the importance of distinguishing between identifiable intangibles and unidentifiable intangibles.
 - Explain the principles underlying amortization of intangible assets.
- 4-21. Describe analysis implications for goodwill in light of current accounting procedures.
- 4-22. Identify five types of deferred charges and describe the rationale of deferral for each.
- 4-23.
- Describe at least two assets not recorded on the balance sheet.
 - Explain how an analyst evaluates unrecorded assets.

EXERCISES

EXERCISE 4-1

*Analyzing Allowances
for Uncollectible
Receivables*

On December 31, Year 1, Carme Company reports its accounts receivable from credit sales to customers. Carme Company uses the allowance method, based on credit sales, to estimate bad debts. Based on past experience, Carme fails to collect about 1% of its credit sales. Carme expects this pattern to continue.

Required:

- Discuss the rationale for using an allowance method based on credit sales to estimate bad debts. Contrast this method with an allowance method based on the accounts receivable balance.
- How should Carme report its allowance for bad debts account on its balance sheet at December 31, Year 1? Describe the alternatives, if any, for presentation of bad debt expense in Carme's Year 1 income statement.
- Explain the analysis objectives when evaluating the reasonableness of Carme's allowance for bad debts.

K2 Sports, a wholesaler that has been in business for two years, purchases its inventories from various suppliers. During these two years, each purchase has been at a lower price than the previous purchase. K2 uses the lower-of-(FIFO)-cost-or-market method to value its inventories. The original cost of the inventories exceeds its replacement cost, but it is below the net realizable value (also, the net realizable value less a normal profit margin is lower than replacement cost for the inventories).

Required:

- What criteria should be used in determining costs to include in inventory?
- Why is the lower-of-cost-or-market rule used in valuing inventory?
- At what amount should K2 report its inventories on the balance sheet? Explain the application of the lower-of-cost-or-market rule in this situation.
- What would be the effect on ending inventories and net income for the second year had K2 used the lower-of-(average) cost-or-market inventory method instead of the lower-of-(FIFO)-cost-or-market inventory method? Explain.

(AICPA Adapted)

EXERCISE 4-2

Assessing Inventory Cost and Market Values

Cost for inventory purposes should be determined by the inventory cost flow method best reflecting periodic income.

Required:

- Describe the inventory cost flow assumptions of (1) average-cost, (2) FIFO, and (3) LIFO.
- Discuss management's usual reasons for using LIFO in an inflationary economy.
- When there is evidence the value of inventory, through its disposal in the ordinary course of business, is less than cost, what is the accounting treatment? What concept justifies this treatment?

(AICPA Adapted)

EXERCISE 4-3

Explaining Inventory Measurement Methods

Inventory and cost of goods sold figures prepared under the LIFO cost flow assumption versus the FIFO cost flow assumption can differ dramatically.

Required:

- Would an analyst consider ending inventory asset value more useful if computed using LIFO or FIFO? Explain.
- Would an analyst consider cost of goods sold more useful if computed using LIFO or FIFO? Explain.
- Assume a company uses the LIFO cost flow assumption. Identify any FIFO-computed values that are useful for analysis purposes, and explain how they are determined using financial statement information.

EXERCISE 4-4

Usefulness of LIFO and FIFO Inventory Disclosures

Refer to the financial statements of **Campbell Soup Company** in Appendix A.

Campbell Soup Company

Required:

- Compute Year 10 cost of goods sold and gross profit under the FIFO method. (*Note:* At the end of Year 9, LIFO inventory is \$816.0 million, and the excess of FIFO inventory over LIFO inventory is \$88 million.)
- Explain the potential usefulness of the LIFO to FIFO restatement in *a*.
- Compute ending inventory under the FIFO method for both Years 10 and 11.
- Explain why the FIFO inventory computation in *c* might be useful for analysis.

EXERCISE 4-5

Restating Inventory from LIFO to FIFO

CHECK

(c) Year 11 FIFO Inventory, \$796.3 mil.

EXERCISE 4-6*LIFO and FIFO
Financial Effects*

During a period of rising inventory costs and stable output prices, describe how net income and total assets would differ depending upon whether LIFO or FIFO is applied. Explain how your answer would change if the company is experiencing declining inventory costs and stable output prices.

(CFA Adapted)

EXERCISE 4-7*Identifying Unrecorded
Assets*

A balance sheet, which is intended to present fairly the financial position of a company, frequently is criticized for not reflecting all assets under the control of a company.

