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Leonard Lorensen

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AICPA
American Institute of Certified Public Accountants

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Notice to Readers

Mr. Lorensen is an employee of the AICPA. His views, as expressed in this monograph, do not necessarily reflect the views of the AICPA. Official positions are determined through certain specific committee procedures, due process, and deliberation.

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Foreword

This is the fourth in a series of accounting research monographs published by the AICPA to stimulate study and discussion of significant issues in financial reporting. It explores what should be a well-explored area—how to account for liabilities. After all, liabilities are one of the three major categories in the statement of financial position. As the author points out, accounting for the other side of the entry, such as pension or insurance expense, has received considerable attention, but liabilities themselves have been neglected. Even accounting revolutionaries have virtually ignored the subject, concentrating their fire on accounting for assets. The fact that Leonard Lorensen is obliged in his study to identify and explain a number of basic concepts testifies to this neglect of accounting for liabilities as a subject of inquiry.

The author acknowledges that his study is based on assumptions that not every reader will accept, such as the idea that sound accounting for liabilities would necessarily result in sound accounting for related amounts, such as expenses. Indeed, the author acknowledges repeatedly that his conclusions diverge from the views of most, if not virtually all, other accountants. Whether he has been fearless or foolhardy in this project is perhaps best left to the readers of the study. I believe that this monograph is a welcome addition to the literature, and I commend it to all who are concerned with the improvement of financial reporting.

PAUL ROSENFIELD
Director, AICPA Technical Standards and Services Division

Preface

I began work on this study accepting the following three assumptions, which are likewise accepted by virtually all accountants who have expressed views on accounting for liabilities.

1. Long-term liabilities should not be stated at the totals of the future payments to be made to creditors—what I call the probable amounts of the liabilities.
2. Long-term liabilities should be stated at amounts calculated by discounting the future payments by the interest formula, that is, they should be stated at their present value.
3. The principal problem in accounting for liabilities is selecting the rate or rates to be used in discounting.

After working on it for a considerable time, I was unable to solve the problem of how to select discount rates, and I became increasingly pessimistic about its ever being solved. What convinced me that it could be was the introduction into accounting theory of the statement of assets and liabilities at their monetary attributes. The Financial Accounting Standards Board (FASB) became the most prominent supporter of this idea, which it adopted in its Statement of Financial Accounting Concepts No. 5.

This revolutionary idea permitted me to evaluate the kinds of rates that were required or proposed for discounting by evaluating the kinds of amounts that they produced. Furthermore, the concept permitted me to investigate whether discounting is needed at all in accounting for liabilities. As a result, I rejected the two latter assumptions, continued to accept the first assumption, and decided that discounting should not be used in accounting for liabilities.

I wish to thank the people who helped me in the course of this study, most of whom were members of an AICPA task force. The

following individuals provided constructive criticism: Marvin A Goldman, John J. Cooney, Joe J. Cramer, Jr., David W. Dusendschon, John E. Hart, William P. Hauworth II, Harold Q. Langenderfer, William D. Mahaney, Thomas W. McRae, Robert R. Sterling, and Frederick R. Gill. Most of all, I wish to thank Paul Rosenfield, Director of the AICPA Technical Standards and Services Division, whose penetrating comments forced me to reexamine my ideas repeatedly. If the study warrants praise, he deserves a large share of it; if blame is called for, it belongs to me alone.

Summary

Accounting for liabilities has been neglected in the accounting literature. In the research literature, attention to the balance sheet is almost totally restricted to assets. In the literature regulating practice, the general basis of accounting for liabilities is unclear, apparently permissive, and can only be inferred from pronouncements on accounting for specific kinds of liabilities. Few of those pronouncements address accounting for liabilities directly. Instead, they specify the manner in which costs resulting in the recognition of liabilities are to be recognized in income statements.

This study is predicated on the view that information about the kinds and amounts of a reporting entity's liabilities is vital to users of its financial statements. Inherent in that view is the belief that high-quality accounting for liabilities leads to high-quality accounting for related financial statement amounts, such as expenses.

The study evaluates (1) the general theory of accounting for liabilities in use as well as alternatives to that theory and (2) the application of the general theory to specific areas within accounting for liabilities. Among the questions it addresses are the following:

- What are the characteristics of a liability?
- When should a liability first be reported?
- At what amount should a liability first be reported?
- When should the amount at which a liability is reported be changed?
- By what amounts should a liability be changed?
- When should reporting of a liability cease?
- Should all liabilities be accounted for in the same way, or do different circumstances or kinds of liabilities require different kinds of accounting?

Current generally accepted accounting principles (GAAP) provide implicit answers to these questions, but they have never been stated explicitly or evaluated systematically. This study evaluates these implicit answers and various alternative answers that have been proposed.

The study uses the concept of an attribute of an asset or liability as promulgated by the Financial Accounting Standards Board (FASB) in its Statement of Financial Accounting Concepts No. 5 as a basis for evaluation. An attribute under that Statement is an amount associated with the asset or liability and with an event or condition outside of financial reporting. Balance sheets and income statements should report on attributes and changes in attributes of all reported assets and liabilities.

A liability is caused by events. It is incurred when the last event that causes it occurs, and it should first be reported then. For particular kinds of liabilities, identifying the last event and when it occurred can be a matter of judgment.

Most liabilities are incurred in exchanges—reciprocal transfers in which the reporting entity receives money or other assets in exchange for promises that initiate the liabilities. Three common kinds of exchanges are loans, credit purchases, and leases. Further, some liabilities are relatively simple, consisting of probable future sacrifices whose number, amounts, and dates are fixed in advance. Others are relatively complex, consisting of probable future sacrifices whose number, amounts, and dates may depend on developments that occur after the liabilities are incurred.

In laying out the study's basic propositions, I discuss liabilities in fixed-payment loans first. Complications concerning credit purchases, leases, and variable payments, and disagreements about whether and when specific kinds of liabilities are incurred, are discussed thereafter.

Two attributes of a fixed-payment loan liability at the time it is incurred are the proceeds of the loan and the total of all future sacrifices that probably will be made (referred to in the study as the *probable amount* of the loan).

Current GAAP requires a fixed-payment loan liability to first be recorded, at the amount of the proceeds, when the reporting entity receives the proceeds. It requires that the amount at which the liability is reported be changed (1) when interest is held to accrue and (2) when payments are made.

Accrual of interest for a fixed-payment loan liability is currently held to be the continuous increase in an obligation. Accordingly, the amount at which the liability is reported is changed each reporting

period. The changes are made by the interest method, which uses the compound interest formula. The financial reporting literature contains no challenge of the proposition that interest accrues in fixed-payment loan liabilities.

For such reporting to be consistent with the concept of attributes, accrual of interest would have to be associated with the continuous occurrence of an event outside of financial reporting.

The financial reporting literature has not systematically investigated the nature of such a continuously occurring event, but it has given some hints of what it might be. It implies that the continuously occurring event that causes the accrual of interest in long-term fixed-payment loan liabilities may be the delay in payment by the borrower, the continuous passage of time, the continuous provision of money by the lender to the borrower, the continuous permission by the lender for the borrower to use the money, or the continuous use of the money by the borrower.

The study examines each of these and concludes that none qualifies as such a continuously occurring event. It concludes that there is no event that continuously causes an increase in an obligation—that interest does not accrue in the sense of a continuously changing attribute of a fixed-payment loan liability. (Bank accounts on which interest accrues, in contrast, are daily, variable-payment loans.) The study concludes from this that current practice for reporting on fixed-payment loan liabilities after they have been incurred presents amounts in financial statements that violate FASB's requirement that all such amounts faithfully represent attributes of assets and liabilities. Current practice is supported simply because it causes income statement charges to be presented at a constant rate of return on the reported amount of the liability, not because the amounts faithfully represent events or conditions outside of financial reporting.

One of the arguments for interest accruing on fixed-payment loan liabilities is the claim that the borrower incurs an obligation at the inception of the loan in the amount of the loan proceeds, and that the borrower incurs additions to the obligation in the form of interest as interest accrues. In contrast, this study defends the view that at the inception of the loan, the borrower becomes immediately obligated to make all promised payments when due, and that the borrower then owes the probable amount. However, this does not mean that the liability should necessarily be reported at the probable amount at the inception of the loan or at any later time. Instead, much of the remainder of the study considers which attribute should form the basis of reporting on fixed-payment loan liabilities.

In the interest of completeness, the study considers all plausible attributes that have been proposed to determine which, if any, should be used. Five candidates are identified. In addition to loan proceeds and the probable amount, three others proposed in the financial reporting literature are the hypothetical proceeds of the loan, the creditor's acceptable early-discharge amount, and the funding amount. The study concludes that neither the loan proceeds nor the probable amount should be the attribute at which a fixed-payment loan liability is stated over its lifetime, because both would make liabilities that are not equally disadvantageous appear to be equally disadvantageous.

The hypothetical proceeds are those that the reporting entity would have obtained at the reporting date in a loan involving the same terms as those of the existing liability, if the existing liability had not been incurred. Presumably that would be an amount that changes over the life of the loan, in contrast with the loan proceeds, which do not. The study concludes that fixed-payment loan liabilities should not be stated at the hypothetical proceeds, because that amount involves a transaction that did not and cannot occur and because it would present an unfavorable event as a gain and a favorable event as a loss.

The creditor's acceptable early-discharge amount is the amount at a reporting date that the creditor would accept to satisfy the liability. The problem with this attribute is that few reporting entities with fixed-payment loan liabilities would be able to learn from their creditors the required amounts at every reporting date—most creditors simply would not want to bother making the calculation. Moreover, current market prices of fixed-payment loan liability securities are inadequate indicators of creditors' acceptable early-discharge amounts.

The funding amount is the amount of money that would have to be invested in securities at the reporting date to provide the amounts needed to make the payments on the liability when required. The risk-free funding amount is the amount that would have to be invested in risk-free securities to make those payments.

The study concludes, by process of elimination, that, unless the creditor's acceptable early-discharge amount is known and is less than the risk-free funding amount, a reporting entity should report a fixed-payment loan liability at its risk-free funding amount over its lifetime. The study considers the benefits and potential disadvantages of such a reporting procedure and concludes that the benefits are of greater weight.

The study next considers fixed-payment liabilities incurred in credit purchases and leases, and concludes that these are the same as

fixed-payment loan liabilities except that the borrower obtains nonmonetary resources instead of money in exchange for the promise of payments. Although reporting on nonmonetary resources received may differ from reporting on money received, this is a difference in assets reporting, not in liabilities reporting. The study concludes that future sacrifices involved in fixed-payment credit purchases and leases in effect are the same as the future sacrifices involved in fixed-payment loan liabilities. Reporting on them should therefore also be the same—at the lesser of the risk-free funding amount and the creditor's early-discharge amount, if known.

The study also considers variable-payment liabilities, such as debentures with call provisions. Although the analysis is complicated by features such as these, the study concludes that such liabilities should also be reported at the lesser of their risk-free funding amounts and the creditors' early-discharge amounts.

Finally, the study considers particular kinds of liabilities—pension liabilities, postretirement benefits liabilities, insurance liabilities, and income tax liabilities—that have been major sources of concern to the profession. In each case, the study concludes that current GAAP requires these liabilities to be reported at amounts that do not represent their attributes, and it recommends alternative reporting procedures.

1

Nature and Incurrence of Liabilities

The first two issues that should be considered in a study of liabilities are the nature of a liability and when it is incurred (this study assumes that a liability should first be reported as of the date it is incurred). These are the main topics that will be considered in this chapter, along with a general discussion of reporting on fixed-payment loan liabilities as it relates to those issues.

Defining a Liability

In determining the nature of a liability, the Financial Accounting Standards Board (FASB) definition is helpful. FASB Statement of Financial Accounting Concepts No. 6, *Elements of Financial Statements*, paragraph 35, defines liabilities as

> probable future sacrifices of economic benefits arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events.

Dictionaries treat the words *liability* and *obligation* as synonyms. In contrast, FASB's specialized definition of liabilities distinguishes them from obligations by using the word *obligations* in the definition.

I consider FASB's definition to be sound for the purposes of this study. However, it is weak in that it is an all-of-a-kind definition, that is, it refers to all liabilities. Such a definition is less precise than a one-of-a-kind definition, that is, one that refers to a single liability. For example, FASB's definition does not say whether a liability arises from a single obligation or from one or more obligations. FASB's definition therefore needs to be restated to make it a definition of a single liability.[1]

The following definition is derived from FASB's definition of liabilities:

> A liability is one or more probable future sacrifices of economic benefits arising from a present obligation of a particular entity to transfer assets or provide services to another entity in the future as a result of past events.

In the remainder of this study, the term *definition of a liability* will refer to this definition of liability. Further, because almost all the liabilities that are recognized for financial reporting purposes require payments of money, liability can be taken to mean monetary liability unless it is stated otherwise.

The definition states that incurrence of an obligation is caused by (is "a result of") past "events" (which may include "transactions"), rather than by a single event. Incurrence of any obligation by a reporting entity can reasonably be said to be caused by a series of events extending back in time (for example, one such event is the creation of

1. Paragraph 36 of FASB Concept Statement No. 6 describes three essential characteristics of a liability:

   > (a) It embodies a present duty or responsibility to one or more other entities that entails settlement by probable future transfer or use of assets at a specified or determinable date, on occurrence of a specified event, or on demand, (b) the duty or responsibility obligates a particular enterprise, leaving it little or no discretion to avoid the future sacrifice, and (c) the transaction or other event obligating the enterprise has already happened.

   These three characteristics, taken together, define a liability as a "present duty or responsibility" with specified characteristics. In contrast, paragraph 35 defines the word *liabilities* instead of the word *liability*, and it defines it as meaning probable future sacrifices with specified characteristics. I prefer the definition in paragraph 36, but there is no practical difference between the two with respect to determining how to account for liabilities.

the reporting entity). An obligation is incurred when the last event in the series occurs.[2]

Implementing the Definition

To determine whether and when an entity has initially incurred a liability involves determining—

1. Whether the entity has by a particular date incurred an obligation to transfer assets or provide services in the future.
2. Whether it is probable at that date that the entity will make one or more sacrifices of economic benefits in the future because of the obligation.

According to the definition of a liability, an entity can incur an obligation to another entity before incurring or without incurring a liability to that entity. A liability based on an obligation is incurred at the time the obligation is incurred or at the time a sacrifice of an economic benefit becomes probable, whichever is later.

The remainder of this chapter will discuss the determination of whether and when an obligation is incurred. Determination of when payment becomes probable will be discussed in subsequent chapters.

Defining an Obligation

Determining the nature of an obligation can help to determine whether and when an obligation is incurred. Footnote 22 to paragraph 35 of Concept Statement No. 6 is helpful in this regard. It states that "obligations refer to duties imposed legally or socially; to that which one is bound to do by contract, promise, moral responsibility, and so

2. An obligation cannot be incurred before all the events that cause it to be incurred have occurred. To illustrate, if events A and B cause an obligation to be incurred and event A occurs first, the obligation is not incurred when event A occurs. If the obligation were to be incurred then, event B would not be a cause of the incurrence of the obligation under the notion of a cause, which is something that must occur to make something else occur.

forth." It also states that the concept "includes equitable and constructive obligations as well as legal obligations." Obligations are thus incurred by the operation of contract, law, or custom and may be legal, equitable, or constructive. Also, footnote 22 makes an obligation a present state: "duties imposed legally or socially."

Based on those aspects of the nature of an obligation, the term *obligation* is used in this study to mean a legal, equitable, or constructive state of an entity on a given date caused by the operation of a contract, law, or custom in which the entity has a duty to transfer assets or provide services to another entity in the future.

When an Obligation Is Incurred

To determine *whether* an obligation is incurred it is necessary to apply the definition of an obligation. Determining *when* an obligation is incurred, which is necessary in applying the definition of a liability to determine when a liability is incurred, involves judgment. There are two ways in which judgment can be used. The first is to apply it in the absence of any principle. FASB has applied judgment in this way to specified kinds of obligations. The second way of using judgment is to develop a principle and apply it to specified kinds of obligations. That is the approach adopted in this study.

Some obligations result from the operation of contracts or customs. In such cases, the reporting entity explicitly or implicitly promises to perform specified acts—almost always payments of money—at specified times if specified conditions have been met.

Other obligations result from the operation of laws. In such cases, a law stipulates that a reporting entity shall perform specified acts—almost always payments of money—at specified times if specified conditions have been met.

A reporting entity becomes conditionally required to perform acts under the terms of a contract, custom, or law when the first condition is met; it remains so required until the last condition is met. The entity then becomes unconditionally required to perform the acts, and remains so until the acts are performed.

A few contracts and laws specify as the last condition to be met that the beneficiary of the specified acts must inform the performing party of the need to perform the acts. The only circumstances in which this is necessary are when—

1. State and local governments need to bill taxpayers for real estate taxes assessed.
2. Policyholders need to file claims for losses with insurance enterprises.
3. In the sale of goods with warranties, buyers need to report defective goods to sellers.
4. In the sale of goods with rebate coupons, buyers need to return the coupons.

The final condition in such a contract or law can be met with relatively trivial effort by the beneficiary of the specified acts. The condition can therefore be reasonably interpreted as nonsubstantive.

When reporting entities incur obligations to perform specified acts is most reasonably based on the conditions specified under contracts, customs, and laws. Accordingly, in this study, an obligation to perform specified acts under a contract, custom, or law is considered to be incurred when the last substantive condition is met for performance to become required. An obligation incurred in a contract, custom, or law with a nonsubstantive condition is discharged if the condition is not met.[3]

Barring the exceptions that have been described, an obligation is incurred when performance becomes unconditionally required. The last substantive condition is virtually always met by the occurrence of an event. When the event occurs determines when the obligation is incurred.

3. As it applies to contracts, this conclusion is consistent with the common-law concept of a condition subsequent—a condition for the performance of specified acts that has to be met after an obligation to perform is incurred. The obligation is discharged if the condition is not met. One business law textbook [Robert N. Corley, Eric M. Holmes, and Peter J. Shedd, *Fundamentals of Business Law* (Englewood Cliffs, N.J.: Prentice Hall, 1986), p. 236] gives as an example of a condition subsequent the need for a policyholder to file a claim for loss with an insurance enterprise within a specified period. All the nonsubstantive contractual conditions described in this chapter are conditions subsequent.

Executory Contracts

Some contend that an obligation to pay under a contract is incurred at the contract's inception, when it is wholly executory—that is, when neither party has acted on any of its promises.[4]

The promises made or received by a party at the inception of a contract may exert some compulsion on the party to perform. However, that compulsion would be too weak to justify the conclusion that the party incurs an obligation at that time. It is more reasonable to consider an obligation to pay not to be incurred before any of the conditions are met that a contract, law, or custom specifies must be met for payment to be required. The mere existence of a contract, law, or custom should not be considered sufficient to result in an obligation.

Events That Do Not Occur

Two kinds of contracts are often combined in the following manner. In the first contract, entity A promises to make payments to entity B. In the second contract, entity C promises to make payments to B if A does not make the payments it has promised. A contract of the second kind is usually called a *guarantee of debt.*

A guarantee of debt is an unusual contract in that it contains a condition that is met by nonoccurrence of an event. In virtually all other contracts, conditions are met by the occurrence of events. In a guarantee of debt, the entity becomes unconditionally required, and should be considered to incur an obligation, when the event—payment of debt—does not occur. This interpretation is consistent with the definition of a liability, because the events referred to in the definition do not exclude events that do not occur.

4. See, for example, Joe J. Cramer, Jr., and Charles A. Neyhart, Jr., "A Comprehensive Framework for Evaluating Executory Contracts," *Journal of Accounting, Auditing, and Finance* (Winter 1979), pp. 135–150. In support of their recommendation, the authors cite Accounting Principles Board Statement No. 4, *Basic Concepts and Accounting Principles Underlying Financial Statements of Business Enterprises,* paragraph 181 (S-1E), which states that "an exchange of promises between the contracting parties is an exchange of something of value." The promises have value, but their value is slight because they are conditional. An exchange of promises of value does not imply that the promises cause obligations to be incurred.

Increments and Decrements in Obligations

An obligation may change after it is incurred in that the amount of money the reporting entity is obligated to pay may increase or decrease. To illustrate, assume that a reporting entity buys an item on credit on January 1 and agrees to pay $1,000 for it. The entity buys another item from the same supplier on January 10 and agrees to pay $1,500 for it. On January 20 the entity pays $1,000 to the supplier for the first item.

The entity incurs an obligation on January 1 to pay $1,000 to the supplier. The entity continues to have an obligation to pay $1,000 until January 10, when the obligation to the supplier increases to $2,500. On January 20 the obligation to pay the supplier decreases to $1,500.

Increments in an obligation, that is, increases in the amount of money the reporting entity is obligated to pay, usually occur because of additional transactions with the entity to which the reporting entity is obligated. Decrements in an obligation, that is, decreases in the amount of money the reporting entity is obligated to pay, usually occur because of payments to the other entity.

Obligations in Fixed-Payment Loans

Perhaps the simplest and most common kind of transaction to which these criteria can be applied to determine whether and when an obligation is incurred is a loan in which the contract specifies the total amount to be paid to the lender. Such a loan is referred to in this study as a *fixed-payment loan*. An example is a bond with no call provision.

A more complex loan is one in which the contract makes the total amount to be paid to the lender depend on the outcome of future events. Examples are a bond with a call provision and a mortgage loan with a variable interest rate. Such a loan is referred to in this study as a *variable-payment loan*.

This study devotes considerable discussion to accounting for fixed-payment loans (see chapters 3 through 5). These loans are important in business and a comprehensive discussion is required to analyze the most popular method of accounting for them—the interest method. (Accounting for variable-payment loans will be discussed in chapter 7.)

Patterns of Payment Promised by Borrowers. An understanding of the patterns of payment promised in various kinds of fixed-payment loans can help in determining when obligations to pay for them are incurred.

A common pattern in fixed-payment loans is uniform amounts to be paid at the conclusion of uniform periods of time. Such payments are called *combined interest-and-principal payments.*

A similar pattern is uniform amounts plus an additional amount to be paid at the end of the term of the loan. An example is the amounts to be paid on an ordinary debenture. The uniform amounts are called *interest payments.* The additional amount is called a *principal payment.*

The principal payment may be the amount the lender paid to the borrower, that is, the proceeds of the loan, which is commonly called *principal.* However, the principal payment may also be more or less than the proceeds. If it is more than the proceeds, the loan was made at what is called a *discount,* for example, if the borrower in a debenture issue received 95 percent of the principal payment. If it is less than the proceeds, the loan was made at what is called a *premium,* for example, if the borrower received 105 percent of the principal payment.

In a loan associated with a so-called *zero coupon bond,* the borrower promises to pay a single amount. The amount paid in this kind of a loan may also be called a combined interest-and-principal payment.

A fixed-payment loan may require payments of irregular amounts, such as $3,000 at the end of the first year it is outstanding, $4,000 at the end of the second year, and $2,000 at the end of the third and last year of the loan.

The parties to a fixed-payment loan can agree to any pattern of payments. Whatever the pattern, however, each party must promise to make a finite number of payments whose number, amounts, and dates are specified in advance. This essential commonality of all fixed-payment loans permits current and proposed principles for accounting for them to be evaluated without reference to the pattern of payments.

When the Obligation Is Incurred. There is no controversy among accountants over the question of when obligations are incurred by borrowers in fixed-payment loans. Nevertheless, I take a position in this study that is contrary to the prevailing opinion.

The common view (analyzed in chapter 3) of when obligations for fixed-payment loans are incurred is that the borrower incurs two obligations—an obligation to pay principal and an obligation to pay interest. This view supports current generally accepted accounting principles for such a liability. The obligation to pay principal is said to be incurred at the inception of the loan. The obligation to pay interest is said to be incurred in increments over the term of the loan.

In contrast, I believe that in any fixed-payment loan, the borrower incurs only a single obligation, at the inception of the loan, to pay *all* the amounts promised when due, regardless of the pattern of payments promised and regardless of what the payments are called (whether interest, principal, payment, or some other name). In this view, the obligation does not change during the term of the loan, with the exception of increments and decrements caused by events other than the accrual of interest.

The basis for this view is that the receipt of the loan proceeds by the borrower is the last event that causes the borrower to become unconditionally required to pay all the amounts promised. The receipt is also the last event that causes the obligation to be incurred.

To illustrate, assume that a borrower (B) and a lender (L) make a contract on December 31, 1990, with the following terms:

- L promises to pay B $1,000 on December 31, 1990.
- B promises to pay L $1,210 on December 31, 1992.

L pays B $1,000 on December 31, 1990.

I contend that on December 31, 1990, B incurs an obligation to pay L $1,210 on December 31, 1992. Incurring the obligation is a result of no later event than the payment to B on December 31, 1990, which is when B becomes unconditionally required to pay $1,210. If B probably will pay L $1,210, B incurs on December 31, 1990, a liability to pay that amount. (Whether the liability should be presented in B's balance sheet on December 31, 1990, at the proceeds—$1,000, at the amount the entity is obligated to pay in the future—$1,210, or at another amount will be discussed in subsequent chapters.)

2

Attributes of Liabilities: The Key Criterion

When a liability first needs to be recognized, attention turns to the amount at which it should be stated in the balance sheet and the amounts at which it should be stated subsequently over the course of its existence. In this study I use the following criteria, among others, for judging amounts at which to state liabilities:

- A liability should be stated at an amount of money that is an attribute of the liability outside of financial reporting.
- The attribute used should be the most relevant for reporting the liability.

This chapter discusses the first criterion.

The Concept of Attributes

The concept of an attribute of an asset or liability has been discussed in several authoritative accounting pronouncements, particularly Accounting Principles Board (APB) Statement No. 4, *Basic Concepts and Accounting Principles Underlying Financial Statements of Business Enterprises*, and FASB Statement of Financial Accounting Concepts No. 5, *Recognition and Measurement in Financial Statements of Business Enterprises*. Paragraph 63 of Concept Statement No. 5 states

that "an item and information about it should meet four fundamental recognition criteria to be recognized and should be recognized when the criteria are met, subject to a cost-benefit constraint and a materiality threshold." Paragraph 65 describes one of the criteria as follows:

> The asset, liability, or change in equity must have a relevant *attribute* that can be *quantified in monetary units* with sufficient reliability. *Measurability* must be considered together with both relevance and reliability. [Emphasis added]

The kind of attribute referred to in paragraph 65 is an amount of money related to the asset or liability in some particular way that justifies calling it a (monetary) attribute of the item. An asset or liability may have as an attribute an as-yet undetermined amount of money; measurement of the attribute involves determining the amount.

Paragraph 67 provides several examples of monetary attributes of assets that are currently used in financial reporting, including historical cost, current market value, and net realizable value. Paragraph 70 states that "this concepts Statement suggests that use of different attributes will continue, and discusses how the Board may select the appropriate attribute in particular cases."

Thus, Concept Statement No. 5 as much as says that assets and liabilities should be stated in financial statements at attributes of those assets and liabilities. I agree with this requirement, but not everyone does. For example, one FASB member dissented when the Statement was issued, in part because it used "a concept of income that is fundamentally based on measurements of assets, liabilities, and changes in them." The alternative concept of income is based on matching costs with revenues. This will be discussed further in chapters 3 and 5.

In an articulated set of financial statements, income is determined by the amounts at which assets and liabilities are stated, and vice versa. I hold that satisfactory accounting cannot result from the use of a concept of income that causes assets and liabilities to be stated at other than attributes of those assets and liabilities. The majority of FASB members implicitly agreed.

Attributes and Relationships

Some attributes—such as height, weight, and color—are inherent in the physical structure of an object and are obvious attributes. In contrast, abstract attributes lacking such inherence, such as amounts of

money reflecting value, are not obvious attributes. For an amount of money to qualify as an attribute of an asset or liability, the relationship between them must be sufficiently close. Whether the relationship is sufficiently close is a matter of judgment, about which opinions may reasonably differ.

Some accountants, for example, contend that assets owned should be stated at the amounts that would currently be spent to acquire duplicates of them. These replacement prices are related to the assets owned, but I do not believe the relationship is sufficiently close to justify interpreting them as attributes of the assets owned. (Instead, they are attributes of assets not owned—the replacement assets.) In contrast, the acquisition cost of an asset owned is so closely related to the asset that virtually all accountants (myself included) would interpret it as an attribute.

In the preceding example, an attribute (the price) of one asset is interpreted as an attribute of another asset. Similarly, in accounting for liabilities, some accountants, in some circumstances, interpret an attribute of one liability as an attribute of another liability. This will be discussed in chapters 4, 6, and 8 as it applies to hypothetical loans.

Attributes Within and Outside of Financial Reporting

The monetary amounts described in the preceding section are attributes of assets outside of financial reporting, that is, they can be described as elements of events or conditions that occur or exist in the absence of financial reporting. Any monetary amount assigned to an asset or liability by an accountant is an attribute of the asset or liability within financial reporting, simply because it is so assigned. Similarly, a number assigned to a football player is an attribute of the player within the game of football. However, assignment by an accountant is a trivial way for an amount to qualify as an attribute.

Paragraph 65 of Concept Statement No. 5 (quoted in the "Concept of Attributes" section) implies that the amount must be an attribute outside of as well as within financial reporting. It states that "measurement must be considered together with relevance and reliability." FASB Statement of Financial Accounting Concepts No. 2, *Qualitative Characteristics of Accounting Information*, paragraph 59, states that "the reliability of a measure rests on the faithfulness with which it represents what it purports to represent." Paragraph 63 states that "representational faithfulness is correspondence or agreement between a measure or description and the phenomenon it purports to

represent.' The "phenomenon" that the stated amount of an asset or liability is supposed to represent surely is an event or condition outside of financial reporting.

Concept Statement No. 6, paragraph 6, implies even more forcefully that an amount at which an asset or liability is stated should be an attribute outside of financial reporting:

> The items that are formally incorporated in financial statements are financial representations (depictions in words and numbers) of certain resources of an entity, claims to those resources, and the effects of transactions and other events and circumstances that result in those resources and claims. That is, *symbols (words and numbers) in financial statements stand for* cash in a bank, buildings, wages due, sales, use of labor, earthquake damage to property, and a host of other *economic things and events pertaining to an entity existing and operating in what is sometimes called the "real world."* [Emphasis added]

However, the restricting of attributes used in financial reporting to those that are outside of financial reporting is not universally accepted by accountants. Under some requirements and proposals, assets and liabilities are stated at amounts that can be described only as amounts calculated under specified accounting rules. Because the amounts are not attributes outside of financial reporting, they should not be accepted as such for financial reporting.