Required:

Cite five examples of assets that are not presently included on the balance sheet. Discuss the implications of unrecorded assets for financial statement analysis.

(CFA Adapted)

EXERCISE 4-8*Expensing versus
Capitalizing Costs*

An analyst must be familiar with the determination of income. Income reported for a business entity depends on proper recognition of revenues and expenses. In certain cases, costs are recognized as expenses at the time of product sale; in other situations, guidelines are applied in capitalizing costs and recognizing them as expenses in future periods.

Required:

- a. Under what circumstances is it appropriate to capitalize a cost as an asset instead of expensing it? Explain.
- b. Certain expenses are assigned to specific accounting periods on the basis of systematic and rational allocation of asset cost. Explain the rationale for recognizing expenses on such a basis.

(AICPA Adapted)

EXERCISE 4-9*Analytical Measures of
Plant Assets*

Refer to the financial statements of **Colgate** in Appendix A.

Colgate*Required:*

- a. Compute the following analytical measures applied to Colgate for 2006.
 - (1) Average total life span of plant and equipment.
 - (2) Average age of plant and equipment.
 - (3) Average remaining life of plant and equipment.
- b. Discuss the importance of these ratios for analysis of Colgate.

EXERCISE 4-10*Analytical Measures of
Plant Assets*

Refer to the financial statements of **Campbell Soup Company** in Appendix A.

Campbell Soup Company*Required:*

- a. Compute the following analytical measures applied to Campbell Soup for both Years 10 and 11:
 - (1) Average total life span of plant and equipment.
 - (2) Average age of plant and equipment.
 - (3) Average remaining life of plant and equipment.
- b. Discuss the importance of these ratios for analysis of Campbell Soup.

CHECK

(a) (3) Year 11, 7.23 years

EXERCISE 4-11*Identifying Assets*

Which of the following items are classified as assets on a typical balance sheet?

- a. Depreciation.
- b. CEO salary.
- c. Cash.
- d. Deferred income taxes.

- | | |
|---|--|
| e. Installment receivable (collectible in 3 years). | m. Loan to officers. |
| f. Capital withdrawal (dividend). | n. Loan from officers. |
| g. Inventories. | o. Fully trained sales force. |
| h. Prepaid expenses. | p. Common stock of a subsidiary. |
| i. Deferred charges. | q. Trade name purchased. |
| j. Work-in-process inventory. | r. Internally developed goodwill. |
| k. Depreciation expense. | s. Franchise agreements obtained at no cost. |
| l. Bad debts expense. | t. Internally developed e-commerce system. |

Refer to the financial statements of **Campbell Soup Company** in Appendix A.

Campbell Soup

EXERCISE 4-12

Restating and Analyzing Inventory from LIFO to FIFO

Required:

Campbell Soup mainly uses the LIFO cost assumption in determining its cost of goods sold and inventory amounts. Compute both ending inventory and gross profit of Campbell Soup for Year 11 assuming the company uses FIFO inventory accounting.

PROBLEMS

Assume you are analyzing the financial statements of ABEX Chemicals. Your analysis raises concerns with certain accounting procedures that potentially distort its operating results.

Required:

- Data for ABEX Corp. is reported in Case 10-5. Using the data in Exhibit I of that case, describe how ABEX's use of the FIFO method in accounting for its petrochemical inventories affects its division's operating margin for each of the following periods:
 - Years 5 through 7.
 - Years 7 through 9.
- ABEX is considering adopting the LIFO method of accounting for its petrochemical inventories in either Year 10 or Year 11. Recommend an adoption date for LIFO and justify your choice.

PROBLEM 4-1

Interpreting and Restating Inventory from FIFO to LIFO

CHECK

(a) (2) FIFO increases margins

(CFA Adapted)

BigBook.Com uses LIFO inventory accounting. Notes to BigBook.Com's Year 9 financial statements disclose the following (it has a marginal tax rate of 35%):

Inventories	Year 8	Year 9
Raw materials	\$392,675	\$369,725
Finished products	401,342	377,104
	<u>794,017</u>	<u>746,829</u>
Less LIFO reserve	(46,000)	(50,000)
	<u>\$748,017</u>	<u>\$696,829</u>

Required:

- Determine the amount by which Year 9 retained earnings of BigBook.Com changes if FIFO is used.
- Determine the amount by which Year 9 net income of BigBook.Com changes if FIFO is used for both Years 8 and 9.
- Discuss the usefulness of LIFO to FIFO restatements in an analysis of BigBook.Com.

PROBLEM 4-2

Restating Inventory from LIFO to FIFO

CHECK

(b) \$2,600

(AICPA Adapted)

PROBLEM 4-3

Analysis of Inventory and Related Adjustments

Excerpts from the annual report of **Lands' End** follow (\$ in thousands):

Lands' End

	Year 9	Year 8
Inventory.....	\$219,686	\$241,154
Cost of sales.....	754,661	675,138
Net income	31,185	64,150
Tax rate.....	37%	37%

Note 1: If the first-in, first-out (FIFO) method of accounting for inventory had been used, inventory would have been approximately \$26.9 million and \$25.1 million higher than reported at Year 9 and Year 8, respectively.

Required:

- What would ending inventory have been at Year 9 and Year 8 had FIFO been used?
- What would net income for the year ended Year 9 have been had FIFO been used?
- Discuss the usefulness of LIFO to FIFO restatements for analysis purposes.

CHECK

(b) \$32,319

PROBLEM 4-4

T-Account Analysis of Plant Assets

Refer to the financial statements of **Campbell Soup** in Appendix A.

Campbell Soup

Required:

- By means of T-account analysis, explain the changes in Campbell's Property, Plant, and Equipment account for Year 11. Provide as much detail as the disclosures enable you to provide. (*Hint:* Utilize information disclosed on the Form 10-K schedule attached at the end of its annual report in Appendix A.)
- Explain the usefulness of this type of analysis.

PROBLEM 4-5

Capitalizing versus Expensing of Costs

Trimax Solutions develops software to support e-commerce. Trimax incurs substantial computer software development costs as well as substantial research and development (R&D) costs related to other aspects of its product line. Under GAAP, if certain conditions are met, Trimax capitalizes software development costs but expenses the other R&D costs. The following information is taken from Trimax's annual reports (\$ in thousands):

	1999	2000	2001	2002	2003	2004	2005	2006
R&D costs.....	\$ 400	\$ 491	\$ 216	\$ 212	\$ 355	\$ 419	\$ 401	\$ 455
Net income.....	312	367	388	206	55	81	167	179
Total assets (at year-end).....	3,368	3,455	3,901	4,012	4,045	4,077	4,335	4,650
Equity (at year-end).....	2,212	2,460	2,612	2,809	2,889	2,915	3,146	3,312
Capitalized software costs								
Unamortized balance (at year-end).....	20	31	27	22	31	42	43	36
Amortization expense	4	7	9	12	13	15	15	14

Required:

- Compute the total expenditures for software development costs for each year.
- R&D costs are expensed as incurred. Compare and contrast computer software development costs with the R&D costs and discuss the rationale for expensing R&D costs but capitalizing some software development costs.
- Based on the information provided, when do successful research efforts appear to produce income for Trimax?
- Discuss how income and equity are affected if Trimax invests more in software development versus R&D projects (focus your response on the accounting, and not economic, implications).
- Compute net income, return on assets, and return on equity for year 2006 while separately assuming (1) Software development costs are expensed as incurred and (2) R&D costs are capitalized and amortized using straight line over the following four years.
- Discuss how the two accounting alternatives in e would affect cash flow from operations for Trimax.

CHECK

(a) Year 2006, \$7

CHECK

(e) (2) ROE, 6.6%

Sports Biz, a profitable company, built and equipped a \$2,000,000 plant brought into operation early in Year 1. Earnings of the company (before depreciation on the new plant and before income taxes) is projected at: \$1,500,000 in Year 1; \$2,000,000 in Year 2; \$2,500,000 in Year 3; \$3,000,000 in Year 4; and \$3,500,000 in Year 5. The company can use straight-line, double-declining-balance, or sum-of-the-years'-digits depreciation for the new plant. Assume the plant's useful life is 10 years (with no salvage value) and an income tax rate of 50%.

Required:

Compute the separate effect that *each* of these three methods of depreciation would have on:

- Depreciation
- Income taxes
- Net income
- Cash flow (assumed equal to net income before depreciation)

(CFA Adapted)

PROBLEM 4-6

Alternative Depreciation Methods

CHECK

Year 1 net income (\$000s),
SL: \$650, DDB: \$550,
SYD: \$568.2

Assume that a machine costing \$300,000 and having a useful life of five years (with no salvage value) generates a yearly income before depreciation and taxes of \$100,000.