For example, paragraph 67 of Concept Statement No. 5 describes as an attribute of an asset "the amount of cash paid to acquire an asset, commonly adjusted after acquisition for amortization or other allocations." Assets are required, in some circumstances, to be stated after acquisition at such adjusted amounts. However, such an amount can be described only as an amount calculated under the rules of amortization or allocation; it cannot be described in terms of a phenomenon outside of financial reporting. The discussion in chapter 9 of income taxes and depreciation will address this issue.

The remainder of this chapter will deal with three possible kinds of attributes: probable amounts, present value, and the creditor's acceptable early-discharge amount.

Probable Amounts

The probable amount is an attribute of liabilities derived from the definition of a liability. As discussed in chapter 1, a liability is one or more probable future sacrifices of economic benefits resulting from a present obligation, that is, an obligation that has been incurred by the

reporting date. This definition implies that the probable future sacrifices of economic benefits are sacrifices of economic benefits that probably will be made to discharge an obligation that has already been incurred. For a monetary liability, the sacrifices of economic benefits that probably will be made in the future are payments of money.

In applying the definition of a liability, a reporting entity can make a determination about the total amount of money that probably will be paid in the future to discharge the obligation that has been incurred by the reporting date. In this study, such a determined amount is called the *probable amount* of the liability. It can reasonably be said to be an attribute of the liability in that it is a quantification of the probable future sacrifices that are the liability.

Unambiguous and Ambiguous Probable Amounts. Liabilities have two kinds of probable amounts: unambiguous and ambiguous. An *unambiguous probable amount* is described in terms of a single amount. The expression "$2,000 probably will be paid" refers to an unambiguous probable amount. An *ambiguous probable amount* is a probable amount that is described in terms of more than one amount. The expression "Any amount from $1,500 to $2,500 probably will be paid" refers to an ambiguous probable amount.

Unambiguous probable amounts can be determined for most liabilities. This is because most obligations require payments of specified amounts of money. Reporting entities are usually solvent, so the incurrence of obligations to pay specified amounts of money is usually followed by payments of those amounts. For a solvent entity that has a liability resulting from such an obligation, the total of the specified amounts it is obligated to pay is the unambiguous probable amount of the liability. (However, this is not the case for some liabilities, such as those of companies that provide mail-in coupon rebates on their goods sold; this will be discussed in the section on probable amounts and joint liabilities.)

In contrast, some obligations require payments of money in amounts that are determined by the outcome of future events. (This kind of obligation will be discussed in chapters 7, 8, and 9.) If the probable future sacrifices that are the liability pertain to such an obligation, an unambiguous probable amount usually cannot be determined for the liability. However, an ambiguous probable amount usually can be determined and will be sufficient to develop sound accounting for the liability.

In some circumstances, a reporting entity may be able to determine within a very narrow range the amount that probably will be paid

to discharge the obligation resulting from a liability. If the difference between the maximum and minimum amounts within the range is not significant, the probable amount should be treated as an unambiguous probable amount, and any amount within the range should be selected as the probable amount for financial reporting purposes.

Probable Amounts and Authoritative Pronouncements. Although I believe that the term *probable amount* is original to this study, the underlying concept is implied in authoritative accounting literature. For example, Concept Statement No. 5, paragraph 67, describes the net settlement value of a liability as follows:

> Liabilities that involve known or estimated amounts of money payable at unknown future dates, for example, trade payables or warranty obligations, generally are reported at their net settlement value, which is the nondiscounted amounts of cash, or its equivalent, expected to be paid to liquidate an obligation in the due course of business, including direct costs, if any, necessary to make that payment.

The total of the "nondiscounted amounts of cash, or its equivalent" is the probable amount of the liability. "Or its equivalent" apparently refers to liabilities that are probable future sacrifices of assets other than money or of services, that is, nonmonetary liabilities. As will be discussed in chapter 9, these too have probable amounts.

Another example from the authoritative accounting literature that implies the concept of a probable amount is FASB Statement of Financial Accounting Standards No. 5, *Accounting for Contingencies*, paragraph 8, which requires an estimated loss to be accrued if "the amount of the loss can be reasonably estimated." In some circumstances, recognizing the loss is to recognize a liability stated at the amount of the loss. In this Statement, the amount of the loss equals the probable amount of the liability.

FASB Interpretation No. 14, *Reasonable Estimation of the Amount of a Loss*, paragraph 1, discusses the estimation of the amount of a loss in the application of Concept Statement No. 5 "if a range of loss can be reasonably estimated but no single amount within the range appears at the time to be a better estimate than any other amount within the range." In other words, the liability has an ambiguous probable amount.

Paragraph 3 (footnote 1) of Interpretation No. 14 requires a liability to be recognized for the loss and stated at the minimum amount in the range because "even though the minimum amount in the range is not necessarily the amount of loss that will be ultimately determined, it

is not likely that the ultimate loss will be less than the minimum amount." However, it is also not likely that the ultimate loss will be more than the maximum amount. The Interpretation gives no reason for choosing the minimum instead of the maximum amount or any amount in between.

Whichever amount is chosen, stating the liability at that amount results in stating it at *a* probable amount rather than *the* probable amount, which is a range of amounts. Because *a* probable amount can be reasonably described as an attribute of the liability, stating it at that amount results in stating it at an attribute of the liability. However, only liabilities with unambiguous probable amounts can be stated at *the* probable amount of the liability.

As a final example, APB Statement No. 4, paragraph 181, states that "most short term liabilities are simply measured at the amount to be paid." The "amount to be paid" apparently is the amount that the reporting entity expects to pay, which is the probable amount of the liability. Current liabilities are therefore stated at their probable amounts under GAAP.

There is usually no material difference between stating a short-term liability at its probable amount and stating it at another attribute. This study is primarily concerned with the attribute at which long-term liabilities should be stated. Further, the probable amount of a liability usually has to be calculated even if the liability will not be stated at that attribute. This is because the amounts that make up the probable amount are usually used in the calculation of any attribute.

Probable Amounts and Joint Liabilities. An unambiguous probable amount of a liability at a reporting date usually equals the amount of money the entity is obligated at that date to pay the creditor in the future under the liability. The probable amount cannot exceed the amount the entity is obligated to pay because, by definition, the probable future sacrifices that are the liability result from a present obligation. Any amount paid to the creditor in excess of the amount the entity is obligated to pay would be a gift to the creditor, not an amount paid to discharge the liability.

In the case of at least one kind of liability that has an ambiguous probable amount, any amount in the range of amounts in terms of which the probable amount is described is always less than the amount the entity is obligated to pay. This liability results from an enterprise's selling of goods accompanied by coupons that the enterprise's supplier promises to redeem for cash when consumers mail them in to the supplier.

When such goods are sold to a consumer, the supplier incurs an obligation to redeem the coupons issued in the sale—an obligation to pay a specified amount of money to the consumer. If each obligation to consumers is considered separately, no liability appears to be incurred to any one consumer. This is because few consumers ever mail in such coupons. As a result, no determination can be made that a particular consumer probably will mail in the coupon and that the supplier probably will make a payment in return.

However, the supplier does incur a liability to pay consumers considered jointly for the return of coupons. Suppliers who issue coupons usually can determine a trend in their return by consumers. This trend can be used to extrapolate the amounts the supplier will probably pay in the future to consumers who mail in coupons. The number of such consumers and their names cannot be determined. The supplier cannot determine the total amount that probably will be paid, but it should be able to determine that an amount within a range of specified amounts probably will be paid. That range is the ambiguous probable amount of a liability incurred jointly to all such consumers. Each amount within the range is less than the total amount the enterprise is obligated to pay all consumers to whom coupons have been issued.

Obligations to redeem such coupons differ from other kinds of obligations that result in joint liabilities, such as pension liabilities. Obligations to redeem coupons are obligations to pay specified amounts of money. The other kinds of obligations involve payments whose amounts will be determined by the outcome of future events. Joint liabilities incurred in connection with such obligations will be discussed in chapters 8 and 9.

Present Value and the Time Value of Money

The formula for calculating compound interest, called the *interest formula* in this study, has been used in business practices outside of financial reporting for many years. First employed in the loaning of money, its use was later expanded to other areas, principally capital budgeting and pension funding. (Use of the formula in the loaning of money is discussed in the Appendix.)

However it is used, the interest formula is applied to given amounts of future receipts or payments of money in a manner called *discounting*, for the purpose of calculating an amount called the *present value*. This term also has other meanings. In the loaning of money, present value means the amount of money loaned. In capital budget-

ing, it means the maximum price that the budgeting enterprise is willing to pay to buy an asset. In pension funding, it means the amount of money that would have to be put in a fund at a given date to provide sufficient money to pay a specific portion of the future benefits that will probably be paid.

Some accountants have proposed that, to the extent feasible, every asset and liability be stated at present value. Their purpose in this is to incorporate the time value of money. The amounts that would be discounted would be future receipts or payments associated with the assets or liabilities. However, the accountants who have proposed this practice have not described those future receipts and payments precisely. Their justification for it does nevertheless imply that the future receipts and payments pertain to the probable amounts of the assets and liabilities to which the procedure is applied. To evaluate the proposal, the time value of money needs to be understood.

The Time Value of Money. The time value of money has been described as follows:

> Because money has earning power, a person who will be paid $100 would rather have the money today than at some time in the future. If money can earn 10 percent per year, then a person who receives $100 today has been given exactly the same spending power as a person who will be given $110 one year later.[1]

The first sentence describes the time value of money as it applies in a specific situation. Described as it applies generally, it is the preference a person has for receiving any amount of money at an earlier rather than at a later date. The second sentence suggests one of the reasons for the time value of money—to buy goods before their prices rise as a result of inflation.

The time value of money is expressed in the preference a person has, in some circumstances, to receive a smaller amount of money at an earlier date rather than a larger amount later on. To illustrate, assume that a person has a choice of receiving $100 today or $110 a year from today. That choice can be understood to be a choice between (1) receiving the $100 today or (2) receiving the $100 a year from today plus an extra $10. The choice of the earlier receipt would indicate that

1. Donald W. Moffat, *Economics Dictionary*, 2d ed. (New York: Elsevier Science Publishers, 1983), p. 300.

the person ranks receiving $100 today higher than receiving $100 and an extra $10 a year from today. The choice of the later receipt would indicate that the person ranks receiving $100 and an extra $10 a year from today higher than receiving $100 today. The choice of the earlier receipt is an expression of the time value of money.

Incorporating the Time Value of Money. Two studies have recently been published expressing the view that assets and liabilities should be stated at present value, to the extent possible, to incorporate the time value of money. One was published by the FASB in the form of a Discussion Memorandum, and the other was published by the Canadian Institute of Chartered Accountants.[2] The author of the Canadian study, which was issued first, was a member of the task force that advised FASB on the preparation of the Discussion Memorandum. The latter describes several views on the role of discounting in financial reporting, including that of the author of the Canadian study. It describes the view as follows:

> 125. Those who hold this view see a limited objective for present value but maintain that it is always better than an undiscounted measurement, if reliable estimates are available. They see *present value* as *a unique attribute that measures the difference attributable to time between current and future amounts.* [Emphasis added]
>
> 126. Proponents observe that present value is fundamentally different from other measurements. Other measurements either recognize the present value discount implicitly (for example, current market value) or explicitly exclude the present value discount (net realizable value). Proponents argue that *a present value measurement is not a market value or exchange price* and that *it is a mistake to think of it as a surrogate for other values.* In their view, *the measurement reflects only the present value* discount. Even so, they reason that present value is so important that accounting measurements should incorporate the present value discount whenever possible. [Emphasis added]
>
> 127. Proponents contend that *time preference is a fundamental characteristic of all economic behavior.* They maintain further that all accounting measurements should reflect this fundamental characteristic, if possible. Measuring assets and liabilities at the undiscounted sum of estimated future cash flows contradicts what proponents see as a truism

2. FASB Discussion Memorandum, *Present Value-Based Measurements in Accounting,* December 7, 1990 (New York: AICPA); and J. Alex Milburn, *Incorporating the Time Value of Money Within Financial Accounting* (Toronto: Canadian Institute of Chartered Accountants, 1988).

> of economic behavior. They reason further that present value is consistent with rational expectations of business enterprises, since no rational manager will acquire an asset without expecting that the future utility will exceed the purchase price. Although the expected future utility cannot be measured, it at least equals the amount that could have been earned from a minimum-risk investment. [Emphasis added]

Proponents of this view contend that present value is an attribute of an asset or liability that "measures the difference attributable to time between current and future amounts." Their contention that present value is an attribute can be evaluated only by explaining this difference, which presumably is related to the time value of money. However, since they have provided no explanation, I have done so.

Expressing the time value of money. As discussed in the section on the concept of attributes, a monetary attribute of an asset or liability is an amount of money that is related to it in some way that justifies calling the amount an attribute. Because the time value of money is a preference, not an amount of money, it cannot itself be a monetary attribute of an asset or liability. However, the manner in which the time value of money is expressed suggests an amount that is a monetary attribute of all liabilities.

The time value of money is expressed in the preference a person has, in some circumstances, to receive a smaller amount of money earlier rather than a larger amount later. This preference can be restated in terms of an unambiguous amount of money as the smallest amount a person would prefer to receive at a given time instead of receiving a larger specified amount later on.

The creditor's acceptable early-discharge amount. A person who owns a claim to money—a creditor—can determine the amounts that he or she will receive under the claim. The creditor can also determine, for each specified amount to be received in the future, the smallest amount he or she would prefer to receive now instead of receiving the specified amount in the future. The total of these smallest amounts is the smallest amount he or she would prefer to receive now in settlement of the claim instead of holding the claim to maturity.

The smallest amount the creditor would prefer to receive now is not likely to be known by the debtor. However, if the debtor is a business enterprise, it may wish to infer the smallest amount and state the liability pertaining to the claim at that amount. The smallest amount can reasonably be said to be an attribute of the liability outside of financial reporting.

For liabilities in general, the smallest amount of money the creditor would accept in early discharge on a given date, if the debtor offered to pay that amount, is called in this study the *creditor's acceptable early-discharge amount.* There have been proposals that liabilities be stated at that attribute and that discounting by the interest formula be used to measure the amount. These proposals will be discussed in chapter 4.

Stating a liability at the creditor's acceptable early-discharge amount meets the objective stated in FASB's Discussion Memorandum of measuring "the difference attributable to time between current and future amounts."

Satisfying a Concern

The proponents of discounting assets and liabilities to reflect the time value of money would undoubtedly disagree with the conclusion that its purpose, with respect to liabilities, is to state them at the creditor's acceptable early-discharge amount. This is clear from FASB's Discussion Memorandum in the statement that present value "is not a market value or exchange price." The early discharge of a liability is an exchange, and the creditor's acceptable early-discharge amount is an exchange price.

However, proponents have not provided any alternative explanation for their proposal. This suggests to me that they are not really interested in the problem of selecting attributes of assets and liabilities for financial reporting. Their statement that present value "is always better than an undiscounted measurement" suggests that their proposal is more *against* statement at undiscounted (probable) amounts than *for* the use of a relevant attribute for assets and liabilities.

The proponents express some caution by calling for discounting only "if reliable estimates are available." They apparently mean reliable estimates of the number, amounts, and dates of future receipts or payments, or of the rates used for discounting.[3] However, there is no way to determine whether a given discount rate is reliable without identifying the attribute of the asset or liability the present value is supposed to measure, that is, "the phenomenon it purports to represent."

3. Compare this caution over discount rates with the statement by one accountant that "adoption of discounting [for liabilities for deferred income taxes] should not be delayed by quibbles over rates," Homer A. Black, *Interperiod Allocation of Corporate Income Taxes*, Accounting Research Study No. 9 (New York: AICPA, 1966), p. 84.

To my knowledge, none of the proponents of stating assets and liabilities at present value in order to incorporate the time value of money has ever described the present value as anything more than an amount calculated by discounting by the interest formula. Indeed, according to the view described in the Discussion Memorandum, "the measurement reflects only the present value discount."

Moreover, paragraph 12 of the Discussion Memorandum states that "the present value attribute of an asset or liability is the future economic benefit or sacrifice associated with the item reduced by a discount computed using the present-value formula." If the present value cannot be described in any other way, it cannot be considered an element of an event or condition outside of financial reporting, and therefore it cannot be an attribute of an asset or liability outside of financial reporting. If it is assigned to an asset or liability in a financial report, it is an attribute within financial reporting because it is so assigned. However, that will not make it acceptable for financial reporting.[4]

According to a few of the requirements and proposals discussed in chapter 4, specified kinds of liabilities are stated at present value. In these cases, present value has specified meanings apart from merely the arithmetical calculation. These specified meanings are attributes of the liabilities outside of financial reporting.

In most circumstances, however, accountants have required or proposed that specified liabilities be stated at present value without specifying its meaning. The attempt to determine meanings of the term that would justify considering stated amounts to be attributes of liabilities outside of financial reporting is a principal task of this study.

I share the concern of the accountants whose views are described in FASB's Discussion Memorandum about the unacceptable results of stating liabilities at undiscounted amounts, that is, at the probable amounts. In chapter 5, I will explain why the results of that procedure are unacceptable. The recommendations that I make in this study satisfy that concern and ensure the statement of liabilities at their most relevant attribute.

4. Milburn does not contend that present value is an attribute of assets and liabilities. Instead, he defines assets and liabilities in terms of present value. He defines a liability as "the present value of probable future cash-equivalent outflows arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events" (Milburn, p. 205). Under that definition, a liability has no existence outside financial reporting.

3

Accounting for Liabilities in Fixed-Payment Loans: Requirements

All business enterprises currently state long-term liabilities incurred in fixed-payment loans when the liabilities are incurred at the proceeds of the loans. They account for such liabilities at subsequent reporting dates under the interest method, which results in a level interest rate on the outstanding balance of the liability. For the sake of convenience, they account for short-term liabilities incurred in fixed-payment loans by stating them over their lifetimes at their probable amounts. The results of this practice generally do not differ materially from those that would be produced under any other reasonable method of accounting for such short-term liabilities.

As will be discussed in the next section, no authoritative pronouncement requires the use of specific methods when accounting for liabilities incurred in long-term fixed-payment loans. However, the universal use of loan proceeds in the initial recognition and of the interest method in subsequent statements of such liabilities means that those methods are required under generally accepted accounting principles.

Authoritative Pronouncements

Accounting for liabilities incurred in fixed-payment loans is discussed in two authoritative pronouncements, APB Opinions 12 and 21.

APB Opinion 12. Issuers of bonds that result in liabilities incurred in fixed-payment loans state such liabilities when they are incurred at the loan proceeds. The stated amount is commonly described as the principal amount less the discount or plus the premium.[1] APB Opinion 12, *Omnibus Opinion—1967*, uses that description in discussing accounting for such liabilities at reporting dates subsequent to the dates at which they are incurred:

> Questions have been raised as to the appropriateness of the "interest" method of periodic amortization of discount and expense or premium on debt (i.e., the difference between the net proceeds, after expense, received upon issuance of debt and the amount repayable at its maturity) over its term. The objective of the interest method is to arrive at a periodic interest cost (including amortization) which will represent a level effective rate on the sum of the face amount of the debt and (plus or minus) the amortized premium or discount and expense at the beginning of each period. The difference between the periodic interest cost so calculated and the nominal interest on the outstanding amount of the debt is the amount of periodic amortization.

The interest method can also be applied by a borrower who does not describe the stated amount of a liability as the principal amount less the discount or plus the premium. As it would be applied by any kind of borrower, the interest method involves recognizing the interest cost each period in an amount calculated by multiplying the stated amount of the liability by a constant percentage. Concept Statement No. 5, *Recognition and Measurement in Financial Statements of Business Enterprises*, paragraph 67(e), calls the constant percentage the "implicit" rate, as will be discussed in the section on subsequent statement.

Opinion 12 does not require the use of the interest method. It merely says that "the interest method is theoretically sound and an acceptable method."

APB Opinion 21. APB Opinion 21, *Interest on Receivables and Payables*, discusses accounting for loans under the assumption that the borrower issues to the lender a written promise, which it calls a "note," to make the payments of principal and interest agreed on. Paragraph 11 states that "when a note is received or issued solely for cash and no other right or privilege is exchanged, it is presumed to have a present value at issuance measured by the cash proceeds exchanged." Paragraph 16 states that "the discount or premium resulting from the

1. The principal amount is also often referred to as the face, maturity, or par amount.

determination of present value... should be reported in the balance sheet as a direct deduction from or addition to the face amount of the note."

In effect, the liability of the borrower is required to be stated initially at an amount equal to the loan proceeds. Paragraph 16 seems to require the stated amount of the liability to be increased or decreased periodically over the loan term by amortizing the discount or premium. That requirement is implied in the statement that "amortization of discount or premium should be reported as interest in the statement of income."

The opinion does not say how the discount or premium should be amortized. Thus, it does not require that the interest method be used for loans. The only mention of the interest method in APB Opinion 21 is in paragraph 15, which requires the interest method to be used in accounting for a specified kind of credit purchase (this requirement will be discussed in chapter 6).

To my knowledge, no authoritative accounting pronouncement requires that the interest method be used for loans. Some accountants dispute that conclusion by citing paragraph 190 of FASB Statement of Financial Accounting Standards No. 15, *Accounting by Debtors and Creditors for Troubled Debt Restructurings.* However, the paragraph (which appears in an appendix) merely says that "allocation of interest income or expense is normally accomplished in present accounting practices by the interest method."

Evaluating Current Accounting

In evaluating current accounting for liabilities incurred in fixed-payment loans, two questions require examination at the outset:

1. Can the amounts at which such liabilities are initially stated reasonably be said to be attributes of the liabilities outside of financial reporting?
2. Can the amounts at which such liabilities are subsequently stated reasonably be said to be attributes of the liabilities outside of financial reporting?

Fixed-payment short-term loan liabilities are stated under GAAP at their probable amounts over the course of their existence, which means that they are stated at that attribute outside of financial reporting when they are incurred and at subsequent reporting dates.

Whether long-term loan liabilities incurred in fixed-payment loans are stated under GAAP at an attribute outside of financial reporting at any or all of those dates will be considered in this chapter.

Initial Statement

An amount that is part of an event in which an entity obtains an asset can reasonably be said to be an attribute of the asset. For example, the payment of money by a lender to a borrower is the immediate cause of the lender's obtaining a receivable from the borrower. The loan proceeds can reasonably be said to be an attribute of the receivable for that reason. The amount of money an entity paid to acquire a nonmonetary asset—its acquisition cost—can also be reasonably said to be an attribute of the asset.

Similarly, an amount that is an element of an event that is the immediate cause of an entity's incurring a liability can reasonably be said to be an attribute of the liability. For example, the receipt by a borrower of the proceeds of a loan is the immediate cause of the incurrence by the borrower of a liability to the lender. The loan proceeds can reasonably be said to be an attribute of the liability for that reason. The loan proceeds pertain to the origin of a liability, which makes the loan proceeds of a liability similar to the acquisition cost of an asset. (Although no one has ever argued that a long-term loan liability should be reported at the proceeds throughout its existence, for the sake of completeness that possibility should not be ignored, and will be considered in chapter 5.)

Subsequent Statement

The amounts of the payments to be made by borrowers in fixed-payment loans are commonly calculated in loan negotiations by applying versions of the interest formula. As discussed in the Appendix, any version used in any given loan is a consolidation of a group of formulas. Each formula in the group pertains to a separate period of the loan, and each can be used to calculate an amount that pertains to the end of each period. Each amount is a subtotal in that each is an element in the formula used to calculate the amount that pertains to the end of the next period. The consolidation of the group of formulas into a single formula permits the amounts of the payments of the borrower to be calculated without calculating the subtotals.

The borrower's liability is stated under the interest method at such subtotals at the reporting dates after the liability is incurred. The

stated amounts are described as present value in FASB Concept Statement No. 5, paragraph 67(e):

> Long-term payables are... reported at their present value (discounted at the implicit or historical rate), which is the present or discounted value of future cash outflows expected to be required to satisfy the liability in due course of business.

The implicit rate is used for discounting liabilities incurred in loans. The historical rate is used for discounting liabilities incurred in credit purchases. (This will be discussed in chapter 6; the difference between the implicit and historical rates is explained in the Appendix.) Calculating the stated amounts of a liability incurred in a loan by discounting at the implicit rate is essentially the same procedure as calculating them by the interest method (the reasons for this conclusion are provided in the Appendix).

"Future cash outflows expected to be required to satisfy the liability" implies that the future cash payments that are discounted at the implicit rate are the amounts that make up the probable amount of the liability. The total of those amounts, which is the total amount the borrower is obligated on the reporting date to pay in the future, is the total of all principal and interest the borrower has promised to pay less any payments that have been made by the reporting date. (This interpretation of the total amount, already discussed in chapter 1, is not the traditional interpretation, which will be discussed in the section on the interest method and probable amounts.)

As discussed in chapter 2, present value is the name given to any amount calculated by discounting under the interest formula. Concept Statement No. 5, paragraph 67, gives the term an additional meaning by calling it an attribute of a liability. If the present value is calculated for a specific liability, it is an attribute of the liability inside of financial reporting simply by virtue of its assignment as such by an accountant. As discussed in chapter 2, the question of whether it is an attribute outside of financial reporting cannot be answered without first specifying some meaning of present value other than any amount calculated by discounting. Concept Statement No. 5 specifies no such meaning, and it is possible that FASB intended no such meaning. However, accountants outside FASB have suggested such meanings. These will be evaluated in the remainder of this chapter.

Value

If the term *present value* is used outside the context of the interest formula, it means the value of an item at the present time. One

accountant suggested to me that present value under the interest method means the value of the liability at the present time, that is, on the reporting date. The term *value* has various meanings, but no particular one was specified.

Liabilities have no value to debtors. (For that reason, liabilities reported in conformity with the conclusions of this study should be said to be stated at their current amounts, not their current values.) Nevertheless, the concept of value as applied to liabilities should be explored to see if any insight can be gained.

The only meanings of value that are relevant to this discussion are those that refer to amounts of money. These are—

1. An amount stated in a document.
2. An amount in a ranking.
3. A price.

These three meanings need to be considered to determine whether they refer to amounts that can reasonably be said to be attributes of liabilities incurred in fixed-payment loans and, if so, whether they are measured by discounting at implicit rates.

Value as any stated amount. People commonly use the term *value* to refer to any monetary amount stated in any kind of document. That use was formalized in Accounting Terminology Bulletin (ATB) No. 3, *Book Value,* issued by the AICPA Committee on Terminology in August 1956. Paragraph 3 states that "value as used in accounts signifies the amount at which an item is stated, in accordance with the accounting principles related to that item."

That use of value was common among accountants when ATB No. 3 was issued, but in recent years its use has diminished. The bulletins are omitted from the *Current Text of General Standards,* published yearly by FASB, and from its companion, *Original Pronouncements.*

An accountant may state an asset or liability at an amount identified as value.[2] Simply using that word, however, does not mean that

2. For example, Kenneth Boulding, an economist often cited by accountants as an advocate of implicit rate discounting, stated that "all the methods of valuation, whether used by accountants or not, are based on various methods of allocating profit." Of those methods, he described (1) a method of valuation "at cost," (2) a method of valuation at some "market" price, (3) a method of valuation at "reproduction cost," and (4) a method of valuation

the amount can reasonably be called an attribute of the item outside of financial reporting, for example, an attribute known as value.

Value as a ranking. People commonly use value as a verb meaning the ranking of items according to preference. The creditor's acceptable early-discharge amount, which is an attribute of a liability (as discussed in chapter 2), involves such a ranking. However, there is no reason why the lender-creditor would use implicit rate discounting to calculate the early-discharge amount.

Value as price. People also commonly use value to mean a price or the product of the price of a particular item multiplied by the number of items.[3] They also use the term *value in exchange* to mean price.[4]

The word *price* has both a narrow meaning and a broad meaning. According to the narrow meaning, price is a ratio of exchange between

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according to the "constant rate of profit." The fourth method is implicit or historical rate discounting. The valuation apparently means merely the stating of an asset at an amount calculated in any specified way. Describing the amount as the value of the asset merely involves giving a name to the amount. See Kenneth E. Boulding, *Economic Analysis*, 3d ed. (New York: Harper and Row, 1955), pp. 851–855.

3. For example, Irving Fisher, another economist often cited by accountants, stated that "the value of a given quantity of wealth is found by multiplying the quantity by the price." Fisher discussed four other meanings of value: (1) the price of a single item, (2) the purchasing power of money in terms of goods, (3) the price an item "ought to sell for," and (4) the "degree of esteem in which an article is held." He concluded that "it seems preferable to conform our definitions of value and price as closely as possible to business usage, which instinctively and consistently applies the term 'price' to the unit and 'value' to the aggregate."

   Fisher advocated stating assets in financial statements at their values, apparently defined as the aggregate price. He advocated determining values by discounting the future receipts and payments attributable to future ownership of assets. See Irving Fisher, *The Nature of Capital and Income* (New York: The Macmillan Company, 1906), pp. 13–14.

4. Moonitz distinguished *value in exchange* from *subjective value* and *intrinsic value*, "which rest on people's tastes or hopes." He concluded that "subjective values of this type are undoubtedly useful in welfare economics; they have no place, however, in accounting." Moonitz implied that price is the only meaning of value relevant to accounting. See Maurice Moonitz, *The Basic Postulates of Accounting*, Accounting Research Study No. 1 (New York: AICPA, 1961), p. 19.

money and an item other than money. The broad meaning is the sacrifice that was or could be made to acquire something. According to the broad meaning, the amount of interest that was or could be paid in a loan is a price.

The amounts at which liabilities in fixed-payment loans are initially stated in current practice are prices, because an amount of borrowed money can be interpreted as the price of the promise of the borrower. However, there is no reason why the amounts at which the liabilities are stated on subsequent reporting dates under implicit rate discounting should be called prices.

Value as an attribute. None of the reasonable interpretations of value suggests that an amount calculated under the interest method can reasonably be said to be an attribute of a liability in a fixed-payment loan. If such an amount is to be demonstrated to be an attribute, another kind of analysis will be needed. An attempt at such an analysis follows.

The Interest Method and Probable Amounts

As discussed in chapter 1, it is my conviction that when a fixed-payment loan is made, the borrower incurs an obligation to pay when due all amounts promised the lender, including all amounts described as interest by the parties. A determination is usually made that the borrower will probably pay the total of all the amounts the borrower has become obligated to pay, so the total is usually the probable amount of the liability. The probable amount is subsequently reduced as the borrower makes the payments.

As discussed in the section on subsequent statement, Concept Statement No. 5 describes the stated amounts of a liability under the interest method as being calculated by discounting the amounts that make up the probable amount of the liability by the implicit interest rate. This is a relatively new interpretation of the probable amount of the liability. According to the traditional interpretation, the stated amount of a liability under the interest method *is* the probable amount of the liability. For example, Earl Spiller, Jr., has made the following statement:

> *Certain liabilities grow progressively in amount* until a payment date is reached, at which time the debt is liquidated. . . . Interest payable is [a] good example. Interest is the charge for the use of borrowed money. *The interest owed increases as time passes* until periodic cash payments are

> made for the total interest related to the elapsed time. [Emphasis added][5]

Spiller presented a graph in which the "interest owed" is shown to increase continuously over the term of the loan.

In common usage, to say that interest is owed is to say that an obligation has been incurred to pay interest. Spiller is essentially saying that an obligation to pay interest is incurred separately from the obligation to pay principal. His statement can be interpreted to mean that the borrower continuously incurs increments in the obligation to pay interest over the term of the loan. As a result, the total amount of interest the borrower is obligated to pay on any given date continuously increases over the loan term, except for interruptions caused by interim payments.

As discussed in the section on subsequent statement, the interest method is applied to a liability incurred in a fixed-payment loan without distinguishing between principal and interest. If a balance sheet were prepared for every date during the term, the series of balance sheets would show a continuously increasing stated amount, less any interest or principal paid. Spiller's description may be understood to assume that the stated amount at any given date under the interest method measures the total probable amounts of two liabilities to the lender, one pertaining to the payment of principal and another pertaining to the payment of interest. Alternatively, the assumption can be made that the stated amount under the interest method measures the probable amount of a single liability to the lender to pay both principal and interest. In effect the two assumptions are the same, but because it is simpler, the second assumption will be used in the remainder of this chapter.

A Demonstration. A complete demonstration of that assumption is given. For convenience in exposition, the demonstration is presented from the perspective of a person who believes it (I do not believe it). After the demonstration is presented, it is evaluated.

The demonstration applies to a loan in which a determination is made on the date of the loan that the borrower probably will make all the payments required under the contract (this is the kind of loan to which this kind of accounting is usually applied). For such a loan, any given amount a borrower on the reporting date has an obligation to pay

5. Earl A. Spiller, Jr., *Financial Accounting: Basic Concepts* (New York: Richard D. Irwin, Inc., 1977), p. 39.

in the future probably will be paid in the future. Consequently, the amount the borrower is obligated on any reporting date to pay in the future is, under the definitions of liability and probable amount, the probable amount of the liability.

The demonstration attempts to show that the amount at which a liability incurred in a fixed-payment loan is first recognized—the loan proceeds—is the amount the borrower then becomes obligated to pay.

The demonstration further attempts to show that the borrower continuously incurs increments in the obligation over the loan term, because of interest, and that the amount at which the liability is stated by the interest method at any given date during the term is the amount of principal and interest that the borrower then has an obligation on the given date to pay in the future.

Continuously Incurring Increments. According to the demonstration, at the time a loan is made, the borrower incurs an obligation to repay in the future the amount of money borrowed. At the end of the next day, the borrower incurs an increment in that obligation because of interest. Because of interest, the borrower incurs an additional increment in the obligation every day until the end of the term. If the borrower is required to make more than one payment and one is made during the term, the payment reduces the amount the borrower is obligated to pay.

The amount the borrower is obligated to pay on any given date equals the amount the borrower originally became obligated to pay (the loan proceeds), plus the sum of the increments in the obligation that have been incurred up to that time because of interest, less the amounts already paid. The amount the borrower is obligated to pay increases continuously over the loan term, except for interruptions caused by payments. The increment in the obligation that is incurred on any particular day equals the amount the borrower is obligated at the beginning of the day to pay in the future multiplied by the implicit rate of interest (expressed as a daily rate).

Increments in the obligation are incurred daily as a result of an event that occurs continuously after the loan is made. Incurring such an increment is a result of the occurrence of the continuously occurring event during the day in which the increment is incurred. That is the last event of which the obligation at the end of the day is a result.

The sum of the amounts of increments incurred in the obligation over the term of the loan equals the total amount of interest paid. For example, assume that a borrower (B) and a lender (L) make a contract dated December 31, 1990, with the following terms:

- L promises to pay B $1,000 on December 31, 1990.
- B promises to pay L $1,210 on December 31, 1992.

L pays B $1,000 on December 31, 1990. On December 31, 1990, B incurs an obligation to pay $1,000 on December 31, 1992, that is, an obligation to repay the amount of money borrowed. The payment to B on December 31, 1990, is the last event that causes the obligation to be incurred.

Increments in the obligation are incurred continuously during 1991 up to December 31. The incurring of increments is caused by an event that occurs continuously during that period. As a result, the borrower will have incurred by December 31, 1991, an obligation to pay $1,100 ($1,000 × 1.10) on December 31, 1991.

Increments in the obligation will also be incurred continuously during 1992 up to December 31. The incurring of increments is caused by an event that occurs continuously during that period. The increments incurred up to December 31, 1992, will cause the borrower to be obligated then to pay $1,210 ($1,000 × 1.10^2) in the future.

Evaluating the Accrual of Interest

Authoritative accounting pronouncements provide support for the demonstration. APB Statement 4, *Basic Concepts and Accounting Principles Underlying Financial Statements of Business Enterprises*, paragraph 181, describes "accumulation of interest" as an exchange that takes place "over time." FASB Concept Statement No. 6, paragraph 209, states, as an example of how an obligation is incurred, that "interest accrues with the passage of time." Assuming that accrual of interest and accumulation of interest mean the same thing, the APB and FASB understand them both to be the process by which increments in the borrower's obligation are continuously incurred over the loan term.[6] In this process, the stated amounts of loan liabilities

6. This meaning of accrued interest differs from that described in connection with savings deposits in banks. As discussed in chapter 7, a savings deposit is a variable-payment loan, not a fixed-payment loan. The accrued interest on a savings deposit at a particular date is an amount that the depositor can demand the bank to pay at that date. The accrued interest in financial reporting for a fixed-payment loan at a reporting date is not an amount that the lender can demand the borrower to pay or that the borrower can choose to pay at that date. Nor is such an amount in the demonstration.

calculated by the interest method are the probable amounts of the liabilities at the reporting dates.

Interest cannot be said to accrue unless the event assumed to cause the accrual—the last event that causes increments in the obligation to be incurred—occurs continuously between the time the loan was made and the time it is completely repaid.

Kinds of Events. Various events occurring after the loan is made have been proposed by accountants as types of events that cause interest to accrue. None of these proposed events are specified by the borrower and lender as conditions for the payment of interest. They are therefore not relevant to determining when the obligation of the borrower is incurred under the assumption made in chapter 1 that incurrence is caused by the occurrence of the last event that is a condition for payment. Nevertheless, the proposed events deserve to be evaluated on their own grounds and to have the assumption waived.

The proposed events can be grouped under the following headings:

1. Delay
2. Passage of time
3. Provision of money
4. Permission to use money
5. Use of money

For the events to cause interest to accrue, they would have to happen continuously and they would have to cause the liabilities to grow.

Delay. One accountant has suggested to me that the event that causes interest to accrue is delay by the borrower in repaying the loan. He bases his contention on the following statement in FASB Concept Statement No. 6, paragraph 37:

> Liabilities facilitate the functioning of a highly developed economy primarily by permitting delay—delay in payment, delay in delivery, and so on. A common feature of liabilities is interest—the time value of money or the price of delay.

The time value of money is the preferability of early receipt of money, as discussed in chapter 2. This preferability is the principal cause of the payment of interest. However, paragraph 37 implies

erroneously that the time value of money is synonymous with the payment of interest, which it calls "the price of delay."

This accountant has misunderstood the nature of delay. It is not an event, as he contends. It is instead an inference, usually about a particular set of circumstances under which an act is performed. These circumstances are the following:

1. An entity has the opportunity to perform an act at time (1).
2. The entity does not perform the act at time (1).
3. The entity performs the act at time (2).

The accountant's contention is easiest to evaluate as it applies to a fixed-payment loan in which the borrower makes a single payment to the lender. In such a loan, the borrower has no unilateral opportunity under the contract to repay the lender until the end of the loan term. If the borrower does not negotiate repayment with the lender before the end of the term, the borrower cannot aptly be described as delaying repayment unless the end of the term passes without repayment. The concept of delay in repayment is therefore not relevant to the assumption that interest accrues.

An entity that has money to lend has the opportunity until the loan is made to use the money for investment or consumption. If the loan is made, the lender sacrifices an opportunity to use that money for investment or consumption until the loan is repaid. The circumstances of a loan are aptly described as involving a delay by the lender in investment or consumption. However, there is no event pertaining to the delay that occurs continuously over the term of the loan except the passage of time.

Passage of time. Several accountants have suggested that interest accrues simply because of the passage of time. Spiller, too, seems to make that suggestion, in the statement quoted in the section on the interest method and probable amounts.

According to this interpretation, the passage of time during the first day after the borrower receives the loan proceeds is the last event that causes the first increment in the borrower's obligation to be incurred. The passage of time on the second day is the last event that causes the second increment to be incurred, and so on. In effect, the obligation of the borrower is said to change after it is initially incurred solely because of the passage of time.

The passage of time affects the relationship between the borrower

and lender in that it shortens the period remaining until the borrower has to make payments. There is only one other effect of the passage of time on the relationship that is apparent: The amount of interest negotiated to be paid depends on the length of time used in the interest formula by which the amount is calculated.

If the obligation of the borrower does change after it is incurred, it is similar to that incurred in transactions in which the amounts paid depend on variations in the lengths of time used to calculate them. For example, the amount of wages paid depends on the length of time an employee works. The amount paid to advertise on television depends on the length of time in which the advertisement appears.

However, in all these other kinds of transactions, the obligations change after they are incurred because of events that occur over time, not the passage of time. The obligation of the employer changes because the employee continues to work. The obligation of the advertiser changes because the television station continues to present the advertisement. (Services of this kind are commonly purchased on credit, and interest is paid in credit purchases as well as in loans. The effect of the payment of interest on the incurrence of obligations in credit purchases will be discussed in chapter 6.)

If interest does accrue solely because of the passage of time, incurrence of an increment in the obligation of the borrower is a unique event. This is because the times when all other kinds of events occur are determined by events other than the passage of time. The passage of time only contains instants in which events occur.

If interest accrues, incurrence of an increment in the obligation of the borrower is more reasonably considered to be similar to all other kinds of events rather than a unique event. When an increment is incurred should be considered to be determined by the time when an event occurs as time passes—an event that is relevant to the relationship between the borrower and lender.

Accrual of interest as an exchange. Authoritative accounting pronouncements imply that events other than the passage of time cause interest to accrue. One of these is APB Statement 4, which, as already discussed, describes the accrual of interest as an exchange. Statement 4 does not describe the nature of the exchange, but it can be understood as an act in which each party does something that benefits the other party. If the accrual of interest is an exchange, it must involve the continuous performance of an act by the lender to the benefit of the borrower, and by the continuous incurrence by the borrower of increments in the obligation to the lender, to the benefit of the lender.

According to this interpretation, the act of the lender causes increments in the obligation to be incurred.

Authoritative accounting pronouncements suggest that there are two kinds of acts performed by the lender that occur continuously and cause interest to accrue: the provision of money and the permission to use money.

Provision of money. Paragraph 209 of FASB Concept Statement No. 6 states that "interest accrues with the passage of time (that is, providing loaned funds for another hour, day, week, month, or year)." The statement implies that provision of the loaned money is a continuous process that occurs over the term of the loan. The manner in which the provision occurs is not explained.

A lender provides money to a borrower by the transfer of money. However, the transfer occurs on the date of the loan. The lender does not continue to provide money in that sense after the loan is made.

The continuous refraining by the lender from obtaining the repayment of the money transferred to the borrower might be construed as a continuous provision of money. In the case of a loan that is renewable daily and has been renewed daily over a period of time, the lender is continuously providing money in this sense after the loan is originally made. But that is a series of daily loans, not a single fixed-payment loan with daily provisions of money.

A variable-payment loan may grant the lender the right to require the borrower to repay the loan at any time. This is the case with a bank savings account, for example, in which the bank is the borrower and the depositor is the lender. Here, the refraining by the lender from exercising the right to exact repayment might be interpreted as a provision of money by the lender. The lender continuously provides money in this sense until the final payment is made by the borrower. However, such a loan is not a fixed-payment loan. In a fixed-payment loan, a lender provides money only once, at its inception. Money is not continuously provided, so the providing of money cannot be an event that causes interest to accrue.

Permission to use money. APB Statement 4, paragraph 151, describes interest as compensation for "permitting others to use enterprise resources," that is, permitting the borrower to use the lender's money. Paragraph 181 describes accumulation of interest as an exchange that takes place over time, implying that permission is continuously given as time passes over the duration of the loan.

Permitting someone to do something means refraining from pre-

venting him or her from doing it. If A stands by while person B does something, A's behavior does not constitute permission unless A has a right to prevent B from doing that thing. For example, if A stands by while B uses A's car, A's behavior can be described as permitting B to use the car. In contrast, if A stands by while B uses B's car, A's behavior cannot be described as permitting B to use the car.

The meaning of permission can be used to determine whether the behavior of a lender can be described as permitting the borrower to use the lender's money continuously over the duration of a loan. If the lender does give permission, it is not until after the borrower receives the money, because the money cannot be used until then. However, the lender has no right to prevent the borrower from using the money after it is received. Consequently, the behavior of the lender after the borrower receives the money cannot be described as permission to use the money continuously.

Use of money. The description of interest in APB Statement 4 can be modified slightly to refer to compensation for the use of the lender's money rather than to compensation for permitting its use. If the money borrowed is used by the borrower continuously over the term of the loan, that continuous use may be the event that causes interest to accrue.

Money is used if it is invested or spent on goods or services. Borrowers almost always use the money borrowed, but they may choose not to do so. If the borrower does not use the money, this does not affect the relationship between the borrower and the lender. The same payments to the lender will have to be made at the same times by a borrower who does not use the money as by a borrower who does. Consequently, the borrower becomes obligated to pay interest in the same way in either case.

However, even if the use of the money were a condition for the payment of interest, it would not explain why increments in the obligation of the borrower are continuously incurred over the term of the loan. The money received by the borrower is not used continuously over the term of the loan. Usually it is used only once, just after being received.

The items bought with borrowed money often provide benefits to the borrower continuously over the loan term. This is true, for example, of the services provided by buildings and equipment. The benefits a borrower expects to receive from using the borrowed money explain *why* the borrower agrees to become obligated to pay interest. However, they do not explain *when* the borrower becomes obligated to pay

interest. If interest is considered to result from an exchange, the borrower becomes obligated when the lender performs an act beneficial to the borrower. If no such act is performed by the lender, there is no exchange. Moreover, the lender performs no act that is beneficial to the borrower other than the one that occurs on the date when money is transferred to the borrower.

A Final Word on the Accrual of Interest. No kind of event seems to provide plausible support for the argument that interest accrues in fixed-payment loans. No increments in the obligation of a borrower are incurred after a fixed-payment loan is made unless a new loan is made with the same lender.

As a final illustration, assume that A loans B $1,000, and B promises to pay A $1,500 two years later. A goes off on safari and is not seen or heard from until the two years have elapsed. I contend that nothing has happened in those two years (other than the shortening of the period until payment is due) to alter the relationship between A and B, which was established two years earlier, when B became obligated to pay A $1,500 (not $1,000) at the end of two years.

Probable Amounts of Fixed-Payment Loan Liabilities

Paragraph 67 of Concept Statement No. 5, quoted in the section on subsequent statement, describes the stated amounts of liabilities incurred in fixed-payment loans as being calculated under the interest method in concept by discounting at implicit rates the totals of all the amounts that probably will be paid by the borrowers after the reporting dates, including interest. Those totals, which usually equal the total amounts the borrowers are obligated to pay, are the probable amounts of the liabilities. Hence, no less august a body than FASB implies that at the time a loan is made, the borrower becomes obligated to pay when they come due all the amounts promised.

In the case of the illustration provided in the demonstration, the borrower incurs on December 31, 1990, an obligation to pay on December 31, 1992, not $1,000 but $1,210. The last event causing the obligation to be incurred is the payment to the borrower on December 31, 1990.

We should reflect on the consequences of interpreting obligations in fixed-payment loans such that the borrower instantly incurs an obligation to pay when due in the future the total amount of money required to be paid under the contract, including all amounts characterized as interest. As far as I know, such an interpretation has never

been made explicitly by any accountant, although it is implied by paragraph 67 of Concept Statement No. 5. It is an interpretation that contradicts the assumption (implied by paragraph 209 of Concept Statement No. 6) of generations of accountants that interest accrues in fixed-payment loans. This assumption should not be abandoned casually, but neither should it be retained if convincing reasons can be provided that it is unsound.

We should also bear in mind that the existence on a reporting date of an obligation pertaining to a loan does not necessitate the stating of the liability at the amount of the obligation on that date. For example, if a borrower of $1,000 instantly incurs a liability to pay $1,210 two years hence, the borrower need not necessarily state the liability at $1,210 on the date of the loan. Much of this study is concerned with evaluating that amount and the various other amounts at which it could be stated.

Income Statement Effects

Many accountants advocate accounting for liabilities in fixed-payment loans on successive reporting dates by the interest method because of the income statement effects of the procedure. For example, in his discussion of the amortization of discount or premium associated with a liability incurred in the issuance of bonds, Hector Anton made the following comment on the use of straight-line amortization instead of amortization by the interest method:

> As is the case with straight-line depreciation, straight-line amortization is but an expedient "average" method. It produces the usual distorted effect on recorded rates of return (expense).

He then added the following comment:

> Of course, this same distortion has been pointed out in connection with depreciation. Unlike the depreciation case, however, there is no mitigating factor of uncertainty here. Thus, while lack of accuracy in method may be excused in view of uncertainties with respect to the income-expense streams in the depreciation problem, the certainty in the bond problem makes it imperative that the most accurate method available be used.[7]

7. Hector R. Anton, "Accounting for Bond Liabilities," *Journal of Accountancy* (September 1956), p. 56.

Anton assumes that the only way a liability incurred in a fixed-payment loan can be accounted for is to state it when it is incurred at the amount of money borrowed and to increase the stated amount continuously over the existence of the liability, either by the interest method or by the straight-line method. However, other methods of accounting for such a liability have been proposed (and these will be discussed in chapter 4). Anton's argument for the interest method is incomplete because it does not compare the interest method with these other methods. Moreover, Anton does not say what he means by "distortion" or show why straight-line amortization distorts the rate of return but amortization by the interest method does not. He also does not say why the interest method is the most accurate method.

The interest method recognizes interest cost on a loan liability each period at a constant percentage of the stated amount of the liability at the beginning of each period, as discussed in the section on authoritative pronouncements. In contrast, the straight-line method of amortizing discount or premium usually results in recognizing interest cost at a decreasing percentage of the stated amount of the liability at the beginning of each period. Most accountants who have considered the matter believe that the interest method produces more satisfactory income statement results than the straight-line method because of that difference, and current GAAP requires the interest method to be used.

Corollary to the assumption of this study that liabilities should be stated at their attributes is the assumption that income statement amounts related to liabilities should represent changes in those attributes caused by events outside of financial reporting. The interest method and the straight-line method produce satisfactory income statement results only if they take into account the occurrence of such an event or events.

The interest method and the straight-line method both recognize interest cost in each reporting period no matter how short the period. If both methods reflect the occurrence of such an event or events, the event or events must occur continuously. Given the corollary assumption and the conclusion of this chapter that no such event occurs, it can be seen that neither method produces satisfactory income statement results.

Conclusion

A liability incurred in a short-term fixed-payment loan is stated under current GAAP during the course of its existence at its probable

amount, which can reasonably be said to be an attribute of the liability. A liability incurred in a long-term fixed-payment loan is initially stated under current GAAP at the amount of money borrowed, which can reasonably be said to be an attribute of the liability. At subsequent reporting dates, such a liability is stated by the interest method at amounts that I have tried in this chapter, without success, to relate to events or conditions outside of financial accounting. None of these amounts can reasonably be said to be attributes of a liability incurred in a fixed-payment long-term loan.

4

Accounting for Liabilities in Fixed-Payment Loans: Proposals

Some accountants have proposed revising GAAP for liabilities incurred in fixed-payment loans so that they are stated at—

- The proceeds of hypothetical loans.
- The creditor's acceptable early-discharge amount.
- The funding amount.

All the proposals are intended to apply not only to liabilities incurred in fixed-payment loans but to all kinds of liabilities.

Proceeds of Hypothetical Loans

Hypothetical loans are loans that have not been and cannot be made.

Definition. Jean Kerr has proposed stating a liability incurred in a fixed-payment loan in certain circumstances at "the amount which could be raised at the date of the balance sheet in return for accepting future obligations in respect of interest and principal repayments as

presently exist."[1] I interpret this to mean the most money the reporting entity would be able to borrow at the reporting date in a hypothetical loan involving payments to a hypothetical lender in the same amounts and at the same times as the payments making up the probable amount of the liability in the existing loan. In this study, the most the entity would be able to borrow is called the *hypothetical proceeds* of the existing loan liability.

Kerr says that stating a loan liability at the hypothetical proceeds would be analogous to stating an asset at the current replacement price.[2] The description is apt. Stating an asset that a reporting entity owns at the current replacement price is to state it at the price of an unowned asset. Stating a loan liability at the hypothetical proceeds is to state a liability that a reporting entity owes at a price applicable to a liability it does not owe.

Kerr proposes revising the stated amount of a fixed-payment loan liability to keep the amount current throughout the liability's existence. The procedure involves recalculating the hypothetical proceeds at each reporting date to reflect (1) the reporting entity's creditworthiness, (2) conditions in the loan market in general at that date, and (3) the length of time until the payments are due. This is to state the liability at hypothetical proceeds current at each reporting date rather than at historical hypothetical proceeds, that is, at hypothetical proceeds when the existing liability was incurred. (In this study, hypothetical proceeds refers to current hypothetical proceeds unless otherwise noted.)

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1. Jean St. G. Kerr, "Liabilities in a Current Value Accounting System," in *Essays in Honor of Trevor R. Johnson*, ed. D.M. Emanual and I.C. Stewart (University of Auckland [Australia], 1980), p. 230. Kerr's proposal is unusual in that she describes the kind of amounts at which she believes a liability should be stated. Most accountants describe kinds of interest rates that they propose be used to discount liabilities without describing the kinds of amounts the discounting is supposed to produce.

   Some accountants have proposed discounting at an interest rate that implies the kind of amount described by Kerr. For example, Weil proposes discounting liabilities at "the interest rate the borrower would pay at the time it incurs the obligation for a loan with characteristics roughly equal in amounts and timing of future cash payments (the borrower's debt rate)." The borrower apparently is the reporting entity that has incurred the liability to be discounted at the proposed rate. See Roman Weil, "Role of the Time Value of Money in Financial Reporting," *Accounting Horizons* (December 1990), p. 50.

2. Ibid.

Kerr describes the calculation of hypothetical proceeds as follows:

> This amount would be calculated by applying to the cash flows concerned the yield required for that security by participants in the market. If the security is listed on a stock exchange, evidence of the current yield required by investors can be obtained from the current market price of that security.[3]

The "cash flows concerned" presumably are the payments making up the probable amount of the existing liability. Its hypothetical proceeds would apparently be calculated by discounting those payments by an interest rate (yield) intended to approximate the rate that would be agreed on in the hypothetical loan. That interest rate is referred to in this study as the *hypothetical borrowing rate.*

Kerr would use as evidence of the hypothetical borrowing rate for a liability associated with publicly traded debt securities the rate (yield) implicit in the price at which such a security was sold at the reporting date, determined by the interest formula. The amount that Kerr would calculate by discounting, which is intended to measure the hypothetical proceeds, equals the amount calculated by multiplying the current price of such a security by the number of such securities outstanding. The hypothetical proceeds can thus be measured in two ways, of which only one involves discounting.

The calculated amount in either approach seems to be a reasonable measurement of the hypothetical proceeds, assuming that the hypothetical loan is one that would have been made instead of the existing loan. The calculated amount would not be a reasonable approximation of the hypothetical proceeds given the alternative assumption, that the hypothetical loan would be made in addition to the existing loan. The rate implicit in the current price of such a security is affected by the borrower's current debt-to-equity ratio. That ratio does not reflect the hypothetical loan. Assuming that the hypothetical loan would be made in addition to the existing loan is to interpret the debt-to-equity ratio at the reporting date as reflecting the additional loan. Adding the hypothetical loan would increase the ratio, so the interest rate that would be agreed on in the hypothetical loan would be higher than the rate implicit in the current price. The latter rate would not be satisfactory evidence of the hypothetical borrowing rate under that assumption. It is therefore assumed in this study that the hypothetical loan would have been made instead of, not in addition to, the existing loan.

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3. Ibid.

Evaluation. Stating a liability incurred in a fixed-payment loan at the hypothetical proceeds should be rejected for two reasons.

First, the hypothetical proceeds of a liability incurred in a fixed-payment loan can reasonably be said to be an attribute of a liability, but not of that liability. It can reasonably be said to be an attribute of a liability that has not been and cannot be incurred, that is, the liability that would be incurred in the hypothetical loan. Liabilities should be stated at amounts that can reasonably be said to be their attributes, not the attributes of other liabilities and especially not the attributes of liabilities that have not been incurred.

The second reason not to state such a liability at its hypothetical proceeds involves the use by lenders of financial statements to, among other things, evaluate the credit risk of current or prospective borrowers. If the financial statements of a reporting entity persuade lenders that an entity has become a greater credit risk, that will increase the interest rate at which it can borrow, which is the rate used to calculate hypothetical proceeds. As a result, the entity will decrease the stated amount of the liability and recognize a gain. If, however, the financial statements persuade lenders that an entity has become less of a credit risk, that will decrease the interest rate at which the entity can borrow. As a result, the entity will increase the stated amount of the liability and recognize a loss.

If a reporting entity is believed to have become a greater credit risk, that change in belief is an event unfavorable to the entity. If a reporting entity is believed to have become a lesser credit risk, that change in belief is an event favorable to the entity. Stating its liability at the hypothetical proceeds involves recognizing an unfavorable event as a gain and a favorable event as a loss, which are obviously not satisfactory results.[4]

Creditor's Acceptable Early-Discharge Amount

A liability from a fixed-payment loan may exist on a date when discharge of the liability is not required by the contract between debtor and creditor. However, the liability may still be discharged on that date; in this study, this is referred to as *early discharge*.

Ronald Ma has proposed that a liability incurred in a fixed-

4. The same argument is made in J. Alex Milburn, *Incorporating the Time Value of Money Within Financial Accounting* (Toronto: Canadian Institute of Chartered Accountants, 1988), p. 213.

payment loan be stated at an attribute pertaining to early discharge. In his discussion of the attribute, he distinguishes between liabilities associated with and those not associated with publicly traded debt securities.

Liabilities Not Associated With Publicly Traded Securities. Ma proposes that a liability incurred in a fixed-payment loan not associated with publicly traded debt securities be stated at "the amount the creditor [is] prepared to accept in full settlement" of the liability on that reporting date.[5] This proposal requires further development.

A borrower may want to discharge a liability early and may negotiate with the creditor (either the lender or a party that has acquired the lender's rights) over the amount. Similarly, a borrower who has not entered into such negotiations may nevertheless infer the lowest amount that would be acceptable to the creditor. In this study, the lowest amount is called the *creditor's acceptable early-discharge amount*. That amount can reasonably be said to be an attribute of any liability incurred in a fixed-payment loan because any rational creditor would accept some amount in early discharge. As discussed in chapter 2, measuring the creditor's acceptable early-discharge amount takes into account the time value of money to the creditor.

Liabilities Associated With Publicly Traded Securities. For liabilities incurred in fixed-payment loans associated with publicly traded securities, Ma states that "the appropriate measure of their current cash equivalent is their market price."[6] I interpret this as a proposal to state such a liability at an amount calculated by multiplying the price at which such a security was traded on the reporting date by the number of securities of that issue then outstanding. Ma would state the liability at that amount because "the company can redeem the liabilities via a market purchase."[7] By this he apparently means purchase by the broker of the borrower on the floor of a securities exchange or over the counter of all the outstanding securities pertaining to the liability.

Scott Henderson and Graham Peirson criticized Ma's proposal in the following remark:

5. Ronald Ma, "On Chambers' Second Thoughts," *Abacus* (December 1974), p. 126.

6. Ibid., p. 125.

7. Ibid., p. 126.

> If the borrower enters the market to liquidate its debt, buying pressure will cause the market price to rise to an indeterminate level. For the statement user to interpret the market price at the balance sheet date as the amount which the buyer would have to pay to redeem its debt ignores the influence of these market operations.[8]

Their criticism is justified. Few of the publicly traded securities associated with a liability are traded on any particular date. If the borrower's broker were to enter the market on a given date, it would have to pay a price higher than that paid by other buyers. Payment of an even higher price would be necessary to induce additional owners to sell their securities, and a higher price still would be needed to induce the remaining owners to sell their securities. Alternatively, the borrower could buy the securities directly from their owners. This would take more time and would probably cost about the same as buying the securities through the market.

In any event, to buy all the securities (and pay off all the debt), the borrower would probably pay a total amount substantially higher than the amount at which the liability would be stated on the given date under Ma's proposal.

The amount the borrower would have to pay on a given date to buy all the securities through the market (which is the amount at which the liability apparently is intended to be stated under Ma's proposal) can reasonably be said to be an attribute of the liability. Moreover, the amount the borrower would have to pay on that date to buy all the securities directly from the owners also can reasonably be said to be an attribute of the liability. For all practical purposes, the amount that would be paid to the owners is the creditor's acceptable early-discharge amount for liabilities not associated with publicly traded securities, except that it is a total of acceptable amounts (one for each owner of the securities) instead of a single acceptable amount. The calculated amount under Ma's proposal—the number of securities outstanding times their current price—is an unsatisfactory measure of either attribute.

Under Ma's proposal, a liability incurred in a fixed-payment loan associated with publicly traded securities would be stated at the same amount as under Kerr's proposal, even though the amount under Kerr's proposal is a measurement of the hypothetical proceeds. In both cases this would produce unsatisfactory results if, during the life of the

8. Scott Henderson and Graham Peirson, "A Note on the Current Cash Equivalent of Liabilities," *Abacus* (June 1980), p. 65.

debt issue, the borrower were believed on the market to have become more or less of a credit risk. Those unsatisfactory results provide an additional reason for rejecting Ma's proposal.

Funding Amount

Sprouse and Moonitz have made the following proposal:

> To measure a liability is to determine the "weight" or the "burden" of the obligation on the balance sheet date. This "burden" is the lowest amount for which the obligation could be effectively discharged. If, for example, payment in cash now will discharge the liability, that amount of cash is the measure of the liability, even though in fact payment is delayed. If the creditor will not or cannot accept cash now in discharge of the liability, the appropriate amount is that sum which, if invested now (e.g., in a sinking fund), will provide the sums needed at maturity even though in fact no explicit sinking fund or other investment device is actually used.[9]

Sprouse and Moonitz thus contend that early payment to a creditor is similar to funding a liability, in that each effectively discharges the liability early. However, a liability can be discharged only by payment to the creditor. Such a payment is a burden to the debtor unless the liability was previously funded. Funding substitutes an earlier burden on the debtor for a later one, as does early payment to the creditor.