Required:

Compute the annual rate of return on this machine (using the beginning-of-year book value as the base) for each of the following depreciation methods (assume a 25% tax rate):

- Straight-line
- Sum-of-the-years' digits

PROBLEM 4-7

Analyzing Depreciation for Rates of Return

CHECK

Year 2 return, SL: 12.5%,
SYD: 7.5%

Among the crucial events in accounting for property, plant, and equipment are acquisition and disposition.

Required:

- What expenditures should be capitalized when a company acquires equipment for cash?
- Assume the market value of equipment acquired is not determinable by reference to a similar purchase for cash. Describe how the acquiring company should determine the capitalizable cost of equipment for each of the following separate cases when it is acquired in exchange for:
 - Bonds having an established market price.
 - Common stock not having an established market price.
 - Dissimilar equipment having a determinable market value.
- Describe the factors that determine whether expenditures toward property, plant, and equipment already in use should be capitalized.
- Describe how to account for the gain or loss on sale of property, plant, and equipment for cash.
- Discuss the important considerations in analyzing property, plant, and equipment.

PROBLEM 4-8

Property, Plant, and Equipment Accounting and Analysis

Mirage Resorts, Inc., recently completed construction of Bellagio Hotel and Casino in Las Vegas. Total cost of this project was approximately \$1.6 billion. The strategy of the investors is to build a gambling environment for "high rollers." As a result, they paid a premium for property in the "high rent" district of the Las Vegas Strip and built a facility inspired by the drama and elegance of fine art. The investors are confident that if the facility attracts high volume and high stakes gaming, the net revenues will justify the \$1.6 billion investment several times over. If the facility fails to attract high rollers, this investment will be a financial catastrophe. Mirage Resorts depreciates its fixed assets using the straight-line method over the estimated useful lives of the assets. Assume construction of Bellagio is completed and the facility is opened for business on January 1, Year 1. Also assume annual net income before depreciation and taxes from Bellagio is \$50 million, \$70 million, and \$75 million for Year 1, Year 2, and Year 3, and that the tax rate is 25%.

PROBLEM 4-9

Capitalization, Depreciation, and Return on Investment

CHECK

(a) ROA, Year 1: -0.68%,
Year 2: 0.31%, Year 3:
0.59%

Required:

Compute the return on assets for the Bellagio segment for Year 1, Year 2, and Year 3, assuming management estimates the useful life of Bellagio to be:

- a. 25 years. b. 15 years. c. 10 years. d. 1 year.

PROBLEM 4-10

*Analyzing Self-
Constructed Assets*

Jay Manufacturing, Inc., began operations five years ago producing probos, a new medical instrument it hoped to sell to doctors and hospitals. The demand for probos far exceeded initial expectations, and the company was unable to produce enough probos to meet demand. The company was manufacturing this product using self-constructed equipment at the start of operations. To meet demand, it needed more efficient equipment. The company decided to design and self-construct this new, more efficient equipment. A section of the plant was devoted to development of the new equipment and a special staff was hired. Within six months, a machine was developed at a cost of \$170,000 that successfully increased production and reduced labor costs substantially. Sparked by the success of this new machine, the company built three more machines of the same type at a cost of \$80,000 each.

Required:

- a. In addition to satisfying a need that outsiders could not meet within the desired time, why might a company self-construct fixed assets for its own use?
- b. Generally, what costs should a company capitalize for a self-constructed fixed asset?
- c. Discuss the propriety of including in the capitalized cost of self-constructed assets:
 - (1) The increase in overhead caused by the self-construction of fixed assets.
 - (2) A proportionate share of overhead on the same basis as that applied to goods manufactured for sale.
- d. Discuss the accounting treatment for the \$90,000 amount (\$170,000 - \$80,000) by which the cost of the first machine exceeded the cost of subsequent machines.

(AICPA Adapted)

PROBLEM 4-11

*Analyzing Intangible
Assets (Patents)*

On June 30, Year 1, your client, the Vandiver Corp., is granted two patents covering plastic cartons that it has been producing and marketing profitably for the past three years. One patent covers the manufacturing process, and the other covers related products. Vandiver executives tell you that these patents represent the most significant breakthrough in the industry in three decades. The products have been marketed under the registered trademarks Safetainer, Duratainer, and Sealrite. Your client has already granted licenses under the patents to other manufacturers in the U.S. and abroad and is receiving substantial royalties. On July 1, Year 1, Vandiver commenced patent infringement actions against several companies whose names you recognize as those of substantial and prominent competitors. Vandiver's management is optimistic that these suits will result in a permanent injunction against the manufacture and sale of the infringing products and collection of damages for loss of profits caused by the alleged infringement. The financial vice president has suggested that the patents be recorded at the discounted value of expected net royalty receipts.

Required:

- a. Explain what an intangible asset is.
- b. (1) Explain what is meant by "discounted value of expected net royalty receipts."
(2) How would such a value be calculated for net royalty receipts?
- c. What basis of valuation for Vandiver's patents is generally accepted in accounting? Give supporting reasons for this basis.
- d. (1) Assuming no problems of implementation and ignoring generally accepted accounting principles, what is the preferable basis of evaluation for patents? Explain.
(2) Explain what would be the preferable conceptual basis of amortization.
- e. What recognition or disclosure, if any, is Vandiver likely to make for the infringement litigation in its financial statements for the year ending September 30, Year 1? Explain.

(AICPA Adapted)

CASES

Financial statements of **Columbia Pictures** include the following note:

Columbia Pictures**CASE 4-1**

Inventory Valuation in the Film Industry

Inventories. The costs of feature films and television programs, including production advances to independent producers, interest on production loans, and distribution advances to film licensors, are amortized on bases designed to write off costs in proportion to the expected flow of income.

The cost of general release feature productions is divided between theatrical and television, based on the proportion of net revenues expected to be derived from each source. The portion of the cost of feature productions allocated to theatrical is amortized generally by the application of tables which write off approximately 62% in 26 weeks, 85% in 52 weeks, and 100% in 104 weeks after release. Costs of two theatrical productions first released on a reserved-seat basis are amortized in the proportion that rentals earned bear to the estimated final theatrical and television rentals. Because of the depressed market for the licensing of feature films to television and poor acceptance by the public of a number of theatrical films released late in the year, the company made a special provision for additional amortization of recent releases and those not yet licensed for television to reduce such films to their currently estimated net realizable values.

Required:

- Identify the main determinants for valuation of feature films, television programs, and general release feature productions by Columbia Pictures.
- Are the bases of valuation reasonable? Explain.
- Indicate additional information on inventory valuation that an unsecured lender to Columbia Pictures would wish to obtain and any analyses the lender would wish to conduct.

Falcon.Com purchases its merchandise at current market costs and resells the product at a price 20 cents higher. Its inventory costs are constant throughout the current year. Data on the number of units in inventory at the beginning of the year, unit purchases, and unit sales are shown here:

Number of units in inventory—beginning of year (@ \$1 per unit cost)	1,000 units
Number of units purchased during year @ \$1.50 per unit cost	1,000 units
Number of units sold during year @ \$1.70 per unit selling price	1,000 units

The beginning-of-year balance sheet for Falcon.Com reports the following:

Inventory (1,000 units @ \$1).....	\$1,000
Total equity	\$1,000

Required:

- Compute the after-tax profit of Falcon.Com separately for both the (1) FIFO and (2) LIFO methods of inventory valuation assuming the company has no expenses other than cost of goods sold and its income tax rate is 50%. Taxes are accrued currently and paid the following year.
- If all sales and purchases are for cash, construct the balance sheet at the end of this year separately for both the (1) FIFO and (2) LIFO methods of inventory valuation.
- Describe the significance of each of these methods of inventory valuation for income determination and financial position in a period of increasing costs.
- What problem does the LIFO method pose in constructing and analyzing interim financial statements?

CASE 4-2

Financial Statement Consequences of LIFO and FIFO

CHECK

(b) Total assets, FIFO: \$1,700, LIFO: \$1,200

(CFA Adapted)

CASE 4-3

*Financial Statement
Effects of Alternative
Inventory Methods*

Droog Co. is a retailer dealing in a single product. Beginning inventory at January 1 of this year is zero, operating expenses for this same year are \$5,000, and there are 2,000 common shares outstanding. The following purchases are made this year:

	Units	Per Unit	Cost
January	100	\$10	\$ 1,000
March.....	300	11	3,300
June	600	12	7,200
October	300	14	4,200
December.....	500	15	7,500
Total.....	<u>1,800</u>		<u>\$23,200</u>

Ending inventory at December 31 is 800 units. End-of-year assets, excluding inventories, amount to \$75,000, of which \$50,000 of the \$75,000 are current. Current liabilities amount to \$25,000, and long-term liabilities equal \$10,000.