It is possible for any reporting entity to substitute an earlier burden for the later burden of a liability. However, few would be willing to undertake such an action, because of the sacrifice it would entail. For example, the sale of vital assets might be required to obtain the money needed to make the substitution. Accounting for liabilities should not be based on an action that a reporting entity cannot possibly undertake, such as borrowing money in a loan made instead of an existing loan. Whether it should be based on an action that is possible but not likely to be taken will be discussed in chapter 5.

A borrower who wanted to substitute the smallest feasible early-discharge burden for the later-discharge burden of a liability incurred in a fixed-payment loan would try to persuade the creditor to accept an amount equal to or less than the funding amount. If the creditor would

9. Robert T. Sprouse and Maurice Moonitz, *A Tentative Set of Broad Accounting Principles for Business Enterprises,* Accounting Research Study No. 3 (New York: AICPA, 1962), p. 39. The proposal conflicts with another proposal made on the same page to state liabilities at the amounts calculated under implicit rate discounting.

accept only an amount higher than the funding amount, the borrower would fund the liability. If the creditor would accept an amount equal to or less than the funding amount, the borrower would discharge the liability to avoid the trouble of funding it.

The proposal of Sprouse and Moonitz involves stating a liability incurred in a fixed-payment loan at the lesser of the funding amount and the creditor's acceptable early-discharge amount. This can be described as stating it at the smallest burden that could be substituted at the reporting date for the later burden. If the funding and creditor's acceptable early-discharge amounts are equal, the stated amount should be described as the creditor's acceptable early-discharge amount, consistent with the borrower's preference for early discharge over funding.

Sprouse and Moonitz provide a brief definition of the funding amount of a liability. This definition needs to be expanded, and problems in applying it to liabilities incurred in fixed-payment loans need to be explored.

Definition. The funding amount of a reporting entity's liability incurred in a fixed-payment loan on a particular reporting date is the amount of money that would be needed on that date to buy securities for a fund intended to provide all the money the entity would need to make when due the payments that make up the probable amount of the liability on the reporting date. That amount depends on the investment strategy assumed, as will be discussed in the section on investment strategies.

The funding amount of a reporting entity's liability can reasonably be said to be an attribute of the liability—one that pertains to the reporting entity's disposal of it. The funding amount is similar to the price at which a reporting entity can sell an asset it owns, that price being an attribute of the asset that pertains to the reporting entity's disposal of it. The probable amount and the creditor's acceptable early-discharge amount are other attributes of a liability that pertain to its disposal.

Economical Investment Strategy. The purpose of buying securities for a fund established to provide the payments required under a liability is to reduce the cost of funding. The cost would be higher if money instead of securities were put into the fund and the money remained uninvested. The income from the securities can provide part of the money needed for the payments.

Under the most economical investment strategy, all money received by the fund from interest and dividends and from the sale or collection of securities would be used immediately after it was received, either to make liability payments or to buy new securities. The fund would contain no money except on the dates money was received and on the dates liability payments were made. On a liability payment date, the amount of money in the fund would equal the amount of the liability payment.

The funding amount of a liability incurred in a fixed-payment loan should be measured by assuming that funding would occur under the most economical investment strategy.

Henderson and Peirson contend that stating liabilities at their funding amounts would allow management to manipulate the statement of liabilities by selecting an investment strategy that states liabilities in a way it desires.[10] Manipulation could be avoided, however, by requiring all enterprises to measure funding amounts under the same investment strategy. (Various possible investment strategies will be discussed in the section on investment strategies.)

Henderson and Peirson contend that "the after tax cash flows from the hypothetical investment must be sufficient to meet the after tax interest commitments and the redemption of the liability."[11] To meet that criterion, the funding amount must be calculated under the assumption that the taxes on income from fund investments are paid out of the fund and that the amounts of taxes saved by deducting interest on the liability are put into the fund. The funding amount with taxes considered differs from the funding amount with taxes not considered if investment income and interest expense on the liability are different over the duration of funding. Funding amounts of liabilities incurred in fixed-payment loans should be measured taking income taxes into account.

Were a fund established, brokerage commissions, taxes on purchases and sales of securities, and administrative salaries would also have to be paid. The funding amount of a liability incurred in a fixed-payment loan should be measured under the assumption that those expenses would be paid out of the fund. For the sake of simplicity, this study does not consider such expenses and income taxes in the discussion of how to determine funding amounts.

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10. Henderson and Peirson, "A Note on the Current Cash Equivalent of Liabilities," p. 63.

11. Ibid., p. 64.

Prices of Fund Investments. Were a fund established, securities would be bought either on the floor of a securities exchange or directly from a dealer in securities, depending on the securities purchased. The funding amount of a liability incurred in a fixed-payment loan should be considered to be the amount that would be used to buy the securities on the reporting date at the time of day—shortly before the exchange closes or the dealer stops trading securities—that would be the last opportunity for the reporting entity to buy them. The purchase should be assumed to be one with no specified price limit, that is, to be at market price.

Kinds of Investment Strategies. Two kinds of investment strategies can be used to calculate the funding amounts of liabilities incurred in fixed-payment loans: synchronization and nonsynchronization.

Synchronization. The funding amount of a liability incurred in a fixed-payment loan can be calculated under an investment strategy in which the fund buys debt securities that are synchronized with the liability, that is, their principal and interest payments are collectible on the same dates and in the same amounts as those of the payments that make up the probable amount of the liability.

To illustrate, assume that a liability in a fixed-payment loan is incurred on December 31, 1990. The probable amount is $1,300, comprising payments of $100 due on December 31, 1991 and 1992, and $1,100 due on December 31, 1993. The funding amount is to be measured on December 31, 1990, based on a strategy of buying a bond that pays interest of $100 on December 31, 1991, 1992, and 1993, and principal of $1,000 on December 31, 1993. If the price of the bond is $994 at the time the securities exchange closes on December 31, 1990, the funding amount will be $994.

FASB Statement of Financial Accounting Standards No. 76, *Extinguishment of Debt—An amendment of APB Opinion No. 26,* paragraph 3, states that a liability should be considered extinguished if "the debtor irrevocably places cash or other assets in a trust to be used solely for satisfying scheduled payments of both interest and principal of a specific obligation and the possibility that the debtor will be required to make future payments with respect to that debt is remote."

Paragraph 4 states that the assets are to "provide cash flows (from interest and maturity of those assets) that approximately coincide, as to timing and amount, with the scheduled interest and principal payments on the debt that is being extinguished." In other words, pay-

ments on the assets are to be synchronized with payments on the liability. Paragraph 4 further states that the assets in the trust should consist of—

1. Direct obligations of the U.S. Government.
2. Obligations guaranteed by the U.S. Government.
3. Securities that are backed by U.S. Government obligations as collateral.

The amount of money that would be used to buy securities for a trust (fund) that met those criteria is the funding amount of the liability based on that investment strategy. If such a fund is established and a liability incurred in a fixed-payment loan is treated as extinguished for financial statement purposes, there will obviously be no liability to measure at the funding amount. However, such a liability should not be treated as extinguished. The entity still owes the money; funding only sets aside funds with which to pay what is owed.

If such a liability is not treated as extinguished, the same criteria could be used as an investment strategy to determine the funding amount of the liability in order to state it at that amount. The criteria could also be used to determine the funding amounts of liabilities incurred in fixed-payment loans for which funds are not established, in order to state them at funding amounts. The remainder of this chapter (as well as chapter 6) applies both to liabilities for which funds are established and to liabilities for which funds are not established.

Neither Standards Statement No. 76 nor any of FASB's interpretations of it mention that, under some circumstances, establishment of a fund according to the Statement's criteria is not feasible. This suggests that it is possible to state any liability incurred in a fixed-payment loan at the funding amount determined by those criteria.

Nonsynchronization. The funding amount of a liability incurred in a fixed-payment loan can also be determined under an investment strategy in which debt securities are bought but payments are not synchronized. The debt securities bought when the fund is initially established are either held until payments are due and then sold, or are sold or collected before payments are due and the proceeds invested in new securities. Determining the funding amount of a liability incurred in a fixed-payment loan under nonsynchronization involves predicting the yearly rate of change in the price at which the reporting entity would be able to sell the securities, with investment income reinvested.

To illustrate, assume that the probable amount of a liability incurred in a fixed-payment loan incurred on December 31, 1990, is a single payment of $100,000 due on December 31, 1995. The funding amount of the liability on December 31, 1990, is to be measured on the basis of buying zero coupon bonds with various maturity dates and predicting the overall rate of change in the prices at which the reporting entity would be able to sell the bonds. An overall increase of 7 percent per year over the next five years is predicted.

The total amount at which the reporting entity could sell the bonds on December 31, 1995, must be $100,000—the amount of the payment. To provide that total amount, the total amount at which the reporting entity could buy the bonds on December 31, 1990, determined by discounting, would be $71,299 ($100,000 $\times$ 1.07^{-5}). The reporting entity would have to buy bonds on December 31, 1990, for that amount, ignoring brokerage commissions and taxes. (The discounting would have to be accomplished in more than one step if it was predicted that more than one rate of increase would occur over the course of the five years.)

The funding amount of a liability incurred in a fixed-payment loan can also be determined under an investment strategy that involves buying equity securities alone or a mixture of equity and nonsynchronized debt securities for the fund. If the funding amount of the liability is to be measured on the basis of such an investment strategy, the future rate of change in the total amount at which the reporting entity would be able to sell all securities in the fund must be predicted.

To illustrate, assume that a liability for a fixed-payment loan is incurred on December 31, 1990. The probable amount is $1,000,000, comprising the following payments due on December 31:

Year	*Payment*
1991	$100,000
1992	$200,000
1993	$150,000
1994	$300,000
1995	$250,000

The funding amount of the liability on December 31, 1990, is to be measured on the basis of a strategy of investing the fund's money without synchronization in a mixture of stocks and bonds. A prediction is made that the sum of the prices at which the reporting entity would be able to sell all the securities in the fund will increase at a rate of 10 percent in 1991, 1992, and 1993 and 15 percent in 1994 and 1995.

Under this investment strategy, the reporting entity sells, on the date each payment is due, sufficient securities from the fund for the proceeds to equal the amount of the payment. The reporting entity intends—on December 31, 1995, the date the last payment is due—to sell the securities remaining in the fund for $250,000—the amount of the last payment.

The reporting entity would need to buy securities for the fund on December 31, 1990, at prices that, if the overall change is at the rate predicted, would enable the reporting entity to sell them for $250,000 on December 31, 1995, when the last payment is due. The sum of the prices on December 31, 1990, that meets that condition is the funding amount of the liability on December 31, 1990, under the assumed investment strategy.

The funding amount can be calculated by discounting each future required payment by the predicted rates of change in selling price. This results in a funding amount of $706,915.[12]

Conclusion. The purpose of establishing a fund for a fixed-payment loan liability (other than to attain the offsetting and accelerated recognition of gain or loss permitted by FASB Statement No. 76) is to substitute an earlier, smaller burden for a later and larger one. That purpose can best be served by establishing the fund under the criteria given in FASB Statement No. 76. The following two criteria from paragraph 4 of the Statement are most relevant to that purpose:

- The fund should invest in direct obligations of the U.S. Government, in obligations guaranteed by the U.S. Government, or in securities backed by U.S. Government obligations as collateral.
- The securities owned by the fund should be synchronized; that is, they should provide receipts from the collection of principal and interest that approximately coincide, as to timing and amount, with the payments to be made.

12.

1991 payment:	$100,000 × 1.10^{-1} =		$ 90,909
1992 payment:	$200,000 × 1.10^{-2} =		165,289
1993 payment:	$150,000 × 1.10^{-3} =		112,697
1994 payment:	$300,000 × 1.15^{-1} =	$260,870	
	$260,870 × 1.10^{-3} =		195,995
1995 payment:	$250,000 × 1.15^{-2} =	$189,036	
	$189,036 × 1.10^{-3} =		142,025
		Total	$ 706,915

Basing an investment strategy on other criteria could result in stating a liability incurred in a fixed-payment loan at an amount that would not substitute an earlier, smaller burden. If payments are not synchronized, future changes in the prices at which the fund can sell its assets would have to be predicted, and the predictions might be wrong. If payments are synchronized but the fund assets are debt securities issued by entities other than those specified, the debtors could default. Were a fund established based on an investment strategy other than one meeting the criteria of Statement No. 76, an overly optimistic prediction of future price increases or an unpredicted future default would cause there to be insufficient money to discharge the liability.

The funding amount is measured by assuming that the debtor would have a broker bargain to buy government or government-backed securities at the market and by inferring the prices the broker would agree to pay. If a debtor's broker were to bargain to buy government or government-backed securities at a certain time to fund a liability, it would be reasonable to expect that the price agreed on for each security would approximately equal the price at which it was traded at that time. The market for government and government-backed securities is so large that the possibility is remote that a single, nongovernmental buyer could significantly affect the prices on the market. For any liability incurred in a fixed-payment loan, it is reasonable to expect the funding amount at a given reporting date to approximately equal the prices at which the securities were traded on the reporting date the last time the reporting entity had the opportunity to buy them, multiplied by the number of securities.

A Proposal Involving Two Kinds of Amounts

A proposal was recently made by FASB to require a liability incurred in a fixed-payment loan to be stated at its hypothetical proceeds or funding amount. The proposal does not apply to the amount at which the liability would be stated in the number columns on the balance sheet. It applies instead to the amount at which the liability would be stated parenthetically on the balance sheet or in the notes to the financial statements.

This proposal was made in an exposure draft entitled *Disclosures About Market Value of Financial Instruments,* which was issued on

December 31, 1990. Paragraph 10 states that "an entity shall disclose, either in the body of the financial statements or in the accompanying notes, the market value of financial instruments for which it is practicable to estimate that value." Footnote 1 to paragraph 3 states that financial instruments underlying liabilities are among those within the scope of the exposure draft. Because financial instruments usually underlie liabilities incurred in fixed-payment loans, the exposure draft applies to liabilities in fixed-payment loans as well as to other liabilities.

Paragraph 5 states that "the market value of a financial instrument is the product of the number of trading units of the instrument times its market price—the amount at which a single trading unit of the instrument could be exchanged in a current transaction between a willing buyer and a willing seller, other than in a forced or liquidation sale." Paragraph 11 states that "quoted market prices, if available, are the best evidence of the market value of financial instruments." However, if quoted prices are not available, "management's best estimate of market value may be based on the quoted market price of a financial instrument with similar characteristics or on valuation techniques (for example, the present value of estimated future cash flows using a discount rate commensurate with the risks involved, option pricing models, or matrix pricing models)."

The exposure draft does not explicitly specify the kind of liability amount the proposal is intended to measure. In the discussion of the choice of discount rate, paragraph 28 mentions "the rate at which the same loan would be made under current conditions," and paragraph 29 mentions "the current incremental rate of borrowing for a similar liability." These remarks imply the hypothetical borrowing rate, which would be used to measure the hypothetical proceeds of a liability. However, "incremental" implies that the hypothetical loan would be made in addition to the existing loan. As discussed in the description of hypothetical proceeds, there is no evidence of the hypothetical borrowing rate under that assumption. Hence, I will assume in the remainder of this chapter that the hypothetical loan would be made instead of, not in addition to, the existing loan, and that therefore the "incremental rate of borrowing" is the hypothetical borrowing rate.

Another discount rate mentioned in paragraph 29 is "the rate that an entity would pay to acquire essentially risk free assets to extinguish the obligation in accordance with the requirements of Statement 76." This implies discounting at the interest rate implicit in the current price of U.S. government securities, and would be used to measure the

funding amount of the liability.[13] As discussed above in the section on synchronization, the funding amount can also be measured without discounting, by using current prices directly.

If no quoted price for the securities underlying the liability is available, the liability would be stated under the exposure draft proposal at either the hypothetical proceeds or the funding amount. If such a quoted price were available, the liability would be stated on that basis. In that case, the liability could realistically be described as being stated at the hypothetical proceeds, but not at the creditor's acceptable early-discharge amount. This is implied by paragraph 6, which requires the use of such a quoted price "even if placing orders . . . to buy back all of a liability might affect the price or if a market's normal volume for one day might not be sufficient to absorb the quantity . . . owed by an entity." As discussed in the section on the creditor's acceptable early-discharge amount, such an effect of early discharge makes the use of quoted prices irrelevant for measuring the creditor's acceptable early-discharge amount.[14]

In paragraph 50 FASB "acknowledges that . . . the flexibility in the estimation of the market value of liabilities with no quoted market prices . . . may reduce the comparability of market value information between entities." FASB concluded that "it should not, at this time, prescribe a single method to be used for all unquoted liabilities." It also stated that later it "will consider the question of a single method."

FASB treats the problem of disclosing supplementary amounts for liabilities as essentially a problem of obtaining reliable evidence. However, the primary problem is to select the most relevant attribute

13. Paragraph 29 mentions one more discount rate: "the rate that an entity would have to pay to a creditworthy third party to assume its obligation, with the creditor's legal consent." The entity (debtor) presumably would guarantee the payments to the creditor by the third party. In that circumstance, the entity (debtor) would in substance loan money to the third party under a triangular repayment arrangement. The amount of money that the entity (debtor) would loan, which would be the amount calculated by discounting, is too remotely related to the liability to justify interpreting it as an attribute of the liability.

14. FASB seems to believe that the effect on the quoted price of the securities underlying a liability of buying all the securities in early discharge of the liability would not be too pronounced. Paragraph 48 states that "a decline in the market price of an entity's debentures may give the entity an opportunity to settle the debt at a price below the carrying amount and, thus, to recognize a gain." I doubt that a gain would be recognized in very many circumstances.

for disclosure. After the most relevant attribute is selected and the reliability of the evidence needed to measure the attribute is determined, the question of whether another attribute should be used for which more reliable evidence is available can be addressed.

In considering "a single method" (or attribute), FASB should consider requiring that it be used for the amounts in the number columns on the balance sheet for all liabilities. Use of a single relevant attribute for the number columns would eliminate any need to present other attributes of liabilities outside the number columns.

Two Attributes Further Considered

Three amounts at which liabilities would be stated under various proposals have been discussed in this chapter—the hypothetical proceeds, the creditor's acceptable early-discharge amount, and the funding amount. Of these, only two—the creditor's acceptable early-discharge amount and the funding amount—can reasonably be said to be attributes of liabilities in fixed-payment loans. These are therefore the only amounts that need to be considered further.

If the funding amount is calculated as recommended above in the conclusion on the choice of funding strategy, the smallest amount a rational creditor would always accept in early discharge would be equal to or less than the funding amount. Were a fund established, it would almost certainly provide enough money to make the required payments. A creditor who accepted in early discharge an amount equal to the funding amount could—if he or she did nothing else with the money—use it to buy government or government-backed securities that would almost certainly provide money in the same amounts and on the same dates at which the debtor would have provided it, and the creditor would be relieved of the risk of default by the debtor.

Therefore, assuming that the funding amount of a liability incurred in a fixed-payment loan is calculated as recommended in this study, stating the liability at the smallest burden that can be substituted at the reporting date for the later one is to state it at the creditor's acceptable early-discharge amount. If the creditor's acceptable early-discharge amount cannot be reasonably determined, stating it at the funding amount is to state it at the smallest burden known at the reporting date. Whether the creditor's acceptable early-discharge amount can be reasonably determined will be discussed in chapter 5.

5

Selecting Which Attribute of Liabilities in Fixed-Payment Loans to Report

The following four kinds of amounts can reasonably be called attributes of liabilities incurred in fixed-payment loans:

1. The probable amount
2. The loan proceeds
3. The creditor's acceptable early-discharge amount
4. The funding amount

As indicated in chapter 4, the risk-free funding amount should be used if the funding amount is selected. In this chapter, the term *funding amount* refers to a risk-free funding amount.

Loan proceeds pertain to the event out of which the liability originates. However, loan proceeds do not pertain directly to the liability, to the probable future sacrifices under the definition of a liability, or to the detriment involved in the event in which the liability was incurred. It pertains instead to the benefit involved in the event in which the liability was incurred--the receipt of money.

The three other attributes of a liability incurred in a fixed-payment loan pertain directly to the liability, to the probable future sacrifices entailed by the liability, and to the detriment involved in the event in which the liability was incurred. The probable amount pertains to the sacrifice involved in making all payments when originally due, and the funding amount and the creditor's acceptable early-discharge amount pertain to smaller but earlier sacrifices than the sacrifice entailed by the probable amount.

These four attributes need to be analyzed to determine which, if any, should be reported in financial statements.

Probable Amount

One characteristic of the probable amount makes it unsatisfactory as the attribute at which to state liabilities incurred in fixed-payment loans. That characteristic can be illustrated by the following scenario: A reporting entity has a liability to pay a given amount on a given future date (liability A) and another liability to pay the same amount on a later future date (liability B). Stating both liabilities at their probable amounts would make them appear to users of the entity's financial statements as equally disadvantageous to the entity.

However, liability A is more disadvantageous than liability B. The disadvantage of a liability at a given time is the total amount of money that will be sacrificed in making the remaining required payments to the creditor. The total is the sum of the remaining payments plus the profit that will be sacrificed over the remaining lifetime of the entity by paying the creditor instead of investing the money. Liability A is more disadvantageous because more profit will be sacrificed in paying the creditor of that liability than will be sacrificed in paying the creditor of liability B. Stating both liabilities at their probable amounts would make them appear erroneously to users of the financial statements as equally disadvantageous.

Loan Proceeds

Stating a liability incurred in a fixed-payment loan at the loan proceeds is to state it at an attribute of the liability that pertains to the benefit involved in the transaction, that is, to the receipt of money. However, the liability should be stated at an attribute of the liability that pertains

to the detriment involved in the transaction, that is, to the probable future sacrifices that are the liability.[1]

Another reason not to state a liability incurred in a fixed-payment loan at the loan proceeds is the same reason not to state it at the probable amount. It is unsatisfactory because it makes some liabilities that are not equally disadvantageous appear to be equally disadvantageous. To illustrate, assume that an enterprise borrows $1,000 on December 31, 1990, and is required to pay the lender $2,000 on December 31, 1995, to discharge the loan. Four years later, on December 31, 1994, the enterprise borrows $1,000 and is required to pay the lender $2,000 on December 31, 1999, to discharge the loan.

On December 31, 1994, the enterprise has two loan liabilities. Each was incurred as a result of the receipt of the same amount of proceeds—$1,000—and each involves future payment by the enterprise of the same amount—$2,000. However, on that date the liability for the earlier loan is more disadvantageous than the liability for the later loan because it has to be repaid sooner. Stating the two loan liabilities at their proceeds would make them appear erroneously to be equally disadvantageous.

Creditor's Acceptable Early-Discharge Amount

Eliminating the probable amount and the loan proceeds from the list of candidates for the attribute at which to state liabilities incurred in fixed-payment loans leaves only the creditor's acceptable early-discharge amount and the funding amount. Both these attributes recognize differences in the disadvantageousness of the liabilities.

The creditor's acceptable early-discharge amount would be determined by asking the creditor the amount it would accept or by inferring that amount. However, rarely would the creditor be willing to answer that question, and rarely could the amount be reasonably inferred. As discussed in chapter 4, the current market price of a

1. This is similar to one of the drawbacks of stating assets at their acquisition costs. An asset involves benefits, and obtaining an asset involves obtaining benefits. An asset should be stated at an attribute that pertains to those benefits. But its acquisition cost—the money spent on the asset in the transaction in which it was acquired—pertains not to the benefits but to a detriment involved in the transaction.

security underlying a liability is not satisfactory evidence of the creditor's acceptable early-discharge amount for the liability.

Therefore, if a reporting entity attempted to state the liability incurred in a fixed-payment loan at the creditor's acceptable early-discharge amount, the amount reported would usually be unacceptable to the creditor for early discharge. Statements containing amounts that may be invalid should be avoided. Therefore, the statement of liabilities incurred in fixed-payment loans at the creditor's acceptable early-discharge amount should be rejected unless the amount is known with certainty.

Funding Amount

By process of elimination, the attribute at which a liability incurred in a fixed-payment loan should be stated is the funding amount at the time the liability is incurred and on each subsequent reporting date (unless the creditor's acceptable early-discharge amount is known and is equal to or less than the funding amount).

To continue stating the liability at this attribute, the initial funding amount should be revised to reflect changes in conditions. Thus, the liability should be stated at each subsequent reporting date at its current funding amount instead of at its historical funding amount. The statement of liabilities incurred in fixed-payment loans at their historical funding amounts should be rejected because it can make liabilities that are not equally disadvantageous appear to be equally disadvantageous.

This conclusion, that liabilities incurred in fixed-payment loans should be stated at their funding amounts, was arrived at by process of elimination. I will now supplement that conclusion by considering the benefits and detriments of such an accounting procedure.

Benefits. The following are the benefits of stating liabilities incurred in fixed-payment loans at their funding amounts.

1. The amounts are attributes of the liabilities.
2. The amounts are measures of limitations at a reporting date on the freedom of action of the reporting entity concerning the liabilities.
3. The same amounts are reported by all reporting entities at all reporting dates for obligations to pay the same amounts at the same future dates. This eliminates, for example, the danger

that a greater credit risk, which would receive less proceeds than a smaller credit risk, might initially report a liability for a loan at its proceeds at a smaller amount than the amount at which a smaller credit risk initially reports a liability for a loan with the same repayment schedule at its proceeds.

4. The amounts are independent of the beliefs, desires, or intentions of the management of the reporting entity.

5. The prices at which securities constituting debts of the reporting entity are traded in the market are not used, eliminating the question of the amounts at which the securities could be bought by the reporting entity. This also eliminates the anomaly of—
   - Writing liabilities up and thereby reporting losses when the market bids up the securities because of good news concerning the reporting entity.
   - Writing liabilities down and thereby reporting gains when the market bids down the securities because of bad news concerning the reporting entity.

6. The amounts are readily available to financial accountants and auditable by independent auditors.

Detriments. Some accountants may disagree with the assumptions underlying this study. They may contend that stating liabilities incurred in fixed-payment loans at their funding amounts would be detrimental because funding amounts are irrelevant, because of the volatility of income reporting, or because the procedure entails the recognition of a new class of gains and losses whose recognition conflicts with convention.

Underlying assumptions. This study rests on the following assumptions:

- Information on the kinds and amounts of a reporting entity's liabilities is vital to the users of its financial reports. The information should be derived from principles that best portray the liabilities.
- Income statement information and balance sheet information should not be treated as competitors. Each should provide helpful information not available in the other.

- The best income statement information is more likely to result from an initial investigation of accounting for balance sheet items than an initial investigation of accounting for income statement items.

Many accountants, perhaps the majority of those in practice, would disagree with each of those assumptions. Instead, they assume the following:

- Income statement information is more helpful to users of financial statements than balance sheet information.
- The best income statement information results from an initial determination of the best income statement information rather than an initial determination of the best balance sheet information.

Accountants who support this set of assumptions would contend that, regardless of underlying assumptions, even studying accounting for liabilities is unsound because it emphasizes the wrong effects of transactions and events—the balance sheet effects. They would contend that the income statement effects should be studied instead. Perhaps it is for this reason that few studies have been made of liabilities in general.

Neither set of assumptions has been championed sufficiently to convince the supporters of either one. The contest remains a significant issue in the accounting profession.

Relevance of funding amounts. The management of a reporting entity would conclude that funding a liability incurred in a fixed-payment loan was unwise if it believed that the profit to be obtained by investing the money needed for funding in other than risk-free securities would exceed the profit to be obtained from investing in such securities. Management generally believes this because it rarely funds a reporting entity's liabilities incurred in fixed-payment loans. However, the beliefs of management about future profitability should not necessarily determine financial reporting for liabilities.[2]

2. Similarly, management beliefs should not determine financial reporting for assets, although some accountants conclude otherwise. For example, Solomons argues that "highly specific" assets should not be stated at their current selling price. Those assets, he says, "may have very little value for

Regardless of whether funding a liability incurred in a fixed-payment loan is believed to be unwise, the funding amount of the liability on each reporting date is the smallest amount that would relieve the reporting entity of the burden of the liability. Generally it is also the smallest amount for which the reporting entity could be sure of being free of the burden of the liability from then on. That smallest amount is therefore relevant to the reporting of liabilities.

Added volatility. The funding amount of a liability incurred in a fixed-payment loan increases over time if interest rates on government or government-backed securities remain the same. This is because the price of a security that reflects a constant interest rate increases over time as the period before payment becomes shorter.

However, the interest rates on government and government-backed securities do rise and fall, sometimes significantly. A fall in interest rates would cause the funding amount of a liability to increase more than it would in the absence of the fall in rates, resulting in the recognition of an expense or loss greater than what would otherwise be recognized. A rise in interest rates would cause the funding amount to increase less than it would in the absence of the rise in rates, resulting in the recognition of an expense or loss less than what would otherwise be recognized. The rise in rates could even decrease the funding amount, resulting in the recognition of a gain. Adopting the recommendations of this study would therefore be likely to make reported net income more volatile than it is under current generally accepted accounting principles.

Many accountants believe that income reporting should be as stable as possible. Many would therefore feel that the benefits (if any exist) of stating liabilities incurred in fixed-payment loans at their funding amounts do not justify the cost of additional volatility. However, it is the preparers of financial reports who prefer stable income

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anyone except the present owner for whom they were constructed.... Yet, presumably, they were worth at least as much as they cost their owners when they were acquired, for otherwise they would not have been constructed or purchased." In effect this suggests that management's intention to hold the assets instead of selling them should determine the accounting for them, even though intentions are ephemeral. See David Solomons, "Asset Valuation and Income Determination: Appraising the Alternatives," in *Asset Valuation and Income Determination—A Consideration of the Alternatives*, ed. Robert R. Sterling (Lawrence, Kan.: Scholars Book Co., 1971), p. 110.

reporting. This study was undertaken to make financial reporting more beneficial to the users of financial reports.

A new class of gains and losses. Stating liabilities incurred in fixed-payment loans at their funding amounts would mean recognizing a new class of gains and losses whose recognition conflicts with convention. In the following discussion, I presume that a reporting entity states its liabilities incurred in fixed-payment loans at their funding amounts on the reporting dates, and that it states all its other liabilities and all its assets at the amounts required under current generally accepted accounting principles on those dates. The new class of gains and losses entailed by stating liabilities incurred in fixed-payment loans at their funding amounts represents a change in what this study refers to as the entity's *command over money.*

The command over money of a reporting entity on a reporting date is the amount of money the entity would have available after selling all assets and fully funding all liabilities. It is not necessarily the amount of money that would be available to pay the stockholders upon liquidation of the corporation, the calculation of which might have to reflect termination benefits to employees or other costs. The command over money is intended to be used in the evaluation and comparison of entities whose liquidation is not imminent.

When a reporting entity borrows money, it immediately loses command over money because the amount that would be used to fund the liability incurred in the loan, which reflects no risk, exceeds the amount of the loan proceeds, which reflects the credit risk of the borrower. Changes in funding amounts (other than decreases caused by payments by the reporting entity) that occur after the liabilities in fixed-payment loans are incurred also cause the entity to lose or gain command over money. Increases in the funding amounts cause losses, and decreases cause gains.

Stating its liabilities incurred in fixed-payment loans at their funding amounts causes a reporting entity to recognize the kinds of gains and losses in command over money described. (They may be called gains and losses or income and expenses.)

Stating a liability incurred in a fixed-payment loan at its funding amount at the time the loan is made involves recognizing a loss in command over money equal to the funding amount less the loan proceeds. Recognizing such a loss conflicts with the general belief that a borrower is as well off (or even better off, else why borrow at all?)

immediately after borrowing as before.[3] That may be so in terms of some unmeasurable sense of well-being. In the measurable sense of command over money, however, the borrower is worse off. He or she can be sure to be relieved of the liability only by paying more than the loan proceeds.

When a liability in a fixed-payment loan is stated at its funding amount at the time it is incurred, subsequent increases or decreases in the funding amount not caused by the borrower's payments cause gains or losses in command over money to be recognized in the amounts of those increases or decreases.

Stating liabilities incurred in fixed-payment loans at their funding amounts and stating other liabilities and assets under current generally accepted accounting principles would cause the gains and losses in command over money related to the liabilities incurred in fixed-payment loans to be recognized when they occur; however, gains and losses in command over money related to other liabilities and to assets would not be recognized when they occur. Stating all liabilities at their funding amounts and stating all assets at the prices at which the reporting entity can sell them currently would cause all gains and losses in command over money to be recognized when they occur. In the latter case, the equity of the reporting entity (its assets less its liabilities) is its command over money.[4]

In some circumstances, the total amount of money the entity can obtain by selling all its assets may be less than the total amount it would need to fund all its liabilities. The concept of demand for money would then apply instead of the concept of command over money. *Demand for money* is the amount an entity would need to complete the funding of its liabilities after selling all its assets and using the money to fund some of its liabilities. The circumstances that cause an entity with command over money to gain or lose that command also cause an entity that has a demand for money to increase or decrease that demand.

3. Similarly, Solomons asks, "What sense would it make in accounting statements to write [highly specific] assets down to their current resale value as soon as they were brought into use?" Ibid., pp. 110–111.

4. This is a monetary attribute of the collected assets and liabilities of an entity. To my knowledge, it is the only monetary attribute that anyone has ever attributed to that collection.

It would be inconsistent to recognize some gains and losses in command over money (or increases and decreases in demand for money) when they occur but not others. For accounting principles to be consistent, either all or none of such gains and losses (or increases and decreases) must be recognized. However, consistency should not be achieved at the cost of poor financial reporting. Stating liabilities incurred in fixed-payment loans at their funding amounts presents fewer practical problems at present than stating assets at the prices at which reporting entities can sell them currently. Assuming that such prices are excluded for the present as amounts at which to state assets, stating liabilities incurred in fixed-payment loans at their funding amounts would result in an improvement in the statement of liabilities in financial statements that would justify the inconsistency.

6

Accounting for Liabilities in Fixed-Payment Credit Purchases and Leases

Like loans, credit purchases and leases may require either fixed or variable payments. In a fixed-payment credit purchase or lease, the contract specifies the total amount to be paid by the debtor or lessee. In a variable-payment credit purchase or lease, the total amount to be paid by the debtor or lessee depends on the outcome of future events.

Probable Amount of a Liability in a Fixed-Payment Credit Purchase

I believe that the buyer-debtor incurs an obligation, as in any fixed-payment loan, to pay all the amounts promised, including any amounts called interest, at the time a fixed-payment credit purchase is made. The probable amount of the liability at the time of purchase should be interpreted as the total of all amounts the buyer-debtor promised to pay, regardless of the pattern of payments and regardless of whether they are called interest, principal, payments, or anything else.

To illustrate when a liability incurred in a fixed-payment credit purchase comes into existence and how its probable amount should be measured, assume that a seller (S) and a buyer (B) make a contract on December 31, 1990, with the following terms:

- S promises to deliver a machine to B on December 31, 1990.
- B promises to pay S $1,210 on December 31, 1992.

S delivers the machine on December 31, 1990.

B incurs an obligation on December 31, 1990, to pay S $1,210 on December 31, 1992. Incurring the obligation is the result of no later event than the delivery of the machine on December 31, 1990. If a determination is made on December 31, 1990, that B probably will pay S as promised, B incurs on that date a liability with a probable amount of $1,210. (Whether the liability should be presented in B's balance sheet on December 31, 1990, at an amount pertaining to the machine, at the probable amount of $1,210, or at another amount will be discussed later in this chapter.)

A fixed-payment credit purchase creates the same kind of relationship between a buyer-debtor and a seller-creditor as a fixed-payment loan creates between a borrower and a lender (the borrower being analogous to the buyer and the lender being analogous to the seller). The only difference between a loan and a credit purchase is the nature of the item the borrower or buyer receives from the lender or seller. In a loan, that item is money; in a credit purchase, it is goods or services. The nature of the item received is irrelevant to (1) the relationship that comes into existence between the two parties when the loan or credit purchase is made and (2) changes that occur in that relationship.

The fact that the proceeds of fixed-payment credit purchases are goods or services and not money introduces a complication in accounting for them that is absent from accounting for fixed-payment loans. However, that complication is involved in accounting for the goods or services, not for the liabilities. The essential equivalence of liabilities incurred in fixed-payment loans and liabilities incurred in fixed-payment credit purchases suggests that their probable amounts should be determined in the same way.

Capital and Operating Leases

Accounting for leases is prescribed in FASB Statement of Financial Accounting Standards No. 13, *Accounting for Leases,* and in its amendments and interpretations. Those pronouncements divide leases into two kinds: capital leases and operating leases. Paragraphs 6 and 7 of Standards Statement No. 13 define capital leases as having one or more of the following characteristics:

1. The lease transfers ownership of the property to the lessee at the end of the lease term.
2. The lease contains a bargain purchase option.
3. The lease term is equal to 75 percent or more of the total estimated economic life of the leased property.

4. The present value at the beginning of the lease term of the minimum lease payments is not less than 90 percent of the fair value of the leased property.

All other leases are defined as operating leases.

A lease with the first or the second characteristic is in substance a purchase of property on credit. A lease with the third or fourth characteristic is essentially the same as a credit purchase in which the buyer-debtor makes payments to the seller-creditor over a period that ends when the purchased property becomes worn out or obsolete.

Capital and operating leases can require either fixed or variable payments (variable-payment leases will be discussed in chapter 7). Standards Statement No. 13 requires a lessee in a fixed-payment capital lease to recognize a liability to the lessor at the beginning of the lease term. I agree with that requirement. When the lessee receives control of the property at the beginning of the lease term, the lessee becomes unconditionally required to make all payments to the lessor when due.

In a fixed-payment operating lease, if control is transferred to the lessee of property owned by the lessor, the lessee is required to pay the lessor specified amounts on specified future dates. The lessee is also required to return control of the property to the lessor on a specified future date.

The definition of a liability and the principles discussed in chapter 1, when applied to fixed-payment operating leases, lead to a conclusion that conflicts with Statement No. 13 and that has seldom been suggested in the accounting literature.[1] In a fixed-payment operating

1. John Myers reached such a conclusion. He made the following comparison between accounting for a lease with a term that is 60 percent of the predicted useful life of the leased property and accounting for a lease with a term that equals the predicted useful life of the property:

> In this case, the right to use the asset has not been purchased for its full useful life. It would be incorrect to set up the asset and the liability for the same amounts as before, but it is not incorrect to record, in the same manner, the smaller asset being purchased for a smaller price. An asset has been acquired as before; this time the asset is a right to use for a shorter period. The fact that the right expires before the asset becomes useless to anyone in the economic sense can hardly make a significant difference; it is useless to the lessee at the expiration of the lease. The present value of the payment, therefore, should be recorded, and over the life of the lease, both the asset and liability should be extinguished. Even if the lease were for a minor fraction of the life of an asset, say 5 percent, the basic philosophy is unchanged.

See John H. Myers, *Reporting of Leases in Financial Statements*, Accounting Research Study No. 4 (New York: AICPA, 1962), pp. 37–38.

lease, the transfer of control of the property to the lessee is the last event specified in the contract that must occur before all payments become unconditionally required of the lessee. When that event occurs, the lessee incurs a liability to pay if it probably will pay. The liability is incurred in exchange for the right to use the property for a specified period. Such a property right is in conformance with FASB's definition of assets.

It might be contended that the lessee then incurs, in addition to the monetary liability, a nonmonetary liability to return control of the property. However, a liability is defined as probable future sacrifices of economic benefits. Since the lessee has no right to continue to control the property when its return is required, the property is then no longer an economic benefit to the lessee. He or she therefore incurs no nonmonetary liability.

Probable Amount of a Liability in a Fixed-Payment Lease

FASB Standards Statement No. 13, paragraph 60, states that a capital lease "transfers substantially all the benefits and risks incident to the ownership of property" and that "the economic effect on the parties is similar, in many respects, to that of an installment purchase." This suggests that rights and obligations come into existence in fixed-payment capital leases in the same way that they come into existence in fixed-payment credit purchases.

When property is transferred in a fixed-payment capital lease, the lessee incurs an obligation to the lessor to pay the total amount described in paragraph 10 of Statement No. 13, that is, the total minimum lease payments over the lease term excluding certain items. If the lessee probably will pay the total amount, it then incurs a liability whose probable amount is the total amount.

As discussed in the section on capital and operating leases, liabilities are incurred and should be recognized for fixed-payment operating leases as well as for fixed-payment capital leases. Upon receiving control of the leased property, a lessee in a fixed-payment operating lease incurs an obligation to make all payments to the lessor called for in the contract. If all the payments probably will be made, the lessee then incurs a liability of which the probable amount is the total amount of those payments. (Whether liabilities incurred in fixed-payment capital and operating leases should be stated at their probable amounts will be discussed at the end of this chapter.)

Requirements for Initial Statement: Credit Purchases

APB Opinion 21, *Interest on Receivables and Payables*, prescribes initial accounting for a fixed-payment credit purchase on the assumption that the buyer issues to the seller a written promise, which it calls a *note*, to make the payments agreed on. Paragraph 12 requires the liability incurred in the credit purchase to be stated initially, in the circumstances it describes, "at the fair value of the property, goods, or service or at an amount that reasonably approximates the market value of the note." The paragraph also contains the following statement:

> In the absence of established exchange prices for the related property, goods, or service or evidence of the market value of the note (paragraph 9), the *present value* of a note that stipulates either no interest or a rate of interest that is clearly unreasonable should be determined by *discounting* all future payments on the note using an *imputed rate of interest* as described in paragraphs 13 and 14. [Emphasis added]

The "present value" of the note is defined in footnote 1 to paragraph 1 of the opinion as "the sum of the future payments discounted to the present date at an appropriate rate of interest." The opinion apparently requires the liability to be stated in certain circumstances at the present value of the note, as calculated by discounting at the "imputed" rate.

The wording of paragraph 12 suggests that the "established exchange price" and the "fair value" might have been intended to be synonymous. However, they are considered to have different meanings in this study, which is intended to cover all the possible kinds of amounts at which liabilities can reasonably be stated. I interpret the established exchange price as one that was asked by the seller-creditor or bid by the buyer-debtor shortly before the credit purchase and may be stated in the note. I interpret fair value as the price at which an item can be sold in an unforced sale between unrelated parties. The established exchange price of goods may differ from their fair value.

Paragraph 13 describes as follows the objective of discounting the future payments pertaining to the liability at the imputed rate:

> The objective is to approximate the rate which would have resulted if an independent borrower and an independent lender had negotiated a similar transaction under comparable terms and conditions with the option to pay the cash price upon purchase or to give a note for the amount of the purchase which bears the prevailing rate of interest to maturity.

The objective does not suggest a definition of the present value of the note other than that contained in footnote 1, that is, simply an amount calculated by discounting. Unless fair value is more than that, it cannot be considered an attribute of the liability outside of financial reporting.

The present value of the note apparently is not intended to be interpreted as evidence of what APB Opinion 21 calls the "market value" of the note, because paragraph 12 states that the liability is to be stated at the present value of the note "in the absence of. . . evidence of the market value of the note." Such evidence would not be absent if it could be obtained by discounting at the imputed rate.

A definition of the present value of the note is suggested by the following examples given in paragraph 14 of the kinds of interest rates that are to be used as imputed rates:

> The selection of a rate may be affected by many considerations. For instance, where applicable, the choice of a rate may be influenced by (a) an approximation of the prevailing market rates for the source of credit that would provide a market for sale or assignment of the note; (b) the prime or higher rate for notes which are discounted with banks, giving due weight to the credit standing of the maker; (c) published market rates for similar quality bonds; (d) current rates for debentures with substantially identical terms and risks that are traded in open markets; and (e) the current rate charged by investors for first or second mortgage loans on similar property.

This suggests that the purpose of the discounting might be to calculate the fair value of the note. However, such an interpretation seems to conflict with the conclusion reached in the preceding paragraph that discounting does not calculate the market value of the note. Market value can be reasonably considered to be synonymous with fair value.

In order to evaluate the stating of the liability at the fair value of the note, I shall ignore the inconsistency. Accordingly, I interpret APB Opinion 21 as requiring a liability incurred in a fixed-payment credit purchase to be stated initially at one of the following amounts:

1. The fair value of the goods bought
2. The established exchange price of the goods
3. The fair value of the note, determined by discounting by the imputed rate

The circumstances in which each is to be used are irrelevant to the concerns of this study.

Requirements for Initial Statement: Capital Leases

As discussed in the section on capital leases, FASB Standards Statement No. 13 requires a lessee in a fixed-payment capital lease to recognize an asset and a liability. Paragraph 10 requires the liability to be initially stated at one of the following three kinds of amounts:

1. The fair value of the leased property
2. The amount calculated by discounting the lessee's future payments by the lessor's interest rate implicit in the lease (assuming that rate is available to the lessee)
3. The amount calculated by discounting the future payments by the incremental borrowing rate

The liability is to be stated at the lesser of (1) the fair value and (2) the greater of the two discounted amounts. The payments to be discounted make up the probable amount of the liability.

Fair Value of the Leased Property. Paragraph 5 of FASB Statement No. 13 defines the *fair value* of the leased property as "the price for which the property could be sold in an arm's length transaction between unrelated parties." The fair value of the goods bought in a credit purchase and the fair value of the note are defined in the same way, as already discussed.

Amount Calculated by Discounting by the Lessor's Implicit Rate. A lease that is a capital lease from the perspective of the lessee is a sales-type lease or a direct-financing lease from the perspective of the lessor. Paragraph 17 of Statement No. 13 defines the lessor's gross investment in a sales-type lease as "the minimum lease payments (net of amounts, if any, included therein with respect to executory cost, such as maintenance, taxes, and insurance to be paid by the lessor, together with any profit thereon) plus the unguaranteed residual value... accruing to the benefit of the lessor." It describes the lessor's net investment in the lease as follows:

> The difference between the gross investment in the lease... and the sum of the present values of the two components of the gross investment shall be recorded as unearned income. The discount rate to be used in determining the present values shall be the interest rate implicit in the lease. The net investment in the lease shall consist of the gross investment less the unearned income.

Appendix C of Statement No. 13 implies that paragraph 17 should be interpreted as in effect requiring a lessor to recognize an asset when a sales-type lease is made and to state the asset at the fair value of the leased property. The fair value is defined as the net investment and is reported as the gross investment less the unearned income. The fair value and the amounts making up the gross investment are to be inserted in the interest formula to calculate the lessor's implicit rate in the manner described in the Appendix to this study. For a direct financing lease, the implicit rate is calculated in a similar manner. The lessee uses the lessor's implicit rate, if known, to discount, as stated in paragraph 10, the "minimum lease payments during the lease term, excluding that portion of the payments representing executory costs such as insurance, maintenance, and taxes to be paid by the lessor, together with any profit thereon."

Although the lessor's implicit rate pertaining to a sales-type lease is derived from the fair value of the leased property, discounting by the lessee at that rate does not produce the fair value, because, although the lessor discounts the unguaranteed residual value of the property, the lessee does not. The discounted amount calculated by the lessee is therefore necessarily lower than the fair value unless there is no unguaranteed residual value.

Amount Calculated by Discounting by the Incremental Borrowing Rate. The incremental borrowing rate is defined in paragraph 5 of FASB Statement No. 13 as "the rate that, at the inception of the lease, the lessee would have incurred to borrow over a similar term the funds necessary to purchase the leased asset." The lessee uses the incremental borrowing rate to discount the same future payments that it discounts at the lessor's implicit rate; these are the payments that make up the probable amount of the liability.

As defined in Statement No. 13, the incremental borrowing rate pertains to a hypothetical loan in which the reporting entity would have borrowed "the funds necessary to purchase the leased asset." The term of the hypothetical loan is said to cover a period "similar" to the period over which payments must be made on the lease.

Statement No. 13 describes the amount calculated by discounting at the incremental borrowing rate only arithmetically. That amount does not approximate the amount of money that would have been borrowed, because loans that are alternatives to capital leases commonly require payments to lenders in amounts and at times that differ

significantly from those of the payments that would be made to lessors.[2]

Statement No. 13 implicitly agrees. The fair value of the leased property equals the amount of money the lessee would have used to buy the property, which equals the amount it would have borrowed. Paragraph 10 implies that that amount differs from the amount calculated by discounting at the incremental borrowing rate, in that it requires the liability to be stated at the lower of the fair value and the amount calculated by discounting at the incremental borrowing rate.

Determining Whether the Amounts Required for Initial Statement Are Attributes

In summary, liabilities incurred in fixed-payment capital leases are required to be stated initially at the following:

- The amount calculated by discounting by the incremental borrowing rate or the lessor's implicit rate
- The fair value of the property

Liabilities incurred in fixed-payment credit purchases are required to be stated initially at the following:

- The fair value and established exchange price of the goods
- The fair value of the note issued by the buyer

These amounts need to be evaluated to determine whether they are attributes of the liabilities outside of financial reporting.

Amount Calculated by Discounting at the Incremental Borrowing Rate or the Lessor's Implicit Rate. When future lease payments under a fixed-payment capital lease are discounted by the incremental borrowing rate under FASB Standards Statement No. 13, future payments that would not be made in a loan to buy property are discounted by an interest rate that was not incurred. Such an amount can be

2. Ibid., pp. 89–93.

described only as the result of an arithmetical calculation. There is no reason to consider it to be an attribute of the lessee's liability outside of financial reporting.

The lessor's implicit rate is derived from the fair value of the leased property. Use of that rate in discounting to calculate an amount other than the fair value, as Statement No. 13 prescribes, results in an amount that can be described only as the result of arithmetical calculation. Again, there is no reason to consider such an amount to be an attribute of the lessee's liability outside of financial reporting.

Fair Value and the Established Exchange Price. In a fixed-payment credit purchase, the fair value and established exchange price are indirectly related to the buyer-debtor's liability through the receipt of the goods or services.

The receipt of the goods by the buyer on credit is the immediate cause of the buyer's incurring a liability to the seller-creditor. For that reason, the goods can reasonably be said to be an attribute of the buyer-debtor's liability. However, since this is not a monetary attribute, it is obviously unsuitable for financial statements.

The fair value and established exchange price of the goods can reasonably be said to be attributes of the goods. However, that does not necessarily make them attributes of the liability.

The fair value of the goods is a measure of the amount of money the purchaser could receive for them. It can be considered analogous to the proceeds of a loan, especially if the goods are liquid. A liability incurred in a loan with given payment terms in which the proceeds are $1,000 can be said to be similar to, or even essentially the same as, a liability incurred in a credit purchase with the same payment terms in which the goods are securities that the the purchaser could sell immediately for $1,000. Although the relationship between the liability and the amount of money the purchaser could obtain by selling the securities is less direct than that between the liability and the $1,000 in the loan, the relationship is close enough that the amount the purchaser could obtain can reasonably be said to be an attribute of the liability incurred in the credit purchase. Hence, the fair value of goods received in a fixed-payment credit purchase can reasonably be said to be an attribute of the liability incurred in the credit purchase.

This conclusion applies only to the fair value of the goods on the date the liability is incurred. The amount of money the buyer-debtor can receive for the goods at subsequent reporting dates has little if any

relationship to the liability. The fair value of the goods at subsequent reporting dates cannot reasonably be said to be an attribute of the liability.

The established exchange price is another matter. Liabilities and assets come into existence because specific events occurred and other specific events did not occur. In a credit purchase, the buyer incurs a liability because the goods were bought in a credit purchase and not for cash at the established exchange price. An argument might be made that the non-occurrence of the purchase at the established exchange price is a cause of the liability's being incurred, and that therefore the established exchange price can reasonably be said to be an attribute of the liability. However, the causes of assets being acquired or liabilities being incurred that can be said to be attributes of those assets and liabilities must be limited to events that actually occurred. Otherwise, assets and liabilities would have an unlimited number of attributes. Given that requirement, the established exchange price cannot reasonably be said to be an attribute of the liability.

Fair Value of the Property and the Note. Unlike a buyer-debtor in a credit purchase, a lessee in a fixed-payment capital lease has no right to sell the acquired property when it is acquired. Unlike the fair value of goods in a credit purchase, therefore, the fair value of the property in a capital lease on the date of the lease is not analogous to the proceeds of a loan. Consequently, the fair value of the leased property cannot reasonably be said to be an attribute of the lessee's liability.

If the fair value of the note issued by the buyer in a fixed-payment credit purchase is understood to be the amount at which the seller-creditor would be able to sell the note to a third party, the fair value of the note can reasonably be said to be an attribute of the seller-creditor's receivable when the receivable is obtained and at subsequent reporting dates. However, the fair value of the note understood in that way cannot reasonably be said to be an attribute of the buyer-debtor's liability, because it excludes the buyer-debtor as one of the parties to whom the note might be sold.

Alternatively, the fair value of the note can be interpreted as the amount at which the seller-creditor would be willing to sell it to the buyer-debtor. Fair value interpreted in that way can reasonably be said to be an attribute of the liability and is the creditor's acceptable early-discharge amount. It is also an attribute of liabilities incurred in fixed-payment loans, as discussed in chapter 4.

Requirements for Statement at Subsequent Reporting Dates

APB Opinion 21 and FASB Standards Statement No. 13 also give requirements for subsequent statement of liabilities incurred in fixed-payment credit purchases and capital leases.

Credit Purchases. Paragraph 15 of APB Opinion 21 discusses accounting at subsequent reporting dates for a liability associated with a note that "requires the imputation of interest." I interpret this as a liability initially recognized at the fair value of the note calculated by discounting the note at the imputed interest rate. The paragraph describes how such a liability is to be accounted for at subsequent reporting dates:

> The difference between the present value and the face amount should be treated as discount or premium and amortized as interest expense or income over the life of the note in such a way as to result in a constant rate of interest when applied to the amount outstanding at the beginning of any given period. This is the "interest" method described in and supported by paragraphs 16 and 17 of APB Opinion No. 12, *Omnibus Opinion—1967*.

The imputed rate is the "constant rate" used to apply the interest method. (The reasons underlying this conclusion are given in the Appendix.)

APB Opinion 21 does not discuss how liabilities incurred in fixed-payment credit purchases that are initially stated at other than the fair value of the note as calculated by discounting at the imputed rate (that is, liabilities that are stated at the fair value of the goods bought or at the established exchange price) should be stated at subsequent reporting dates. However, most reporting entities apparently state the liabilities at amounts calculated under the interest method.

Capital Leases. Paragraph 12 of Statement No. 13 requires the liability to the lessor in a fixed-payment capital lease to be accounted for by the interest method on subsequent reporting dates. It states that "each minimum lease payment shall be allocated between a reduction of the obligation and interest expense so as to produce a constant periodic rate of interest on the remaining balance of the obligation." This remark is amplified as follows in footnote 11:

> This is the "interest" method described in the first sentence of paragraph 15 of APB Opinion No. 21, "Interest on Receivables and Payables," and

in paragraphs 16 and 17 of APB Opinion No. 12, "Omnibus Opinion—1967."

If the initial stated amount of the liability is calculated by discounting at the lessor's implicit rate or the incremental borrowing rate, the interest method is applied by using that rate. (The reasons underlying this conclusion are given in the Appendix.)

If the liability is initially stated at the fair value of the leased property, the interest method is applied by using the rate calculated in the same manner as the lessor's implicit rate (as discussed in the section on the amount calculated by discounting by the lessor's implicit rate). The rate used by the lessee to apply the interest method to the liability to the lessor is necessarily lower than the lessor's implicit rate, although both rates are derived from the fair value of the leased property. It is lower because the unguaranteed residual value of the leased property is not an element in the lessee's calculation, whereas it is an element in the calculation of the lessor's implicit rate.

Evaluating the Requirements for Statement at Subsequent Reporting Dates

As demonstrated in chapter 3, the amounts at which a liability incurred in a fixed-payment loan is stated at subsequent reporting dates under the interest method are not attributes of the liability according to any meaning of the word *value*. A review of those meanings reveals none that justifies describing as an attribute the amounts at which a liability incurred in a fixed-payment credit purchase or capital lease is stated under the interest method at subsequent reporting dates.

Accrual of Interest. Accountants commonly contend that interest accrues in fixed-payment credit purchases and capital leases in a manner similar to the way it is said to accrue in fixed-payment loans.[3] If this is so, the interest method measures the probable amount of the liability of the buyer-debtor or lessee at subsequent reporting dates.

Chapter 3 contained a demonstration that interest does not accrue in fixed-payment loans. The section on the probable amount of a

3. For example, "If assets are acquired through the incurrence of interest-bearing liabilities, an additional legal claim on the firm's assets, for interest, accrues as time passes." See Earl A. Spiller and Martin L. Grossman, *Financial Accounting: Basic Concepts* (Homewood, IL: Richard D. Irwin, Inc., 1984), p. 136.

liability in a fixed-payment credit purchase demonstrated that liabilities in fixed-payment credit purchases are essentially similar to liabilities in fixed-payment loans. This indicates that interest does not accrue in fixed-payment credit purchases. The essential similarity between fixed-payment credit purchases and capital leases indicates that neither does interest accrue in fixed-payment capital leases. For readers who are still on the fence on this issue, what follows is an additional argument for why interest does not accrue in fixed-payment credit purchases and capital leases.

The nature of obligations and rights implies that all obligations to pay money are fundamentally related in the following way to all rights to receive money. At any given date, an obligation of entity A to pay a specified amount of money to entity B is accompanied by a right of B to receive that amount from A. If interest is assumed to accrued in fixed-payment credit purchases and capital leases, that fundamental relationship would be violated, at least insofar as the accrual was measured by the interest method as it is applied under GAAP.

The relationship between the obligation to pay money and the right to receive it would be violated because no single method is used under GAAP by both the buyer-debtor and the seller-creditor and by both the lessee and the lessor to determine the initial stated amounts of the buyer-debtor's or lessee's liability and the seller-creditor's or lessor's receivable. Therefore, it is reasonable to assume that the initial stated amounts of the liabilities and receivables of these parties would usually differ. The differences would persist at successive reporting dates because the stated amounts at those dates would be derived from the initial stated amounts.

If interest is assumed to accrue, the initial stated amount of the liability is the amount the buyer-debtor or lessor initially has an obligation to pay, and the initial stated amount of the receivable is the amount the seller-creditor or lessor initially has the right to receive. Given the difference in the initial stated amounts of liability and receivable, the initial amount of the obligation would usually be considered to differ from the initial amount of the right. Given the difference in the stated amounts of liability and receivable at successive reporting dates, the amount of the obligation would usually be considered to differ from the amount of the right at successive reporting dates.

Data From the Contract. A credit purchase or capital lease contract may specify an interest rate or a price for the asset. An argument

might be made that the interest method should be applied by using that data to calculate the initial stated amount of the liability and the receivable and the stated amounts of each at subsequent reporting dates. If that were done, the stated amounts of each would always be equal.

However, the stated price or rate is merely nominal. The parties can enter any one of various rates or prices into the contract with no practical effect on the relationship between them. The ability of the buyer-debtor and seller-creditor to manipulate the stated interest rate or price in a credit purchase was the main reason for the issuing of APB Opinion 21. Paragraph 12 concludes that in a credit purchase "there should be a general presumption that the rate of interest stipulated by the parties to the transaction represents fair and adequate compensation to the supplier for the use of the related funds. That presumption... would not apply if... the stated interest rate is unreasonable."

A procedure for applying the assumption that interest accrues cannot be considered sensible if it incorporates an "unreasonable" interest rate. However, an interest rate that is reasonable to the buyer-debtor usually differs from a rate that is reasonable to the seller-creditor. As a result, the amounts of interest for the buyer-debtor and seller-creditor usually differ, as I will demonstrate.[4] This also applies to a capital lease. Given a difference in the two amounts, their use in the interest method necessarily would produce different stated amounts for the liability and the receivable.

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4. The discussion is derived from the following description of interest:

> Some people like to find a single cause for everything, and such people ask: "Is interest caused by the productivity of capital? Or by the fact that savers must be paid for the unpleasant task of 'abstinence' or 'waiting'? Which is more important: opportunity to invest or impatience to spend?"
>
> Our previous argument shows this is a false antithesis. Both factors operate to determine the time path of interest: the impatience to spend, or the tendency to prefer the present to the future, limits the growth rate and attained size of capital; and the productivity factor tells us what the interest or net productivity is that can be earned as we have various amounts of diverse capital goods.
>
> Just as both blades of a scissors are needed to cut—so that you cannot say that one blade rather than the other is doing the actual work—both factors, impatience and productivity, interact to determine the behavior of the real interest rate.

See Paul A. Samuelson, *Economics*, 11th ed. (New York: McGraw-Hill Book Company, 1980), p. 570.

Interest to a Seller-Creditor. The owner of an asset can keep it, sell it for money, or sell it on credit. Both keeping the asset and selling it for money give the owner the ability to invest or to consume some goods currently. Selling it on credit entails sacrificing the ability to invest or to consume goods currently. The seller-creditor regains the ability to invest or to consume goods when the buyer-debtor's payments are received.

A credit sale therefore causes the seller-creditor to defer the investment or consumption of goods. Because of the preferability of earlier to later investment or consumption, the seller-creditor demands a monetary benefit to compensate for the deferral. Interest is that monetary benefit.