Required:

CHECK

(a) Income, FIFO: \$8,500,
LIFO: \$5,900,
AC: \$7,112

- Determine net income for this year under each of the following inventory methods. Assume a sales price of \$25 per unit and ignore income taxes.
 - FIFO
 - LIFO
 - Average cost
- Compute the following ratios under each of the inventory methods of FIFO, LIFO, and average cost.
 - Current ratio
 - Debt-to-equity ratio
 - Inventory turnover
 - Return on total assets
 - Gross margin as a percent of sales
 - Net profit as a percent of sales
- Discuss the effects of inventory accounting methods for financial statement analysis given the results from parts *a* and *b*.

CASE 4-4

*Analysis of Investing
Activities*

Refer to the annual report of **Campbell Soup** in Appendix A.

Campbell Soup

- Compute Campbell Soup's working capital at the end of Year 11.
- Campbell Soup reports net receivables totaling over \$527 million. To whom has it extended credit and how much bad debt reserve is provided against these receivables? What percentage of total receivables is considered uncollectible?
- What cost flow assumption does Campbell Soup use for inventories? What is its inventory write-down policy?
- The inventory turnover ratio (cost of goods sold/average inventory) is a measure of inventory management efficiency and effectiveness. Compute the inventory turnover ratio for Campbell Soup and comment on ways that it might improve the ratio.
- How much is the LIFO reserve for Campbell Soup? What are the total tax benefits realized by Campbell Soup as of the end of fiscal Year 11 because it chose the LIFO inventory cost flow assumption (assume a 35% tax rate)?
- What would Campbell Soup's pretax income have been in Year 11 if it had chosen FIFO?
- What percentage of total assets is Campbell Soup's investment in plant assets? What depreciation method does it use for fixed assets? What percentage of historical cost is the accumulated depreciation amount associated with these assets? What can the percentage depreciated calculation reveal to an analyst about fixed assets?
- Campbell Soup reports intangible assets totaling about \$436 million at the end of Year 11. What major transaction(s) gave rise to this amount?

CHECK

(d) Inventory turnover, 5.37

(f) \$672.4 mil.

Toro Manufacturing is organized on January 1, Year 5. During Year 5, financial reports to management use the straight-line method of depreciating plant assets. On November 8, you (as consultant) hold a conference with Toro's officers to discuss the depreciation method for both tax and financial reporting. Toro's president suggests the use of a new method he feels is more suitable than straight line during this period of predicted rapid expansion of production and capacity. He shows an example of his proposed method as applied to a fixed asset with an original cost of \$32,000, estimated useful life of five years, and a salvage value of \$2,000, as follows:

CASE 4-5*Analyzing
Depreciation*

End of Year	Years of Life Used	Fraction Rate	Depreciation Expense	Accumulated Depreciation at Year-End	Book Value at Year-End
1.....	1	$\frac{1}{5}$	\$ 2,000	\$ 2,000	\$30,000
2.....	2	$\frac{2}{5}$	4,000	6,000	26,000
3.....	3	$\frac{3}{5}$	6,000	12,000	20,000
4.....	4	$\frac{4}{5}$	8,000	20,000	12,000
5.....	5	$\frac{5}{5}$	10,000	30,000	2,000

Toro's president favors this new method because he asserts it:

1. Increases funds recovered in years near the end of the assets' useful lives when maintenance and replacement costs are high.
2. Increases write-offs in later years and thereby reduce taxes.

Required:

- a. What are the purpose of and the principle behind accounting for depreciation?
- b. Is the president's proposal within the scope of GAAP? Discuss the circumstances, if any, where this method is reasonable and those, if any, where it is not.
- c. The president requests your advice on the following additional questions:
 - (1) Do depreciation charges recover or create cash? Explain.
 - (2) Assuming the IRS accepts the proposed depreciation method, and it is used for both financial reporting and tax purposes, how does it affect availability of cash generated by operations?