At the time of the credit sale, the seller-creditor has the opportunity to receive money by selling the asset to the buyer-debtor or to someone else. From the perspective of the seller-creditor, the interest is the amount by which the total amount of money received from the buyer-debtor exceeds the largest amount of money that could have been obtained by selling the asset at the time of the credit sale.

Interest to a Buyer-Debtor. A person who contemplates buying an asset can buy it on credit, refrain from buying it, or buy it with money. Buying the asset on credit provides an ability to invest or to consume goods currently. When the buyer-debtor pays the seller-creditor, the ability to invest or to consume goods later is sacrificed. Neither refraining from buying the asset nor buying it with money has that effect on the ability to invest or to consume goods at any time.

A credit purchase therefore gives the buyer-debtor the ability to accelerate investment or consumption of goods. Because of the preferability of earlier to later investment or consumption, the buyer-debtor consents to incur a monetary cost to obtain the acceleration. Interest is that monetary cost.

Unless the buyer-debtor had the ability at the time of the purchase to buy the asset or an identical asset with money already owned or with money that could have been obtained by borrowing or selling assets, the sacrifice entailed by not buying on credit cannot be determined in terms of money. Therefore, the amount of interest from the perspective of the buyer-debtor cannot be determined in the absence of that ability. When the buyer-debtor has that ability, interest from the buyer-debtor's perspective is the amount of money promised less the smallest amount of money that would have to have been paid at the time of the purchase to buy the asset or an identical asset.

Perfect and Imperfect Markets. In a perfect market, the smallest amount of money the buyer-debtor would have to pay at the time of a credit purchase to buy the asset or an identical asset necessarily equals the largest amount of money the creditor-seller could have obtained at that time by selling the asset. Thus, in a perfect market, the amount of interest paid by the buyer-debtor equals the amount received by the seller-creditor.

In an imperfect market, the smallest amount for the buyer-debtor usually differs from the largest amount for the seller-creditor. As a result the two amounts of interest also differ. Given different amounts of interest, there is no sensible procedure for applying the assumption that interest accrues that does not violate the fundamental relationship between the obligation to pay and the right to receive money.

A Proposal to State Liabilities at the Hypothetical Proceeds

As discussed in chapter 4, a proposal has been made to state liabilities incurred in fixed-payment loans at hypothetical proceeds over the course of their existence. The hypothetical proceeds are calculated by discounting the payments that make up the probable amount of the liability by the hypothetical borrowing rate. The proposal also applies to liabilities incurred in fixed-payment credit purchases and in fixed-payment capital or operating leases.

Hypothetical Proceeds and the Hypothetical Borrowing Rate in a Credit Purchase or Lease. A reporting entity that is a buyer-debtor or lessee might alternatively have taken out a loan involving payments to a lender in the same amounts and at the same times as the payments it is making to a seller-creditor or lessor. Discounting the payments to the seller-creditor or lessor by the interest rate that would have been incurred in the loan—the hypothetical borrowing rate—results in a liability amount that can be described as the amount of money that would have been borrowed—the hypothetical proceeds.

The incremental borrowing rate under FASB Standards Statement No. 13 is similar to the hypothetical borrowing rate as it applies to a capital lease in that both pertain to a hypothetical loan to the lessee. However, only the hypothetical borrowing rate can be used to calculate the hypothetical proceeds of a lease liability. As discussed in the section on the amount calculated by discounting at the incremental borrowing rate or the lessor's implicit rate, discounting a capital lease

by the incremental borrowing rate does not result in an arithmetically significant amount.

The assumption is made in this study that the hypothetical loan is one that would have been made had the credit purchase or lease not been made. Given that assumption, the debt-to-equity ratio is not changed by the hypothetical loan. The alternative assumption is that the hypothetical loan creates a liability in addition to the liability incurred in the credit purchase or lease. Given that assumption, the hypothetical loan increases the debt-to-equity ratio. The assumption adopted in this study results in a hypothetical borrowing rate that is lower and probably easier to estimate than the one produced by the alternative assumption.

Uncertainty of Payments. The probable amount of the liability to the seller-creditor or lessor comprises the payments that are discounted, which are payments that probably will be made. To be aptly described as probable payments, the level of uncertainty of payment must be comparatively low. Payments with a higher level of uncertainty would be aptly described as possible payments.

Hence, the payments that make up the probable amount of the liability to the seller-creditor or lessor are associated with a particular level of uncertainty of payment. Discounting those payments at the hypothetical borrowing rate to calculate the hypothetical proceeds implies that the payments required in the hypothetical loan would have been of the same level of uncertainty.

The level of uncertainty associated with the payments to be made under the liability to the seller-creditor or lessor depends on the duty of the reporting entity to surrender the property as demanded by the seller-creditor or lessor if the reporting entity fails to make the required payments. By surrendering the property, the reporting entity in substance makes up part or all of the payments that were missed.

For the level of uncertainty of the payments to the hypothetical lender to be the same as the level of uncertainty of the payments to the seller-creditor or lessor, the reporting entity would have to have the duty to surrender the property to the hypothetical lender if it failed to make payments on the loan.

The hypothetical borrowing rate is therefore the interest rate applicable to a secured loan. In contrast, the incremental borrowing rate under Standards Statement No. 13, paragraph 93, is the interest rate applicable to either a secured or an unsecured loan.

Experienced Borrowing Rate. The buyer-debtor or lessee may have borrowed money in a secured loan shortly before making the credit purchase or lease. The interest rate agreed on in the loan would not be satisfactory evidence of the hypothetical borrowing rate for use in calculating the hypothetical proceeds of the liability to the seller-creditor or lessor. The interest rate agreed on would have been affected by the buyer's prevailing debt-to-equity ratio just before the loan was made. The loan would have increased the ratio, and the interest rate that would have been agreed on in a subsequent loan—such as the hypothetical loan—would therefore have been higher than the earlier rate.

A Final Word on the Use of Hypothetical Proceeds. Stating liabilities incurred in fixed-payment credit purchases or leases at the hypothetical proceeds should be rejected for two reasons. First, hypothetical proceeds are not an attribute of such a liability. Second, it would mean recognizing unfavorable events as gains and favorable events as losses. These are the same as the reasons given in chapter 4 for not stating liabilities incurred in fixed-payment loans at the hypothetical proceeds.

A Proposal to State Liabilities at the Smallest Substitute Burden

As discussed in chapter 4, a proposal has been made to state a liability incurred in a fixed-payment loan at the smallest burden that could be substituted at the reporting date for the later burden, which is to state it at the lesser of the creditor's acceptable early-discharge amount and the funding amount. The proposal also applies to a liability incurred in a fixed-payment credit purchase or lease. The creditor's acceptable early-discharge amount for a liability incurred in a lease is the amount the lessor would accept at the reporting date in exchange for canceling the lease. The funding amount of a liability incurred in a fixed-payment credit purchase or lease should be calculated in the same way that the funding amount of a liability incurred in a fixed-payment loan would be calculated according to the recommendations in chapter 4.

Selecting an Attribute

The following four kinds of amounts can reasonably be called attributes of liabilities incurred in fixed-payment credit purchases and leases:

- The probable amount
- The fair value of the goods at the date the liability is incurred (credit purchase only)
- The creditor's acceptable early-discharge amount
- The funding amount

Statement of a liability incurred in a fixed-payment credit purchase or lease at its probable amount should be rejected because it would make liabilities that are not equally disadvantageous appear to be equally disadvantageous. This was explained in chapter 5 in connection with a liability incurred in a fixed-payment loan.

Stating a liability incurred in a fixed-payment credit purchase at the fair value on the date of the purchase should be rejected for two reasons. First, stating the liability at that attribute is to state it at an attribute that pertains to a benefit of the transaction, that is, to the possible receipt of money from the sale of the goods. Instead, the liability should be stated at an attribute that pertains to the detriment involved in the transaction, that is, to the incurrence of the obligation. Second, stating the liability at the fair value on the date of the purchase throughout its existence makes liabilities that are not equally burdensome appear to be equally burdensome. This was explained in chapter 5 in connection with a liability incurred in a fixed-payment loan. The loan proceeds are analogous to the fair value of the goods at the date of purchase, as explained in the section on fair value and the established exchange price.

If the creditor's acceptable early-discharge amount is not known, liabilities incurred in fixed-payment credit purchases and leases should be stated at their funding amounts throughout their existence. If it is known, the liabilities should be stated at the lesser of the two amounts. This recommendation is the same as the one made in chapter 5 to state liabilities incurred in fixed-payment loans at the lesser of the two amounts.

7

Accounting for Liabilities in Variable-Payment Loans, Credit Purchases, and Leases

Loans, credit purchases, and leases with variable payments are more complex than those with fixed payments. As a result, determining how those with variable payments should be accounted for presents problems not encountered in those with fixed payments.

For the sake of convenience, the discussion in this chapter focuses on loans. A variable-payment credit purchase or lease creates the same kind of relationship between a buyer-debtor or lessee and a seller-creditor or lessor as a variable-payment loan creates between a borrower and a lender (the borrower being analogous to the buyer or lessee and the lender being analogous to the seller or lessor). The only difference between a loan and a credit purchase or lease is the nature of the item the borrower or the buyer or lessee receives. In a loan, that item is money; in a credit purchase or lease, it is goods or services. As discussed in preceding chapters, the nature of the item received is irrelevant to determining (1) the relationship that comes into existence between the two parties when the loan or credit purchase or lease is made and (2) changes that occur in that relationship.

The fact that the proceeds of variable-payment credit purchases or leases are goods or services and not money introduces a complication

not found in accounting for variable-payment loans. However, that complication is involved in accounting for the goods or services, not for the liabilities. The essential equivalence of liabilities incurred in variable-payment loans and liabilities incurred in variable-payment credit purchases or leases indicates that the two kinds of liabilities should be accounted for in the same way.

Kinds of Variable-Payment Loans, Credit Purchases, and Leases

Variable-payment loans, credit purchases, and leases involve payments of a variable number or amount, or both, to the lender, creditor, or lessor. Payments that vary in number do so because of a variable final-payment date. Payments that vary in amount do so because of a variable interest rate.

A loan with a variable final-payment date is one in which the contract requires the final payment to be made on any one of several specified dates. If the loan requires the borrower to make a series of periodic payments, more payments will be made if a later final payment date is chosen than if an earlier one is chosen. The contract requires either the borrower or the lender to choose the final payment date. If the borrower or lender decides that a particular final payment date should pass without the final payment being made, the borrower may be required on that date to make a smaller nonfinal payment consisting solely of interest.

A loan with a variable interest rate is one in which the interest rate is established by the contract as a function of a quoted market interest rate that varies over time. If the established rate changes on a given date, interest payments made before that date are calculated on the basis of the old rate and interest payments made after that date are calculated on the basis of the new rate. As a result, the borrower's payment amounts vary with changes in the established rate. The contract may or may not specify a minimum interest rate.

Variable-payment credit purchases and leases have variable final-payment dates and variable interest rates similar to those in variable-payment loans.

Examples of Variable-Payment Loans, Credit Purchases, and Leases

The following combinations of fixed and variable final-payment dates and fixed and variable interest rates occur in variable-payment loans:

1. A fixed final-payment date and a variable interest rate
2. A variable final-payment date and a fixed interest rate
3. A variable final-payment date and a variable interest rate

The following companies provide examples of each combination.

Caesar's World, Inc., is a borrower in a loan with a fixed final-payment date and a variable interest rate. In note 8 to its financial statements for the year ended July 31, 1989, Caesar's World disclosed a long-term liability with a stated amount of $100,000,000. It was described as a "bank term loan . . . [whose] interest rate approximates prime or an alternative negotiated rate, matures in September 1992, with semiannual installments of $12,500,000 due in March and September 1990 and 1991, increasing to $25,000,000 in March and September 1992."

The described future payments total $100,000,000, which equals the stated amount of the liability. The payments are therefore payments of principal rather than payments of principal plus interest.

Illinois Tool Works, Inc., is a borrower in a loan with a variable final-payment date chosen by the borrower and a fixed interest rate. In a note to its financial statements on long-term debt for the year ended December 31, 1989, Illinois disclosed a long-term liability with a stated amount of $100,000,000. It was described as "8⅜% notes due November 1, 1993." The notes were further described as follows:

> The notes are redeemable at the option of the Company, in whole or in part, on and after November 1, 1991, at a redemption price of 100% of their face value plus interest accrued thereon to the date of redemption. The effective interest rate of the notes is 8.5%.

The intended meaning of "interest accrued" is not clear. Illinois may have intended it to mean simply the amount of interest required to be paid at the date of redemption. It may also have been intended to mean the amount of the liability for interest that will be recognized by the date of redemption under the interest method. (The use of the interest method in variable-payment loans will be discussed in the section on evaluating accounting requirements.)

United Tote, Inc., is a borrower in a loan with a variable final-payment date chosen by the lender and a fixed interest rate. In note 8 to its financial statements for the year ended October 31, 1989, it disclosed a long-term liability with a stated amount of $2,662,500. It was described as a "10% loan due in quarterly installments of $37,500, including interest, through April 2007." The loan was said to contain a

provision "whereby the lender has the option to accelerate the maturity date of the loan and demand payment in full at April 1993, 1999, or 2005."

Litton Industries, Inc., is a borrower in a loan with a variable final-payment date chosen by the borrower and a variable interest rate. In note C to its financial statements for the year ended July 31, 1989, Litton disclosed a long-term liability with a stated amount of $439,695,000. It was described as "floating rate subordinated notes due 2000." The notes were said to "bear interest at a rate of 1¼% over the three month London Interbank Offered Rate, reset quarterly with a minimum interest rate of 5% per annum." The notes "provide for redemption at par at the option of the Company on or after July 1, 1987."

In the Litton Industries loan, a minimum interest rate was specified in the contract. Schwartz Brothers, Inc., is another example of a borrower in a loan with a variable and minimum interest rate. The loan has a variable final-payment date chosen by the lender. In note 5 to its financial statements for the year ended January 1, 1990, Schwartz disclosed a long-term liability with a stated amount of $261,912. It was described as a "mortgage payable... in monthly installments of principal of $476 to November 1991, $784 to November 1996, $1,288 to November 2001, and $2,119 to November 2006... plus interest at prime rate plus 1%... with a minimum rate of 8% and a maximum rate of 13%; lender has option to call for repayment December 1, 1991 and every five years thereafter."

Revolving credit is a common kind of loan in which the borrower can choose when to borrow, in what amounts, when to repay, and in what amounts within specified limits. Under revolving credit, each day the loan is outstanding can be chosen by the borrower as the final payment date. The interest rate typically is variable with no minimum. The borrower is typically permitted to convert the unpaid balance of the loan on a specified date to a loan with a fixed final-payment date.

Murphy Oil Corporation is a borrower in a revolving credit loan. Murphy described the loan as follows in note M to its financial statements for the year ended December 31, 1989:

> Murphy Oil Corporation and certain wholly owned subsidiaries have a revolving and term loan agreement that provides for borrowing of United States and/or Canadian dollars up to an aggregate or equivalent of US $50,000,000 until July 31, 1992, at which time the amount outstanding may, at the option of the Company, become a term loan repayable in six equal semiannual installments beginning January 31, 1993.... The borrower has an option under the agreement to select

interest rates based on certain banks' prime rates or costs of funds. At December 31, 1989, $9,000,000 was outstanding under this agreement and was classified as long term.

A savings account in a bank is another common loan in which each day the loan is outstanding is a possible final payment date. In contrast to a revolving credit loan, it is the lender (that is, the depositor) rather than the borrower (that is, the bank) who chooses, within specified limits, when money is borrowed (or deposited), in what amounts, when repayments are made, and in what amounts. Like the interest rate in a revolving credit loan, the interest rate in a savings account is typically variable. However, the rate, which usually changes infrequently, is set by the borrower (the bank) with no negotiation with the lender (the depositor). Banks recognize such loans as *deposit liabilities*.

I have been unable to find any published financial statements that disclose liabilities incurred in variable-payment credit purchases. However, there are numerous examples of liabilities incurred in capital leases with variable interest rates. Birmingham Steel Corporation disclosed a long-term liability stated at $13,464,000 in its balance sheet for the year ended June 30, 1990. The liability was described as "capital lease obligations, interest rates ranging from 55% to 83% of bank prime, payable through 2001."

FASB Statement of Financial Accounting Standards No. 29, *Determining Contingent Rentals*, paragraph 16, illustrates how amounts paid by a lessee in a capital lease that are a function of a variable interest rate would be calculated: "An equipment lease could stipulate a monthly base rental of $2,000 and a monthly supplemental rental of $15 for each percentage point in the prime interest rate in effect at the beginning of each month."

Some leases have fixed final-payment dates; others have variable final-payment dates, meaning that the lease can be canceled at dates specified in the contract at the option of the lessee or lessor.[1] FASB Standards Statement No. 13 does not apply to leases with variable final-payment dates. This is because paragraph 5 defines a "lease term" in substance as "the fixed noncancellable term of the lease."

Since credit purchases are similar to leases, it is likely that some credit purchases also have variable payments. The assumption is made in this study that the kinds of variable payments described in relation to loans also apply to credit purchases and leases.

1. See John H. Myers, *Reporting of Leases in Financial Statements*, Accounting Research Study No. 4 (New York: AICPA, 1962), p. 78.

Kinds of Probable Amounts

Variable-payment loans, credit purchases, and leases are characterized by far more uncertainty than are fixed-payment loans, credit purchases, and leases. The additional uncertainty creates ambiguity in the probable amounts of liabilities incurred in some variable-payment loans, credit purchases, and leases. All liabilities in fixed-payment loans, credit purchases, and leases have unambiguous probable amounts. As discussed in chapter 2, an *unambiguous probable amount* is one that is described in terms of a single amount. The expression "$1,000 probably will be paid" refers to an unambiguous probable amount.

Unambiguous Probable Amounts. A liability with an unambiguous probable amount is incurred in a loan, credit purchase, or lease with a fixed final-payment date and a variable and minimum interest rate. To illustrate such a loan, assume that B and L make the following agreement on December 31, 1990:

- L promises to pay B $1,000 on December 31, 1990.
- B promises to pay L, on December 31, 1995—
  - —$1,469, which is the sum of $1,000 principal plus $469 interest, calculated at 8 percent per year ($1{,}000 \times 1.08^5$).
  - —An amount to be determined as the excess over $469, if any, of interest calculated at the prime rate in effect on December 31, 1995.

L pays B $1,000 on December 31, 1990. B then becomes unconditionally required to pay $1,469 to L on December 31, 1995. However, B does not on December 31, 1990, become unconditionally required to pay interest in excess of the minimum rate, because the payment is conditioned on the prime rate's exceeding the minimum rate on December 31, 1995. B incurs an obligation on December 31, 1990, only to pay $1,469. If a determination is made at that time that B probably will pay at least $1,469, B then incurs a liability of which the probable amount is $1,469.

A borrower in a loan with a fixed final-payment date and a variable and minimum interest rate becomes obligated when the loan is made to pay the principal and the minimum amount of interest. If the payment is determined at that time to be probable, the borrower then incurs a liability with an unambiguous probable amount, calculated as the sum of the principal and the minimum amount of interest. The

borrower incurs an increment in the liability when the variable rate exceeds the minimum rate during a period preceding the payment of interest. The probable amount of the liability then increases by the amount of interest to be paid in excess of the minimum.

A liability with an unambiguous probable amount is incurred in a similar manner in a credit purchase or lease—capital or operating—with a fixed final-payment date and a variable and minimum interest rate. To calculate interest, the parties may substitute a specified price for the principal in a loan. As discussed in chapter 3, the price need not be the price at which the property could be sold in a cash sale.

Ambiguous Probable Amounts. Liabilities incurred in some variable-payment loans, credit purchases, and leases have ambiguous probable amounts. An *ambiguous probable amount* is one that is described in terms of more than one amount. The following three types of ambiguous amounts are found in practice:

- *Type 1* is a probable amount that is any amount within a single range of specified consecutive amounts. The expression "Any amount from $1,500 to $2,000 probably will be paid" refers to a type 1 ambiguous probable amount.
- *Type 2* is a probable amount that is any one of a number of specified nonconsecutive amounts. The expression "$1,000, $1,300, or $1,600 probably will be paid" refers to a type 2 ambiguous probable amount.
- *Type 3* is a probable amount that is any amount within two or more ranges of specified consecutive amounts. The expression "Any amount from $1,200 to $1,600 or from $2,200 to $2,700 probably will be paid" refers to a type 3 ambiguous probable amount.

Type 1 ambiguous probable amount. A liability with a type 1 ambiguous probable amount is incurred in a loan, credit purchase, or lease with a fixed final-payment date and a variable interest rate with no minimum. To illustrate, assume that B and L make the following agreement on December 31, 1990:

- L promises to pay B $1,000 on December 31, 1990.
- B promises to pay L an amount on December 31, 1995, that is the sum of $1,000 principal plus interest calculated at the prime rate in effect on December 31, 1995.

L pays B $1,000 on December 31, 1990. B then becomes unconditionally required—that is, he incurs an obligation—to pay L, on December 31, 1995, the sum of $1,000 plus interest calculated at the prime rate in effect on that date.

On December 31, 1990, a determination cannot be made of the amount that B probably will pay L on December 31, 1995. The most that can be determined at that time is that B will probably pay a rate of interest between 7 percent and 13 percent per year. Therefore, B probably will pay an amount between $1,403 ($1{,}000 \times 1.07^5$) and $1,842 ($1{,}000 \times 1.13^5$). That determination is a sufficient basis for concluding that B incurs a liability on December 31, 1990, of which the probable amount is between $1,403 and $1,842.

A borrower in a loan with a fixed final-payment date and a variable interest rate with no minimum becomes unconditionally required when the loan is made to pay the principal and all interest as calculated under the variable rate. The fact that the amount of interest to be paid will be determined by future events is irrelevant to when the payment of the interest becomes unconditionally required. The future events are not a cause of the payment's becoming unconditionally required, because some amount of interest will have to be paid regardless of their outcome.

There is a remote possibility that the borrower will have to pay no interest, that is, that the variable rate will be zero. This could occur, for example, if a government were established that forbade the payment of interest. Given that possibility, an argument might be made that the borrower does not become unconditionally required at the inception of the loan to pay interest. However, when the borrower becomes unconditionally required to pay interest depends on an interpretation of the contract between the borrower and lender. Both the borrower and lender in such a loan intend some interest to be paid. Thus, the borrower does become unconditionally required under the contract to pay interest, because the intentions of the borrower and lender are part of the contract. An action by the government forbidding payment of interest would abrogate the contract altogether.

The borrower incurs an obligation to pay all principal and interest at the time payment becomes unconditionally required, which is when the loan is made. By that time, the amount of principal the borrower is obligated to pay has been determined. The amount of interest the borrower is obligated to pay has yet to be determined.

When the loan is made, it may be determined that the borrower probably will pay all amounts required. In that case, the borrower incurs a liability at that time to pay all the amounts. Interest rates have

fluctuated materially with no established trend for a long time. It is therefore not reasonable to believe that a borrower with such a liability would be able at the inception of the loan or at any time during the loan term to determine an unambiguous probable amount for the liability incurred.

A type 1 ambiguous probable amount, however, can reasonably be determined, because a range of amounts accommodates more uncertainty than a single amount. Uncertainty can be kept to a sufficiently low level by specifying a sufficiently high maximum amount and a sufficiently low minimum amount. The probable amount of a liability incurred in a loan with a fixed final-payment date and a variable interest rate with no minimum should therefore be interpreted as a type 1 ambiguous probable amount. Similarly, liabilities with type 1 ambiguous probable amounts are incurred in credit purchases or leases with fixed final-payment dates and variable interest rates with no minimum.

Type 2 ambiguous probable amount. A liability with a type 2 ambiguous probable amount is incurred in a loan, credit purchase, or lease with a variable final-payment date and a fixed interest rate or a variable interest rate with a minimum. To illustrate, assume that B and L make the following agreement on December 31, 1990:

- L promises to pay B $1,000 on December 31, 1990.
- B promises to pay L either—
  - —$1,469 on December 31, 1995, which is the sum of $1,000 principal plus $469 interest, calculated at 8 percent per year ($1{,}000 \times 1.08^5$), or
  - —$2,261 on December 31, 2000, which is the sum of $1,000 principal plus $1,261 interest, calculated at 8.5 percent per year ($1{,}000 \times 1.085^{10}$).

L pays B $1,000 on December 31, 1990. B then incurs an obligation to pay one of the two amounts. If a determination is made at that time that B probably will pay one or the other of the amounts, B then incurs a liability to L.

The amount that B probably will pay L cannot be determined. What can be determined is that B probably will pay L $1,469 or $2,261. The probable amount of the liability is $1,469 or $2,261—a type 2 ambiguous probable amount.

In a loan with a variable final-payment date and either a fixed interest rate or a variable interest rate with a minimum, each possible

final-payment date is associated with a set of payments by the borrower up to that date. When the loan is made, the borrower incurs an obligation to make the payments associated with one of the possible final payment dates. Whether the borrower or the lender selects the final payment date is specified in the contract. If a determination is made at the inception of the loan that the borrower probably will make all required payments, the borrower incurs a liability at that time.

In most circumstances, the borrower cannot at the time the loan is made determine the total amount that will probably be paid to the lender. What can be determined is that the borrower probably will pay one of several total amounts, each associated with a final payment date. Thus, the probable amount is a type 2 ambiguous probable amount.

In some circumstances, the borrower can determine at the time the loan is made the total amount that probably will be paid to the lender. In such a case, the borrower intends to repay the loan by a particular date and obtains the right to repay it by then. The borrower negotiates the right to repay the loan by later dates simply to accommodate unforeseen events that might prevent repayment by the intended date. The liability incurred in such a loan has an unambiguous probable amount.

Early in its existence, a liability incurred in a loan with a variable final-payment date and either a fixed interest rate or a variable and minimum interest rate usually has a type 2 ambiguous probable amount, that is, one of a number of amounts, each corresponding with a final payment date. The number of those amounts decreases as the various final payment dates pass without payment. After all but one of the final-payment dates have passed without final payment, the liability has an unambiguous probable amount.

In the illustration of a type 2 ambiguous probable amount, the liability has that probable amount until December 31, 1995. If that day passes without final payment, the liability becomes one with an unambiguous probable amount of $2,261. It continues to have that probable amount until payment is made on December 31, 2000. Similarly, liabilities incurred in credit purchases or leases with variable final-payment dates and either fixed interest rates or variable and minimum interest rates usually have type 2 ambiguous probable amounts.

Type 3 ambiguous probable amount. A liability with a type 3 ambiguous probable amount is incurred in a loan, credit purchase, or lease with a variable final-payment date and a variable interest rate with no minimum. To illustrate such a loan, assume that B and L make the following agreement on December 31, 1990:

- L promises to pay B $1,000 on December 31, 1990.
- B promises to pay to L either—
  —An amount on December 31, 1995, that is the sum of $1,000 principal plus interest calculated at the prime interest rate in effect on December 31, 1995, or
  —An amount on December 31, 2000, that is the sum of $1,000 principal plus interest calculated at the prime interest rate in effect on December 31, 2000.

L pays B $1,000 on December 31, 1990. B then incurs an obligation to pay either of the two amounts. If a determination is made at that time that B probably will pay either of the two amounts, B then incurs a liability.

The amount that B probably will pay to L cannot be determined at that time. The most that can be determined is that—

- If B makes the payment on December 31, 1995, B probably will pay an interest rate between 7 percent and 13 percent per year. B therefore will probably pay an amount between $1,403 ($1,000 $\times$ 1.07^5) and $1,842 ($1,000 $\times$ 1.13^5).
- If B makes the payment on December 31, 2000, B probably will pay an interest rate between 7 percent and 13 percent per year. B therefore will probably pay an amount between $1,967 ($1,000 $\times$ 1.07^{10}) and $3,395 ($1,000 $\times$ 1.13^{10}).

B therefore incurs a liability with a type 3 ambiguous probable amount on December 31, 1990. The probable amount is an amount either from $1,403 to $1,842 or from $1,967 to $3,395. This probable amount is described in terms of two ranges that do not overlap. In practice, the ranges of type 3 ambiguous probable amounts often do overlap.

To modify the preceding illustration, assume that B can choose to make the payment on either December 31, 1995, or December 31, 1997. If B makes the payment on December 31, 1997, the amount will probably be between $1,606 ($1,000 $\times$ 1.07^7) and $2,353 ($1,000 $\times$ 1.13^7). The probable amount, with overlapping ranges, is an amount either from $1,403 to $1,842 or from $1,606 to $2,353.

An argument might be made that that probable amount is a type 1 ambiguous probable amount, that is an amount between $1,403 and $2,353. However, this would wrongly imply that B has no choice in the amount that probably will be paid. Because that choice is an element in accounting for the liability, it needs to be incorporated into the de-

scription of the probable amount. Therefore, the probable amount should be described as any amount either from $1,403 to $1,842 or from $1,606 to $2,353, which is a type 3 ambiguous probable amount.

A borrower in a loan with a variable final-payment date and a variable interest rate with no minimum incurs an obligation when the loan is made to pay all amounts that the contract requires as determined by the outcome of future events. If the borrower probably will pay, the borrower incurs a liability at that time. The total amount that the borrower probably will pay cannot be determined, and the liability incurred usually has a type 3 ambiguous probable amount. The liability continues to have a type 3 ambiguous probable amount until the last day on which a final payment can be made at the choice of the borrower or lender. If that day passes without a payment, the liability will then have a type 1 ambiguous probable amount.

Sometimes, the borrower can determine at the time the loan is made the date by which it probably will be repaid. In such a case, the borrower intends to repay the loan by a particular date and obtains the right to repay it by then. The borrower negotiates the right to repay the loan by later dates simply to accommodate unforeseen events that might prevent repayment by the intended date. The liability incurred in such a loan has a type 1 ambiguous probable amount.

Liabilities with type 3 ambiguous probable amounts are similarly incurred in credit purchases and leases with variable final-payment dates and variable interest rates with no minimum. Some liabilities in credit purchases and leases of that kind have type 1 ambiguous probable amounts.

Standardizing Predictions of Future Interest Rates

Determining the ambiguous probable amount of a liability incurred in a loan, credit purchase, or lease with a variable interest rate and no minimum involves a prediction of future interest rates, which is a matter of judgment. If an authoritative accounting body requires such liabilities to be stated at a specified attribute, it should standardize predictions of maximum and minimum interest rates for use in determining the probable amount, which is necessary in the measurement of any attribute. This would remove the risk of unduly low interest rate predictions made by management in order to minimize the stated amounts of liabilities. In the absence of such standardization, independent auditors would find it difficult to challenge management predictions.

To standardize predictions, the authoritative accounting body should predict the maximum and minimum of the various interest

rates common in current loans, credit purchases, and leases with variable interest rates. The predictions could be made based on one of the following:

- Past trends in changes in the various rates over a specified length of time
- Averages of changes in the various rates over a specified number of past years

Evaluation of Accounting Requirements

With one exception that will be discussed in the next section, requirements and proposals for stating liabilities incurred in loans, credit purchases, and leases at various kinds of amounts have not, to my knowledge, distinguished liabilities incurred in fixed-payment loans, credit purchases, and leases from liabilities incurred in variable-payment loans, credit purchases, and leases. However, applying those requirements and proposals to such liabilities with variable payments presents problems not encountered when applying them to such liabilities with fixed payments. The omission of a discussion of those problems from the accounting literature suggests that the application of the requirements and proposals to liabilities with variable payments was never considered by their developers.

Leases. The exception is FASB Standards Statement No. 13 (as amended by Statement No. 29), which discusses variable amounts of payments in a capital lease. Paragraph 5 makes this statement in discussing contingent rentals in a capital lease:

> Lease payments that depend on an existing index or rate, such as the consumer price index or the prime interest rate, shall be included in minimum lease payments based on the index or rate existing at the inception of the lease; any increases or decreases in lease payments that result from subsequent changes in the index or rate are contingent rentals and thus affect the determination of net income as accruable.

The kind of lease this refers to is apparently one in which the payments that are a function of the consumer price index or prime rate are not associated with a minimum level of the index or a minimum prime rate. A capital lease has a fixed final-payment date, so the lease has a fixed final-payment date and a variable interest rate (or price index) with no minimum (or index). The liability incurred in the lease therefore has a type 1 ambiguous probable amount.

Determining the probable amount of the liability involves a prediction of the minimum and maximum price indexes or interest rates that probably will prevail over the remainder of the lease term. Whether the index or rate on any reporting date over the term will be within the range depends on circumstances. Thus, the amounts that are discounted under Statement No. 13, which are calculated on the basis of the index or rate prevailing at the inception of the lease, may or may not be within the range of amounts making up the probable amount of the liability.

Statement No. 13 requires a liability incurred in a variable-payment capital lease to be stated initially at the same kind of amount at which a liability incurred in a fixed-payment capital lease is stated. As discussed in chapter 6, none of these amounts is an attribute of a liability incurred in a fixed-payment lease. Neither is there any reason to consider them attributes of a liability incurred in a variable-payment lease.

Statement No. 13 requires a liability incurred in either a variable-payment or a fixed-payment capital lease to be stated at subsequent reporting dates under the interest method. The implicit rate used to apply the interest method is determined at the beginning of the lease term. If the payments to the lessor are determined by a variable interest rate or price index, paragraph 5 states that changes in the rate or index "affect the determination of income as accruable." I interpret this to mean that the interest method is to be applied at a rate calculated at the beginning of the lease term in both a fixed-payment and a variable-payment capital lease.

The interest method should be rejected for a variable-payment capital lease for the same reasons given in chapter 6 with respect to a fixed-payment capital lease.

Loans and Credit Purchases. A liability incurred in a fixed-payment loan or credit purchase is required to be stated initially at the kinds of amounts discussed in chapters 3 and 6. Stating a liability incurred in a variable-payment loan or credit purchase initially at those amounts should be rejected for the same reasons given in chapters 3 and 6 with respect to a fixed-payment loan or credit purchase.

A liability incurred in a fixed-payment loan or credit purchase is stated at subsequent reporting dates at amounts calculated by the interest method, as discussed in chapters 3 and 6. In the case of a loan or credit purchase with a variable interest rate and no minimum rate, various ways of applying the interest method present themselves. As discussed in the preceding section, FASB Standards Statement No. 13

seems to require that the interest method be applied to a capital lease with a changing rate in the same way that it is applied to a capital lease with a fixed rate. This suggests that the interest method should be applied to a loan or credit purchase with a changing rate in the same way that it is applied to a loan or credit purchase with a fixed rate.

Regardless of which way the interest method is applied, it should be rejected for liabilities incurred in variable-payment loans or credit purchases for the same reasons given in chapters 3 and 6 with respect to liabilities incurred in fixed-payment loans or credit purchases.

One of the reasons discussed in chapter 3 in support of the interest method is that the lender continuously provides money to the borrower after the loan is made. That can be interpreted as the lender's continuous refraining from demanding repayment. Although this does not apply to a fixed-payment loan, it does apply to a loan with a variable final-payment date chosen by the lender, as discussed in chapter 3.

This interpretation does not imply the use of the interest method in loans with variable final-payment dates. Instead, it implies the statement of such liabilities at an attribute pertaining to the lender's option to demand payment. By coincidence, the interest method measures that attribute, called in this study the *creditor's optional final amount*, in some circumstances.

Hypothetical Proceeds

As discussed in chapters 4 and 6, a proposal has been made to state a liability incurred in a fixed-payment loan, credit purchase, or lease at the hypothetical proceeds—the amount of money that would have been borrowed on the reporting date if the existing liability had not been incurred—of a loan with the same payment terms as those of the existing liability. An argument might be made that a liability incurred in a variable-payment loan, credit purchase, or lease should also be stated at the hypothetical proceeds.

As discussed in chapters 4 and 6, reliable evidence of the hypothetical proceeds of a liability incurred in a loan, credit purchase, or lease with fixed payments would seem to be available in the form of quoted market rates of interest. However, loans, credit purchases, and leases with variable payments are so complex and varied that I doubt such evidence of the hypothetical proceeds of any particular liability so incurred would be available. Stating a liability incurred in a variable-payment loan, credit purchase, or lease at the hypothetical proceeds should be rejected for that reason.

It should also be rejected for two additional reasons. First, the hypothetical proceeds is not an attribute of such a liability. Instead, it is an attribute of a liability that was not incurred, namely, the liability in the hypothetical loan. Second, stating such a liability at the hypothetical proceeds involves recognizing unfavorable events as gains and favorable events as losses. These are the same reasons as those given in chapters 4 and 6 for not stating liabilities incurred in fixed-payment loans, credit purchases, and leases at the hypothetical proceeds.

Smallest Substitute Burden

As discussed in chapters 4 and 6, a proposal has been made to state a liability incurred in a fixed-payment loan, credit purchase, or lease at the smallest burden that could be substituted at the reporting date for the later burden, which is to state it at the lesser of the creditor's acceptable early-discharge amount and the funding amount. Similarly, stating a liability incurred in a loan, credit purchase, or lease with a variable interest rate but a fixed final-payment date at the smallest substitute burden is to state it at the lesser of the creditor's acceptable early-discharge amount and the funding amount.

Stating a liability incurred in a loan, credit purchase, or lease with a variable final-payment date at the smallest substitute burden is to state it at the lesser of three amounts—the creditor's acceptable early-discharge amount, the funding amount, and the debtor's or creditor's optional final amount.

A loan with a variable final-payment date is associated with a number of sets of payments of which one is to be made by the borrower. Each set ends with a payment date specified in the contract. Each payment date except the last one is an optional final-payment date. If all the optional final-payment dates pass without final payment, the final payment must be made on the last specified date. If the borrower chooses the payments, the final amount specified in the contract for each set of payments ending on an optional final-payment date either may or may not be paid. The amount the borrower can choose to pay or not pay is referred to in this study as the *debtor's optional final amount*. Similarly, in a credit purchase or lease with a variable final-payment date, the amount the buyer-debtor or lessee can choose to pay or not pay on an optional final-payment date is also referred to as the debtor's optional final amount.

If the lender chooses the payments in a loan with a variable final-payment date, it may or may not demand that the borrower pay

the final amount specified in the contract for the set of payments ending on each optional final-payment date. The amount the lender can choose to demand or not demand is referred to in this study as the *creditor's optional final amount.* Similarly, in a credit purchase or lease with a variable final-payment date, the amount the seller-creditor or lessor can choose to demand or not demand that the buyer-debtor pay or not pay on each optional final-payment date is also referred to as the creditor's optional final amount.

The use of the interest method produces amounts that equal the debtor's or creditor's optional final amounts as long as—

1. Each consecutive reporting date also is the date of an optional final payment.
2. The loan, credit purchase, or lease has a fixed interest rate or a variable rate with a minimum.
3. The same interest rate is used to calculate the optional final amount of each optional final-payment date.

The variable-payment loan of Illinois Tool Works is an example of a loan that may meet these criteria.

The smallest substitute burden as it applies to a liability incurred in a fixed-payment loan was discussed in chapter 4. It can also be applied to a liability incurred in a loan, credit purchase, or lease with a variable final-payment date chosen by the debtor. In such a case, the debtor would try to persuade the creditor to accept an amount lower than the debtor's optional final amount for that date. If the creditor would not accept a lower amount, any other amount acceptable to the creditor would be irrelevant for determining the smallest substitute burden. Instead, the debtor would substitute the smallest burden of the liability by discharging it at the debtor's optional final amount or by funding it, whichever costs less. If the two amounts are equal, the debtor would discharge the liability to save the trouble of funding it.

If the creditor accepted an amount lower than the debtor's optional final amount, substituting the smallest burden of the liability would involve discharging the liability at the amount acceptable to the creditor or funding it, whichever costs less.

For a liability incurred in a loan, credit purchase, or lease with a variable final-payment date chosen by the creditor, the debtor's smallest substitute burden at a given optional final-payment date is the creditor's optional final amount for that date if the creditor requires the debtor to pay that amount. If the creditor does not require that, some

higher amount would be acceptable to the creditor. The debtor would substitute the smallest burden of the liability by discharging it at the amount acceptable to the creditor or by funding it, whichever costs less. If the two amounts are equal, the debtor would discharge the liability to save the trouble of funding it.

Stating at the smallest substitute burden a liability incurred in a loan, credit purchase, or lease with a variable final-payment date chosen by the debtor at an optional final-payment date that is also a reporting date involves stating it at the lesser of (1) the debtor's optional final amount, (2) the creditor's acceptable early-discharge amount, and (3) the funding amount. If either of the first two amounts equals the funding amount and the liability is stated at that amount, the amount should be described as either of the first two amounts, consistent with the debtor's preference for discharging the liability instead of funding it.

The creditor's optional final amount is irrelevant for stating a liability incurred in a loan, credit purchase, or lease with a variable final-payment date chosen by the creditor at the smallest substitute burden on a reporting date that coincides with a given final payment date. This is because the creditor's decision not to require the debtor to pay that amount indicates that the creditor would accept only a higher amount. Stating the liability at the smallest burden is to state it at the lesser of the creditor's acceptable early-discharge amount and the funding amount. If the two amounts are equal, the stated amount should be described as the creditor's acceptable early-discharge amount.

The funding amount of a liability incurred in a variable-payment loan, credit purchase, or lease should be calculated as described in the next section. If this is done, the rational creditor would always accept in early discharge an amount equal to or less than the funding amount. This is because the fund would almost certainly provide enough money to make the required payments. With an amount equal to the funding amount accepted in early discharge, the creditor could, if nothing else, buy securities that would almost certainly provide money in the same amounts and on the same dates that the debtor would have provided, and the creditor would be relieved of the risk of default by the debtor.

Therefore, if the funding amount of a liability incurred in a variable-payment loan, credit purchase, or lease is calculated as recommended in the next section, stating such a liability with a fixed final-payment date at the smallest substitute burden is to state it at the lesser of the funding amount and the creditor's acceptable early-discharge amount. Stating such a liability with a variable final-payment date

chosen by the creditor at the smallest substitute burden is to state it at the creditor's acceptable early-discharge amount, or, if the debtor chooses the final payment date, at the lesser of the creditor's acceptable early-discharge amount and the debtor's optional final amount.

Calculating the Funding Amount

The funding amount of a liability incurred in a variable-payment loan, credit purchase, or lease should be calculated according to the investment strategy specified in FASB Statement No. 76, *Extinguishment of Debt—An Amendment of APB Opinion No. 26*, for the same reason that the strategy should be used to calculate the funding amount of a liability incurred in a fixed-payment loan, credit purchase, or lease, as discussed in chapters 4 and 6. According to that strategy, the funding amount is a risk-free funding amount.

To calculate the funding amount of a liability incurred in a fixed-payment loan, credit purchase, or lease, first the probable amount of the liability must be calculated, as discussed in chapters 4 and 6. Similarly, to calculate the funding amount of a liability incurred in a variable-payment loan, credit purchase, or lease, first the probable amount of the liability must be calculated.

The funding amount of a liability incurred in a loan, credit purchase, or lease with a fixed final-payment date and a variable interest rate with a minimum is calculated in the same way as the funding amount of a liability incurred in a fixed-payment loan, credit purchase, or lease is calculated. This is because both of these liabilities have unambiguous probable amounts.

Although liabilities incurred in other kinds of variable-payment loans, credit purchases, and leases have ambiguous probable amounts, the funding amounts of such liabilities are not ambiguous. This is because the risk-free funding amount and the smallest substitute burden demand that the funding amount be calculated on the basis of a particular amount in the set of amounts in terms of which the probable amount of the liability is described.

If the loan, credit purchase, or lease has a variable interest rate with no minimum, the minimum and maximum rate that will be paid must be predicted in order to calculate the probable amount of the liability. The risk-free funding amount demands that the funding amount be calculated on the assumption that the maximum rate will be paid. Therefore, the funding amount should be calculated on the basis of the highest amount within each range of amounts in terms of which the probable amount is described.

In the case of the liability used to illustrate a type 1 ambiguous probable amount, the funding amount should be calculated on the assumption that $1,842 at an interest rate of 13 percent per year will be paid. In the case of the liability used to illustrate a type 3 ambiguous probable amount, the funding amount should be calculated on the assumption that $1,842 or $3,395 will be paid at an interest rate of 13 percent per year. (A type 2 ambiguous probable amount is not associated with a variable interest rate with no minimum.)

For a liability incurred in a variable-payment loan with a fixed final-payment date, and therefore a type 1 ambiguous probable amount, only one funding amount has to be calculated.

If the liability is incurred in a loan, credit purchase, or lease with a variable final-payment date, and therefore a type 2 or type 3 ambiguous probable amount, a funding amount has to be calculated for each set of payments associated with each optional final-payment date. As already discussed, if the loan, credit purchase, or lease has a variable interest rate with no minimum, each funding amount should be calculated on the assumption that the maximum interest rate will be paid.

According to the concept of the smallest substitute burden, the funding amount of the liability—if management, as the debtor, selects the final payment date—is the smallest funding amount associated with all optional final-payment dates. According to the concept of a risk-free funding amount, the funding amount—if the creditor selects the final payment date—is the largest funding amount associated with the optional final-payment dates. If management funded at a smaller amount, it would incur the risk that the creditor would choose a final payment date at which the fund would not be able to provide sufficient money.

Selecting an Attribute

When selecting an attribute at which to state liabilities incurred in loans, credit purchases, and leases, those with variable interest rates and fixed final-payment dates need to be distinguished from those with variable interest rates and variable final-payment dates.

Fixed Final-Payment Date. The probable amount, the creditor's acceptable early-discharge amount, and the funding amount are attributes of liabilities incurred in loans, credit purchases, and leases with variable interest rates and fixed final-payment dates.

To state such a liability incurred in a loan, credit purchase, or lease without a minimum rate at the probable amount is not feasible,

because the probable amount is a type 1 ambiguous probable amount. As such, it would have to be stated in the balance sheet at more than one amount. However, it is feasible to state such a liability with a minimum rate at the probable amount, because it is an unambiguous probable amount. Nevertheless, the liability should not be stated at the probable amount, because this would make some liabilities that are not equally disadvantageous appear to be equally disadvantageous (that effect is explained in chapter 5 in connection with liabilities incurred in fixed-payment loans). For the same reason, such a liability incurred in a loan, credit purchase, or lease without a minimum rate should not be stated at any of the amounts in terms of which the probable amount is described.

A liability incurred in a loan, credit purchase, or lease with a variable interest rate—with or without a minimum—and a fixed final-payment date should not be stated at the creditor's acceptable early-discharge amount unless the amount is known. The reason for this is that the creditor's acceptable early-discharge amount cannot reasonably be determined. This is the same reason as the one given in chapter 5 for rejecting the statement of a liability incurred in a fixed-payment loan at the creditor's acceptable early-discharge amount unless the amount is known. For the sake of simplicity, I will assume in the remainder of this discussion that the creditor's acceptable early-discharge amount is not known.

A liability incurred in a loan, credit purchase, or lease with a variable interest rate and a fixed final-payment date should be stated at the funding amount. The funding amount should be calculated as already described.

Variable Final-Payment Date. The following are the attributes at which a liability incurred in a loan, credit purchase, or lease with a variable interest rate and a variable final-payment date can be stated:

1. The probable amount on the reporting date
2. The debtor's or creditor's optional final amount on the reporting date
3. The funding amount on the reporting date

Such a liability has an ambiguous probable amount, so stating it at the probable amount is not feasible. Stating such a liability at one of the amounts in terms of which the probable amount is described should be rejected because it would make some liabilities that are not equally disadvantageous appear to be equally disadvantageous.

If the creditor chose the final payment date, the debtor would not be able on the reporting date to pay the optional final amount that applied to that date, even if the money were available. In order to do so, the debtor would have to receive, before the end of the reporting date, instructions from the creditor to make the payment. The fact that the optional final amount applicable to the reporting date was not paid indicates that no such instructions were received.

If the debtor chose the payments, the debtor would be able on the reporting date to pay the optional final amount applicable to the reporting date, assuming the money were available. The debtor would only have to decide to pay and to write a check at the end of the reporting date.

By process of elimination, a liability incurred in a loan, credit purchase, or lease with a variable interest rate and a variable final-payment date chosen by the creditor should be stated at its funding amount throughout its existence. A liability incurred in a loan, credit purchase, or lease with a variable interest rate and a variable final-payment date chosen by the debtor should be stated on each reporting date either at its funding amount as of that date or at the debtor's optional final amount as of that date, whichever is less.[2] Use of the lesser amount is consistent with the concept of the smallest substitute burden.

2. AICPA Statement of Position 82-1, *Accounting and Financial Reporting for Personal Financial Statements*, recommends various kinds of amounts at which to state assets and liabilities in personal financial statements. Paragraph 27 makes this recommendation concerning liabilities:

> Personal financial statements should present payables and other liabilities at the discounted amounts of cash to be paid. The discount rate should be the rate implicit in the transaction in which the debt was incurred. If, however, the debtor is able to discharge the debt currently at a lower amount, the debt should be presented at the lower amount.

I interpret this to recommend that liabilities incurred in loans, credit purchases, and leases with fixed final-payment dates be stated at amounts calculated under the interest method. I interpret it as recommending that liabilities incurred in loans, credit purchases, and leases with variable final-payment dates be stated at the lesser of the amount calculated under the interest method and the debtor's optional final amount.

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Accounting for Pension and Postretirement Benefits Liabilities

Reporting entities commonly provide pensions and other postretirement benefits, such as life insurance and health care, to employees after they retire. For the sake of convenience, postretirement benefits other than pensions are referred to in this chapter as *postretirement benefits*.

When Pension Liabilities Are Incurred

Under virtually all defined-benefit pension plans, an employee does not have to work for an employer up to the time of retirement to become entitled to a pension from that employer. The employee is entitled to a pension after reaching retirement age, provided a sufficient length of time as specified in the plan has been worked. However, the pension is usually smaller than the one to which the employee would be entitled after working until retirement. As of any given date during employment, the pension to which the employee would become entitled after reaching retirement age and ceasing to work is called the *vested benefit* to the employee. Under some plans, an employee must work five years before having any benefits vested.

An employer pays pension benefits on regularly scheduled dates.

An employee (or surviving spouse) is conditionally promised benefits on consecutive scheduled dates beginning with the first scheduled date after reaching retirement age. To receive the benefits, the employee must be entitled to the minimum vested benefit and must be alive on the scheduled payment dates.

A pension contract is unique in that it contains conditions that apply separately to each of the payments promised in addition to one that applies to all of the payments. All other contracts contain conditions that apply jointly but none that apply severally to the payments promised. In a pension contract, entitlement to the minimum vested benefit is the condition that applies jointly. Being alive on the scheduled payment dates comprises an indefinite number of conditions that apply severally. Being alive on a given payment date is a condition for that and no other payment. (It also meets the condition of being alive on subsequent payments dates.)

A principle of this study is that an obligation to make the payments promised in a contract is incurred when the last substantive condition for the payments to become required has been met. The only conditions that are relevant are those that apply jointly to the payments promised. According to this principle, an employer incurs an obligation to pay pension benefits when the employee becomes entitled to the minimum vested benefit.

An alternative principle is that conditions that apply jointly and conditions that apply severally are both relevant to determining when obligations are incurred. Such a principle would treat each payment promised in a contract as pertaining to a separate obligation. An obligation to make any given promised payment is understood as incurred if and when the last substantive condition for the payment to become required has been met. The last substantive condition applies either jointly or severally to the payments promised. In a pension contract, the last substantive condition (that the employee must be alive on the given payment date) is one that applies severally. The phrase *if and when* is used because, in a pension contract, the last substantive condition will never be met for payments conditionally promised for dates after the employee has died.

I have rejected this alternative principle because attributing a separate obligation to each payment promised is not reasonable. For example, a borrower cannot reasonably be said to incur twenty obligations to a lender in a loan in which twenty payments are promised. Thus, an employer should be considered to incur an obligation to pay

pension benefits to an employee when, but not until, the employee becomes entitled to the minimum vested benefit.[1]

FASB Statement of Financial Accounting Standards No. 87, *Employers' Accounting for Pensions*, takes another approach. It requires an employer with a defined-benefit pension plan to recognize accrued pension cost or prepaid pension cost. One of the components of such cost is a "projected benefit obligation," which the Statement interprets as a liability. Paragraph 40 describes the calculation of the projected benefit obligation:

> For purposes of this Statement, pension benefits ordinarily shall be attributed to periods of employee service based on the plan's benefit formula to the extent that the formula states or implies an attribution. For example, if a plan's formula provides for a pension benefit of $10 per month for life for each year of service, the benefit attributed to each year of an employee's service is $10 times the number of months of life expectancy after retirement, and the cost attributable to each year is the actuarial present value of that benefit.

An obligation to pay pension benefits is therefore considered to be incurred after the employee has worked for the employer for any length of time, from the moment the employee becomes eligible to join the plan, even if entitlement to the minimum vested benefit has not yet been attained. For this reason, application of Statement No. 87 can result in the recognition of a liability for unvested pension benefits.

However, until entitlement to the minimum vested benefit is attained, the employee must continue working in order to meet that condition for payment of benefits. Recognizing a pension benefit liability in conformity with Statement No. 87 is therefore to recognize it before any of the conditions for payment of benefits have been met. An obligation to pay benefits cannot reasonably be said to be incurred so early, when the contract is still wholly executory.

Not recognizing a pension liability until an employee has become entitled to the minimum vested benefit could have results that appear odd. However, this is perhaps not unreasonable, since pension contracts with vesting provisions are strange contracts.

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1. See Leonard Lorensen and Paul Rosenfield, "Vested Benefits—A Company's Only Pension Liability," *Journal of Accountancy* (October 1983), pp. 64–68, 70, 72, 76.

When Postretirement Benefits Liabilities Are Incurred

In recent years, many employers have adopted plans that provide retired employees with health care, life insurance, tuition assistance, legal services, and housing subsidies, among other benefits. Unlike virtually all pension plans, some postretirement benefit plans require an employee to work for an employer until retirement in order to become entitled to postretirement benefits from that employer. That is, there are no vested benefits before retirement, and payment of benefits does not become unconditionally required until retirement. The obligation to pay such postretirement benefits should be considered to be incurred no sooner than when the employee retires.

Other postretirement benefits plans do not require an employee to work for an employer until retirement in order to become entitled to postretirement benefits from that employer. That is, benefits become vested before retirement.

However, with only one exception, reaching retirement age or becoming entitled to the minimum vested benefit is not the only event that must occur for payment of benefits to become unconditionally required. Health care, tuition assistance, legal services, and housing subsidies are examples of benefits that will not be paid unless the retired employee becomes sick, attends school, or requires an attorney or housing assistance. Thus, an employer becomes unconditionally required to pay for treatment of a broken arm when the retired employee's arm is broken, not before.

The one exception is life insurance benefits. The employer becomes unconditionally required to pay life insurance benefits when the employee reaches retirement age or becomes entitled to the minimum vested benefit. The death of the employee is not one of the events that must occur for the payment to become unconditionally required. This is because both the employer and the employee intend the benefit to be paid. When the employee dies only determines when it is paid.

An obligation to pay postretirement benefits should be considered to be initially incurred when the employer becomes unconditionally required to pay them. Accordingly, an obligation to pay life insurance benefits is incurred when the employee retires or becomes entitled to the minimum vested benefits. Obligations to pay all other kinds of postretirement benefits should be considered to be initially incurred when the specified postretirement events occur that are conditions for the unconditional payment of benefits.

FASB Statement of Financial Accounting Standards No. 106, *Employers' Accounting for Postretirement Benefits Other Than Pen-*

sions, takes another approach. It requires an employer with a postretirement benefits plan to recognize accrued or prepaid postretirement benefits cost. One of the components of such cost is the "accumulated postretirement benefit obligation," which the Statement interprets as a liability.

Paragraph 45 describes the calculation of the accumulated postretirement benefit obligation:

> As with other forms of deferred compensation, the cost of providing postretirement benefits shall be attributed to the periods of employee service rendered in exchange for those future benefits pursuant to the terms of the plan. That cost notionally represents the change in the unfunded accumulated postretirement benefit obligation for the period.

According to this approach, an obligation for postretirement benefits is considered to be incurred during the employee's first year of work for the employer granting the benefits. However, until retirement or entitlement to the minimum vested benefits is attained, the employee must continue working in order for payment of the benefits to become unconditionally required.

Furthermore, Statement No. 106 does not distinguish between life insurance benefits and benefits whose payment depends on the occurrence of events other than continuation of life. An obligation to pay these as well as life insurance benefits is considered to be incurred during the employee's first year with the employer.

Recognizing a liability for postretirement benefits under Statement No. 106 can therefore result in recognizing a liability before it is incurred, in violation of the definition of a liability.

Probable Amounts of Pension and Postretirement Benefits Liabilities

All of the requirements and proposals that will be discussed in the remainder of this chapter deal with problems in accounting for pension and postretirement benefits liabilities apart from the problem of determining when such liabilities are incurred. They are discussed as they would apply to a pension or postretirement benefits liability whose time of incurrence is determined according to the recommendations of the preceding sections.

All the requirements and proposals require that the probable amounts of pension and postretirement benefits liabilities be calculated because these amounts are required in calculating the stated

amounts of the liabilities. However, problems arise in making the calculations.

Pension Liabilities. When an employee becomes entitled to receive the minimum vested benefit under a pension plan, the employer incurs an obligation to pay a specified amount to the employee (or spouse) periodically after retirement as long as the employee (or spouse) lives. If each obligation to a particular employee is considered separately, a determination could be made of whether pension benefits probably will be paid to that employee. The probable amounts of the liabilities could then be determined for the employees to whom benefits probably will be paid.

However, this method of determining the probable amounts of pension liabilities is unsatisfactory for two reasons. First, it is likely to underestimate or overestimate the number of employees who will receive pension benefits, because there is no certainty as to when particular employees will die. Second, the probable amounts of the liabilities would have type 1 ambiguous probable amounts (that is, any amount within a range of consecutive amounts). The type 1 ambiguous probable amounts of liabilities incurred in variable-payment loans, credit purchases, and leases are of a sufficiently narrow range to make them acceptable for use in accounting for those liabilities. However, the type 1 ambiguous probable amount of a pension liability to a particular employee is likely to have such a wide range that it would not be acceptable for use in accounting for the liability.

Another approach is therefore needed to determine the probable amounts of pension liabilities. Actuaries have developed statistics on how long people in general live beyond a certain age. Those statistics can be used to predict when unidentified employees are likely to die. The predictions are sufficiently accurate that a determination can be made about the total amount that probably will be paid to discharge all present obligations to employees who will live long enough to receive pension benefits. Although the number of such employees and their names may be determined, the amounts that probably will be paid to specific employees cannot be.

The employer cannot determine a single total amount that probably will be paid to all such employees, but it should be possible to determine whether any total amount within a range of consecutive total amounts probably will be paid. That determination is the type 1 ambiguous probable amount of a liability incurred jointly to all such employees. The range of amounts in terms of which the probable amount is described is likely to be sufficiently narrow to permit satisfactory accounting for the liability.

To illustrate, assume that a determination is made that, under a present liability to employees jointly, an employer will probably pay pension benefits in the future in any amount from $1,500,000 to $1,700,000 at one time, in any amount from $1,300,000 to $1,600,000 at another time, and in any amount from $1,200,000 to $1,400,000 at a third time. For the sake of simplicity, assume that the employer does not have to make any more payments after the third time. The probable amount of the liability is any total amount that probably will be paid, or the sum of any amount from $1,500,000 to $1,700,000, plus any amount from $1,300,000 to $1,600,000, plus any amount from $1,200,000 to $1,400,000. The probable amount of the liability is therefore any amount from $4,000,000 to $4,700,000.[2]

Postretirement Benefits Liabilities. Liabilities for some kinds of postretirement benefits pertain to obligations incurred to pay specified amounts of money to individual employees or their beneficiaries. For example, an employer may incur an obligation at the time an employee retires or becomes vested to pay a specified amount of money to a beneficiary when the employee dies. The employer may incur an obligation when a retired employee pays rent to pay a specified portion of the rent. These liabilities have unambiguous probable amounts.

Liabilities for other kinds of postretirement benefits do not result from obligations to pay specified amounts to individual retired employees. Health-care benefits are the most common example. An employer incurs an obligation to a retired employee when the retiree (or spouse or dependents) becomes sick to pay all or a portion of the total amount that will have to be paid to doctors, hospitals, and laboratories to diagnose and treat the illness. The total amount will be determined by future events.

If each obligation of this kind is considered separately, a determination can be made that some amount probably will be paid to the retired employee. However, the uncertainty of the amount precludes a determination of the probability that it will be a particular amount or any amount within a range of specified amounts sufficiently narrow to permit satisfactory accounting for the liability.

Another approach is therefore needed to determine the probable amounts of liabilities to pay accident or sickness benefits. Actuaries have developed statistics on the amounts that have been paid in the past to people who have experienced various kinds of illness and

2. $1,700,000 + $1,600,000 + $1,400,000 = $4,700,000
   $1,500,000 + $1,300,000 + $1,200,000 = $4,000,000

accident. Those statistics can be used to make a determination about the total amount that probably will be paid to discharge all present obligations to retired employees who have experienced accidents or illness. The amounts that probably will be paid to specific employees cannot be determined.

The employer cannot determine a single total amount that probably will be paid to all such employees. However, it should be possible to determine whether any total amount within a range of consecutive total amounts probably will be paid. That determination is the type 1 ambiguous probable amount of a liability incurred jointly to all such employees. The range of amounts in terms of which the probable amount is described is in most circumstances likely to be sufficiently narrow to permit satisfactory accounting for the liability.

Deferred Debits and Credits

Standards Statement No. 87 requires a pension liability and a pension fund to be offset on the balance sheet in a manner that causes deferred debits or credits—that is, items included with assets or liabilities that are neither—to be recognized. Similarly, Statement No. 106 requires a postretirement benefits liability and a fund established to provide postretirement benefits to be offset on the balance sheet in a manner that causes such deferred debits and credits to be recognized.

Pensions. Statement No. 87, paragraph 54, requires the employer to disclose the fair value of the investments owned by the pension fund in addition to the stated amount of the pension liability. The fund and the pension liability are not reported in the number columns of the balance sheet. They are interpreted in appendix B of the Statement as components of "accrued pension cost" or "prepaid pension cost," which is reported with the liabilities or the assets in the balance sheet. The accrued or prepaid pension cost must have a balance of zero when Statement No. 87 is initially adopted, unless accrued or prepaid pension cost is reported in the balance sheet at that time.

For the accrued or prepaid pension cost to have a zero balance at the time Statement No. 87 is adopted, it must be considered to have a component that equals the difference between the stated amount of the liability and the fair value of fund assets. That component, which is required to be amortized to income or expense, is described in appendix B as the "unrecognized net obligation" (in the case of a debit

component) or the "unrecognized net asset" (in the case of a credit component). In effect, it prevents the stated amount of the liability and the fair value of fund assets from being fully recognized as a change in the equity of the reporting entity at the time Statement No. 87 is adopted. However, the change should be fully recognized at that time. Deferring recognition would in effect cause it to be recognized as a liability or an asset when it is neither.

The stated amount of the liability and the fair value of fund assets change once Statement No. 87 has been adopted. The changes must be combined and treated as a component of accrued or prepaid pension cost. That component, which is required to be amortized to income or expense, in effect prevents the changes, which are gains and losses, from being fully recognized as such when they occur. However, those gains and losses should be fully recognized when they occur. Deferring recognition would in effect cause them to be recognized as a liability or an asset when they are neither.

Postretirement Benefits. Statement No. 106, paragraph 74, requires the employer to disclose the fair value of the investments owned by the benefits fund in addition to the stated amount of the postretirement benefit liability. The fund and the liability are not reported in the balance sheet. They are interpreted in appendix C as components of "accrued postretirement benefit cost" or "prepaid postretirement benefit cost," which is reported in the balance sheet.

Statement No. 106 permits an employer to report an accrued or prepaid cost of zero when the Statement is initially adopted. For the accrued or prepaid cost to have a balance of zero, it must be considered to have a component that equals the difference between the stated amount of the liability and the fair value of fund assets. That component, which is required to be amortized to income or expense, is described in paragraph 46 as an "unrecognized transition obligation" (in the case of a debit component) or an "unrecognized transition asset" (in the case of a credit component). Alternatively, the employer can choose not to recognize the transition item as a component of the prepaid or accrued cost when Statement No. 106 is initially adopted.

Like the transition item of Statement No. 87, the transition item of Statement No. 106 in effect prevents the discounted amount of the liability and the fair value of fund assets from being fully recognized as a change in the equity of the reporting enterprise at the time the Statement is adopted. However, the change should be fully recognized at that time, for the reasons given in the discussion of Statement No. 87.

Discounting Required

Both Statement No. 87 and Statement No. 106 require the stated amount of a pension or postretirement benefits liability to be calculated by discounting under the interest formula. However, neither Statement describes the amounts that are to be discounted. I assume that FASB intended them to be those that pertain to the probable amount of the liability.

Pensions. Statement No. 87 requires the stated amount of the liability to be calculated by discounting at "assumed" rates. Paragraph 44 describes these as follows:

> Assumed discount rates shall reflect the rates at which the pension benefits could be effectively settled. It is appropriate in estimating those rates to look to available information about rates implicit in current prices of annuity contracts that could be used to effect settlement of the obligation (including information about available annuity rates currently published by the Pension Benefit Guaranty Corporation). In making those estimates, employers may also look to rates of return on high-quality fixed-income investments currently available and expected to be available during the period to maturity of the pension benefits.

"At which the pension benefits could be effectively settled" suggests that the discounting is intended to measure the funding amount of the pension liability. The paragraph seems to imply that either of two investment strategies is acceptable in measuring the funding amount. "Current prices of annuity contracts that could be used to effect settlement of the obligation" suggests an investment strategy in which the fund would buy annuities from an insurance company and use the money periodically provided to pay pension benefits. The second sentence suggests an investment strategy that would involve the purchase of debt securities with receipts from the investments synchronized with payments to retired employees. However, complete synchronization would probably not be feasible, as I will explain.

That Statement No. 87 intends a pension liability to be stated at its funding amount is supported in *A Guide to Implementation of Statement 87 on Employers' Accounting for Pensions,* issued by FASB in 1986. Question 61 states the following:

> The discounting process using an explicit approach does not consider anything other than the time value of money for purposes of determining the single sum which, if invested at the measurement date, would

> generate the necessary cash flows to pay the pension benefits when due (the sum necessary to settle effectively the pension obligation assuming no future experience gains or losses).

The "single sum" can reasonably be interpreted as the funding amount of the liability. However, that interpretation is contradicted in the remainder of Question 61, which describes an investment strategy that would involve the purchase of annuities from an insurance company:

> The purpose of the guidance in paragraph 44 of Statement 87 is to direct the employer to the proper sources for selecting assumed discount rates. Its intent is not necessarily to arrive at a discounted amount that would be the price an insurance company would charge to assume the same pension benefit promise to employees. Many factors affect the price at which an insurance company would undertake a particular obligation. The insurance company's assessment of the risks related to mortality obviously affect that price as does the profit margin the insurance company hopes to achieve. *Had Statement 87 intended to arrive at the insurer's price, it would have stated that the actuarial present value of the projected benefit obligation would be the best estimate of the price at which the insurance company would assume the employer's obligations.* In that case, the approach to selecting various assumptions would be to select those inherent in annuity prices rather than those that "reflect the best estimate of the plan's future experience." [Emphasis added]

Question 61 does not explain why, if the intention of Statement No. 87 was not what the emphasized sentence suggests, the Statement implied it in paragraph 44.

Question 61 does not deny that the "single sum" is the funding amount of the liability measured under an investment strategy that involves the purchase of debt securities with synchronization, as implied by paragraph 44 of Statement No. 87. In that investment strategy, the funding amount is the total of the current prices of specified securities. The funding amount could be measured by using those prices directly, which would not involve discounting. Alternatively, the funding amount could be measured by using those prices indirectly, that is, by using discounting to determine the current prices. It is not clear why Statement No. 87 seems to approve only of the indirect use of current prices by discounting.

The current prices do not have to be determined precisely by discounting. They can be approximated by discounting at average interest rates. The use of average discount rates is suggested in paragraph 199 of Statement No. 87:

> Interest rates vary depending on the duration of investments; for example, U.S. Treasury bills, 7-year bonds, and 30-year bonds have different interest rates. Thus, the weighted-average discount rate (interest rate inherent in the prices of annuities or a dedicated bond portfolio) will vary depending on the length of time remaining until individual benefit payment dates. A plan covering only retired employees would be expected to have significantly different discount rates from one covering a work force of 30-year-olds. The disclosures required by this Statement regarding components of the pension benefit obligation will be more representationally faithful if individual discount rates applicable to various benefit deferral periods are selected. A properly weighted average rate can be used for aggregate computations such as the interest cost component of net pension cost for the period.

Postretirement Benefits. Statement No. 106 requires the stated amount of a postretirement benefits liability to be calculated by discounting at "assumed" discount rates. Paragraph 31 describes these rates as follows:

> Assumed discount rates shall reflect the time value of money as of the measurement date in determining the present value of future cash outflows currently expected to be required to satisfy the postretirement benefit obligation. In making that assumption, employers shall look to rates of return on high-quality fixed-income investments currently available whose cash flows match the timing and amount of expected benefit payments. If settlement of the obligation with third-party insurers is possible (for example, the purchase of nonparticipating life insurance contracts to provide death benefits), the interest rates inherent in the amount at which the postretirement benefit obligation could be settled are relevant in determining the assumed discount rates.

The second sentence implies that the stated amount of the liability, as calculated by discounting at assumed rates, is its funding amount. That sentence also implies that the funding amount should be measured under an investment strategy that involves the purchase of debt securities with synchronization. The third sentence seems to imply that the investment strategy should involve the purchase of insurance policies, if feasible.

In summary, paragraph 31 seems to imply that the funding amount should be measured under an investment strategy involving the purchase of insurance policies, if feasible. If it is not feasible, the funding amount should be measured under an investment strategy that involves the purchase of debt securities with synchronization.

Paragraph 186 seems to take another approach:

> The objective of selecting assumed discount rates is to measure the single amount that, if invested at the measurement date in a portfolio of

high-quality debt instruments, would provide the necessary future cash flows to pay the accumulated benefits when due. Notionally, that single amount, the accumulated postretirement benefit obligation, would equal the current market value of a portfolio of high-quality zero coupon bonds whose maturity dates and amounts would be the same as the timing and amount of the expected future benefit payments. Because cash inflows would equal cash outflows in timing and amount, there would be no reinvestment risk in the yields to maturity of the portfolio. However, in other than a zero coupon portfolio, such as a portfolio of long-term debt instruments that pay semiannual interest payments or whose maturities do not extend far enough into the future to meet expected benefit payments, the assumed discount rates (the yield to maturity) need to incorporate expected reinvestment rates available in the future.

This implies an investment strategy under which debt securities would be bought with or without synchronization, as the reporting entity chooses. Paragraph 186 does not mention the use of an investment strategy involving the purchase of insurance policies.

Pensions: Proposed Discount Rates

Some accountants have proposed that pension liabilities be stated at amounts calculated by discounting at rates other than those required under Statement No. 87. The rates proposed are the following:

1. The interest rate on experienced or appraised borrowing
2. The standard discount rate
3. The cost of capital

None of the accountants who have made these proposals have described the amounts that would be discounted. I assume they would pertain to the probable amounts of the liabilities.

Interest Rate on Experienced or Appraised Borrowing. Cramer and Schrader have recommended stating a pension liability at the amounts calculated by discounting at "the employer's experienced or appraised discount rate on its other long term borrowing."[3] However, they do not say why that rate should be used. An argument might be made that the liability should be discounted at that rate in order to

3. Joe J. Cramer and William J. Schrader, "Elements of Pension Cost," *Journal of Risk and Insurance* (June 1968), p. 243.

state it at the hypothetical proceeds. The proposal discussed in chapters 4 and 6 to state liabilities at the hypothetical proceeds is applied to a fixed-payment loan by discounting the future payments that make up the probable amount of the liability by the hypothetical borrowing rate. According to that proposal, the rate described by Cramer and Schrader would be used to approximate the hypothetical borrowing rate.

In this study, the hypothetical borrowing rate applicable to any designated liability, including a pension liability, is the interest rate the reporting entity would have incurred to borrow money in a loan involving payments to the lender in the same amounts and at the same times as the payments to the creditor under the designated liability.

The amount of money that would have been borrowed in the hypothetical loan—the stated amount of the designated liability calculated by discounting—is the hypothetical proceeds. The liability to the hypothetical lender is treated in this study as one that would have been incurred instead of the designated liability and one that would have imposed on the reporting entity the same duties to make payments to the hypothetical lender as those that were imposed to make payments to the designated creditor.

Discounting a liability at the hypothetical borrowing rate over the term of its existence causes it to be stated at the hypothetical proceeds over that period only if the hypothetical borrowing rate is updated on each reporting date to the one prevailing at the time.

The payments that would be discounted presumably are payments that pertain to the probable amount of the pension liability. Those payments are associated with a particular level of uncertainty regarding their correspondence in amount and number to the payments that will in fact be made to eligible employees. This uncertainty exists because the amount and number of the payments depend on how long the eligible employees will live, which must be predicted. Although the use of actuarial techniques in making this prediction diminishes the level of uncertainty from what it would be had the prediction been made for each employee separately, it is much higher than the uncertainty associated with the future payments to a lender in an ordinary loan.

Discounting payments that pertain to the probable amount of a pension liability by the hypothetical borrowing rate implies that the payments made to the hypothetical lender would have been associated with the same high level of uncertainty. Because of that high level of uncertainty, the hypothetical loan would have entailed a risk to the lender much greater than the risk entailed in an ordinary loan. The

lender in the hypothetical loan would have demanded a much higher interest rate than the rate demanded in an ordinary loan.

The discount rate proposed by Cramer and Schrader is therefore not satisfactory for calculating the hypothetical proceeds of a pension liability.

Standard Discount Rate. Ross Skinner recommends stating a pension liability at the amounts calculated by discounting at a "standard discount rate":

> Pension benefit formulas are determined by employers, sometimes by organized negotiation with employees and sometimes by less formal arrangement. Whether formally negotiated or not, however, we doubt that employees demand or attain higher pension benefits in high risk situations than in low. Hence it can be argued that risk is not an effective factor in establishing pension obligations and therefore it should not affect the accounting for such obligations. If this is accepted, a standard discount rate should be applied in pension accounting. The appropriate rate for the private sector, we would think, would be that applicable to the highest quality corporate risks—perhaps 1% over the central government rate. It might not be overly conservative, in fact, to adopt the risk-free government rate itself.[4]

Skinner discusses a particular kind of risk associated with the payment of pensions: the risk that an employer will curtail or eliminate promised pension benefits. He concludes that the existence of that risk should not be a consideration in the selection of the rate at which to discount a pension liability. I agree.

There is another kind of risk associated with the payment of pensions that Skinner does not discuss: the risk that an employer will have to pay larger pension benefits than those originally anticipated. That risk exists because of the uncertainty about when employees will die, which creates uncertainty about the amounts of pension benefits that will have to be paid.

If the purpose of discounting is to measure the hypothetical proceeds by discounting at the hypothetical borrowing rate, such an uncertainty needs to be considered when selecting the rate at which to discount a pension liability. As already discussed, the borrowing rate in an ordinary loan is not satisfactory evidence of the hypothetical borrowing rate for pensions.

The uncertainty of pension payment amounts does not need to be

4. Ross M. Skinner, *Pension Accounting* (Clarkson Gordon, Canada), p. 32.

considered when selecting a discount rate other than the hypothetical borrowing rate. Skinner recommends the use of a standard rate interpreted as the risk-free rate. A justification for using that rate is given in the section on funding amounts under FASB Statement No. 76.

Cost of Capital. Some accountants recommend that pension liabilities be stated at amounts calculated by discounting at the cost of capital, a concept used in capital budgeting. One of the tools of capital budgeting is the calculation of maximum acceptable purchase prices. The minimum acceptable rate of profit on the purchase is called the *cost of capital.*

John Dewhirst recommends that pension liabilities be stated at amounts calculated by discounting at the cost of capital because "the funds that originate from revenues produced by employee labor-services exchanged for pension benefits are available to the company for reinvestment in projects that promise to earn a return in excess of the minimum required rate of return."[5] He does not explain why the investments made by the employer with those funds—other than those in the pension fund—are relevant to determining the rate used to discount the amounts pertaining to the pension liability.

> The cost of capital also represents the opportunity cost of funds frozen in pension fund investments. Company management, by choice or coercion, transfers cash to a pension fund. The cost to the company of this use of funds is the return lost on the best alternative investment opportunity. The minimum acceptable rate of return on the best alternative opportunity is the cost of capital. Over time, the difference between interest expense on the pension liability calculated at the cost of capital rate, and the earnings rate on the pension fund, represents a measure of the cost of investing company funds in traditionally low-earning assets such as pension funds.[6]

The "interest expense" on the liability is apparently the increase in the liability from the time it is incurred until the time it is discharged. The "earnings rate" on the pension fund apparently is not a rate but the increase, from the time the fund is established until the time it is used to pay pensions, in the total price at which the employer can sell all the assets in the pension fund. The "cost of investing company funds in traditionally low-earning assets such as pension funds" apparently is intended to mean the accumulated profit the

5. John F. Dewhirst, "A Conceptual Approach to Pension Accounting," *Accounting Review* (April 1971), p. 367.

6. Ibid., p. 368.

employer sacrifices by putting money into the pension fund instead of using it for other purposes.

The sacrificed profit is the excess of the profit the employer would have earned by using for other purposes the money it put into the pension fund over the profit it earned on pension fund investments, that is, the earnings rate. However, the difference between the interest expense on the liability and the earnings rate on the pension fund does not measure the sacrificed profit unless (1) the cost of capital equals the rate of profit sacrificed and (2) the liability is fully funded when it is incurred.

Discounting a pension liability at the cost of capital therefore does not produce an amount of any significance.

Selecting an Attribute

Pension and postretirement benefits liabilities are stated at various amounts under the requirements and proposals discussed in this chapter. Only two of these can be considered amounts of any significance. They are—

- The hypothetical proceeds.
- The funding amount.

Statement of a pension liability at the hypothetical proceeds should be rejected for the same reasons that were given in chapter 4 for rejecting the statement of a liability incurred in a fixed-payment loan at the hypothetical proceeds. An additional reason for rejecting this proposal is that no evidence can be obtained of the amount of money that would have been borrowed in a loan with the same repayment terms as those applicable to such a liability. This is because of the high degree of uncertainty about the amounts of the future payments.

Theoretically, pension liabilities and liabilities for postretirement benefits, like other liabilities and for the same reasons, should be stated at the smallest burden that could be substituted at the reporting date for the later one. For other kinds of liabilities, this is to state them at the lesser of the creditor's acceptable early-discharge amount and the funding amount. The creditor's acceptable early-discharge amount is seldom if ever known for pension and postretirement benefits liabilities. Both kinds of liabilities should therefore be stated at the funding amount. However, problems arise in stating pension and postretirement benefits liabilities at funding amounts that need to be considered.

Offsetting a Fund and Liability

As discussed in the section on deferred debits and credits, accrued or prepaid pension cost under FASB Statement No. 87 is calculated in part by subtracting the fair value of plan assets from the discounted amount of the pension liability, which is its funding amount, or by subtracting the funding amount from the fair value. Similarly, accrued or prepaid postretirement benefits cost under Statement No. 106 is calculated in part by subtracting the fair value of plan assets from the discounted amount of the postretirement benefits liability, which is its funding amount, or by subtracting the funding amount from the fair value.

An excess of the fair value of fund assets over the funding amount of the liability can be interpreted as the amount of money the employer would retain after selling all fund assets and using a portion of the proceeds to fund the liability. An excess of the funding amount over the fair value can be interpreted as the additional amount of money the employer would need to complete the funding of the liability after selling all fund assets and using the proceeds to provide a portion of the funding of the liability. Neither amount is an attribute of either the fund or the liability.

The fund should be recognized as an asset and the liability should be recognized as a liability. The existence of a fund to pay specific liabilities does not mean the liabilities do not exist; it merely means that they are more likely to be paid. This treatment avoids stating the fund or the liability at an amount that is not an attribute.

Symmetrical Investment Strategy

A FASB Discussion Memorandum contains this statement about accounting for a pension or postretirement benefits liability:

> Some commentators have suggested that the assets, accumulated for the purpose of discharging the liability, and the liability be determined on the same measurement basis. That is, they contend that the earnings assumptions used in determining the liability be consistent with the earnings of the plan as determined by changes in the carrying bases of its assets. (This view is sometimes referred to as symmetry.)[7]

7. FASB Discussion Memorandum, *Accounting and Reporting for Employee Benefit Plans*, October 6, 1975 (New York: AICPA), paragraph 194.

Symmetry demands that the funding amount of the liability be measured under an investment strategy in which the same kinds of securities are bought as those that were bought for the established fund. The Discussion Memorandum does not explain why a symmetrical investment strategy should be used to measure the funding amounts of pension or postretirement benefits liabilities.

Paragraph 189 of Statement No. 106 describes an argument provided by some accountants in favor of a symmetrical investment strategy as it applies to a postretirement benefits liability:

> The extent to which an employer chooses to fund its obligation in a trust or similar arrangement changes the value of the promise to retirees because the existence of the plan assets enhances the security of their benefit payments.

However, the Statement does not say why the accountants believe the enhancement of security implies a symmetrical investment strategy.

There is another argument for measuring the funding amounts of pension and postretirement benefits liabilities under a symmetrical investment strategy. If such a liability is stated at the funding amount, some users of the financial statements may assess the adequacy of the fund by comparing the stated amount of fund assets with the funding amount of the liability. However, if the securities assumed to be bought in determining the funding amount of the liability are different from those actually bought for the fund, such an assessment would be unfair to management.

An argument might be made that, to prevent such an unfair judgment, a symmetrical investment strategy should be used to measure the funding amount of the liability. However, that argument should not be accepted. The purpose of stating a pension or postretirement benefits liability at the funding amount should not be to provide a standard for judging the adequacy of the fund. The adequacy of the fund should be judged solely on the basis of whether the funding objectives set by management are sound and have been met, and users of financial statements should be given that information.

Use of a symmetrical investment strategy to measure the funding amounts of pension and postretirement benefits liabilities simply because it is the strategy used for funding should be rejected for two reasons. First, a symmetrical investment strategy permits manipulation of the stated amounts of the liabilities by means of investment strategies chosen to produce the desired amounts. For example, a risky investment strategy could be chosen to minimize the stated amount of the liability. Second, a symmetrical investment strategy

produces liability amounts for two or more reporting entities that are not comparable, because entities follow diverse investment strategies in funding liabilities.

Both Standards Statement No. 87 and Standards Statement No. 106 reject the use of a symmetrical investment strategy. Paragraph 197 of Statement No. 87 states that the use of discounting to calculate the funding amount of the liability has "nothing to do with plan assets." Paragraph 190 of Statement No. 106 states that "the Board rejected the indebtedness model for postretirement benefit measurements" (the indebtedness model is another name for a symmetrical investment strategy).

Funding Amounts Under FASB Statement No. 76

As discussed in preceding chapters, the funding amounts of liabilities incurred in loans, credit purchases, and leases should be calculated under the investment strategy specified by Standards Statement No. 76, which involves synchronization. For this to be done, the predicted payment dates of amounts making up the probable amount of the liability must be no later than those at which payments are required under debt securities currently available for purchase. Although Statement No. 76 is not intended to apply to pension and postretirement benefits liabilities, their funding amounts could be measured under the investment strategy specified in the Statement when synchronization is feasible. As already noted in the section on discounting required, paragraph 44 of Statement No. 87 discusses synchronization in measuring the funding amount of a pension liability and paragraph 31 of Statement No. 106 discusses synchronization in measuring the funding amount of a postretirement benefits liability.

However, some of the future payments that make up the probable amounts of most pension liabilities and some postretirement benefits liabilities probably will be made later than the dates at which payments are required under debt securities currently available for purchase.

The funding amounts of such liabilities can be measured under the investment strategy specified in Statement No. 76, with an additional procedure applicable to payments that probably will be made after the last payments under currently available securities. For those payments, the investment strategy would have to be based on *partial synchronization*, that is, on the assumption that proceeds collected on securities initially bought by the fund are to be used to buy other securities, whose proceeds will be collected when the payments due

later than those under currently available securities are made. Paragraph 186 of Statement No. 106 seems to approve of partial synchronization in measuring the funding amount of a postretirement benefits liability, as discussed in the section on discounting required.

For the purposes of this discussion, an illustration of the use of partial synchronization to determine a portion of the funding amount of a pension or postretirement benefits liability would be unnecessarily complex. Instead, the following illustration describes a simpler application of partial synchronization to another kind of liability.

Assume that a reporting entity incurs a liability on December 31, 1990. The probable amount is a single payment of $300,000 due on December 31, 2000. The funding amount of the liability on December 31, 1990, is to be measured on the basis of a strategy of buying zero coupon U.S. Government bonds that have a maturity amount of $1,000 each and that mature on December 31, 1995, and using the proceeds to buy other zero coupon U.S. Government bonds that have a maturity amount of $1,000 each and mature on December 31, 2000.

A prediction is made that, on December 31, 1995, the rate of interest applicable to purchases of $1,000 zero coupon U.S. Government bonds that mature on December 31, 2000, will be 12 percent per year. Those bonds are intended to provide proceeds of $300,000 on December 31, 2000. The cost of the 300 bonds needed for that purpose is predicted by discounting at 12 percent per year to be $170,228 on December 31, 1995.[8] Alternatively, instead of predicting the interest rate, the price of each bond could be predicted and multiplied by 300.

On December 31, 1990, the price of a $1,000 zero coupon U.S. Government bond that matures on December 31, 1995, is $593. The enterprise would need to buy 171 bonds on December 31, 1990, to provide for buying 300 bonds later on. Hence, the funding amount of the liability on December 31, 1990, is $101,403.[9]

As discussed in the section on the probable amounts of pension and postretirement benefits liabilities, the probable amounts of some postretirement benefits liabilities are unambiguous. This means that there is no choice of amounts from which to derive the funding amounts of the liabilities under the investment strategy specified in Statement No. 76 and modified as needed for partial synchronization. The probable amounts of pension liabilities and most postretirement benefits liabilities are type 1 ambiguous probable amounts. This means

8. $\$1{,}000 \times 1.12^{-5} \times 300 = \$170{,}228$

9. $\$593 \times 171 = \$101{,}403$

that there is a choice of amounts from which to derive the funding amounts of the liabilities. However, the funding amounts, unlike the probable amounts, are not ambiguous. This is because the investment strategy specified in Statement No. 76 implies a funding amount that is as risk-free as possible. That, in turn, implies that the funding amount should be measured on the assumption that the fund would provide for the payment of the maximum amount within the range of amounts in terms of which the probable amount is described. In the illustration of a type 1 ambiguous probable amount of a pension liability, the funding amount should be measured on the assumption that $4,700,000 probably will be paid.

Funding Amounts Under the Purchase of Insurance

The funding amounts of liabilities measured under the investment strategy specified in Statement No. 76 are risk-free provided the liabilities have unambiguous probable amounts. The funding amounts are not risk-free if the strategy has to be modified for partial synchronization. The funding amounts also are not risk-free if the liabilities have ambiguous probable amounts. In both circumstances, the funding amounts are not risk-free because of the uncertainties associated with using partial synchronization, ambiguous probable amounts, or both to measure funding amounts.

Pension and postretirement benefits liabilities are associated in most circumstances with insurable benefits. This provides the option of measuring funding amounts under an investment strategy that involves the purchase of insurance policies instead of under the strategy specified in Statement No. 76 with or without partial synchronization. Use of such a strategy avoids the uncertainty associated with both partial synchronization and ambiguous probable amounts. This is because the probable amounts are not used to measure the funding amounts under the strategy.

When an employer buys insurance policies for employees, it buys them for specific individuals. Consequently, the funding amount of a pension or postretirement benefits liability under an investment strategy involving the purchase of insurance policies is the total of the prices of the policies bought for individual employees for whom pension or postretirement benefits obligations have been incurred. As noted in the section on discounting required, both Statement No. 87 and Statement No. 106 discuss measuring the funding amount of a pension or postretirement benefits liability under such an investment strategy.

The funding amounts of pension or postretirement benefits liabilities that are measured under an investment strategy that involves the purchase of insurance are not risk-free. Measurement of a funding amount under such a strategy substitutes the risk that the insurance company might become insolvent and unable to pay benefits to policyholders for the uncertainty inherent in partial synchronization or ambiguous probable amounts.

Conclusion

Pension and postretirement benefits liabilities should be stated at their funding amounts. How the funding amounts are measured should depend on whether the benefits to which the liabilities pertain are uninsurable or insurable.

All pension liabilities and most postretirement benefits liabilities pertain to insurable benefits. The funding amounts of postretirement benefits liabilities that pertain to uninsurable benefits—for example, housing subsidies—should be measured under the investment strategy specified in Statement No. 76, which involves synchronization. That strategy is applicable to all such postretirement benefits liabilities.

If the benefits are insurable, the funding amounts should be measured either under an investment strategy that involves the purchase of insurance or under the investment strategy specified in FASB Statement No. 76, modified if necessary to provide for partial synchronization.

9

Accounting for Insurance Liabilities, Income Tax Liabilities, and Nonmonetary Liabilities

Insurance enterprises incur liabilities to pay benefits to policyholders. Accounting for these insurance liabilities, as well as for income tax liabilities and nonmonetary liabilities, will be discussed in this chapter.

When an Insurance Liability Is Incurred

FASB Statement of Financial Accounting Standards No. 60, *Accounting and Reporting by Insurance Enterprises,* paragraph 17, states that "a liability for unpaid claim costs relating to insurance contracts other than title insurance contracts, including estimates of costs relating to incurred but not reported claims, shall be accrued when insured events occur." Under that requirement, a liability is recognized for (1) policyholders who have filed claims with the insurance company as the result of the occurrence of insured events and (2) policyholders who have not yet filed claims but who have experienced insured events, that is, events that are described as incurred but not reported (IBNR). That is a sound rule.

Additional Liabilities. However, that requirement is not observed in paragraph 21 of Statement No. 60, which states that "a liability for future policy benefits relating to long-duration contracts other than title insurance (paragraph 17) shall be accrued when premium revenue is recognized," that is, when premiums become due from policyholders. The liability represents "future benefits to be paid to or on behalf of policyholders."

Those future benefits do not pertain to insured events that have occurred, because the liabilities described in paragraph 17 are to pay benefits for those events. The liabilities described in paragraph 21 are to pay benefits for insured events that have not occurred by the date the statement requires them to be recognized, but are predicted to occur after that date.

Paragraph 21 applies only to "long-duration contracts." Paragraph 7 says that a long-duration contract "generally is not subject to unilateral changes in its provisions, such as a noncancellable or guaranteed renewable contract, and requires the performance of various functions and services (including insurance protection) for an extended period." Paragraph 8 gives examples of long-duration contracts:

> Examples of long-duration contracts include whole-life contracts, guaranteed renewable term life contracts, endowment contracts, annuity contracts, and title insurance contracts. Accident and health insurance contracts may be short-duration or long-duration depending on whether the contracts are expected to remain in force for an extended period.

Paragraph 4 explains why the additional liability is to be recognized:

> Premium revenue... generally exceeds expected policy benefits in the early years of the contracts and it is necessary to accrue, as premium revenue is recognized, a liability for costs that are expected to be paid in the later years of the contracts.

Thus, the additional liability is recognized in order to attain certain desired income statement effects, not to inform users of financial statements in the best way possible of the kinds and magnitudes of the reporting entity's liabilities.

Accident and Health Insurance. For a long- or short-duration accident or health insurance contract, an insured event is an accident or the onset of illness. That event is the last event (apart from the filing of a claim) that causes payment of benefits to become unconditionally

required. The insurance company incurs an obligation to pay insurance benefits to the policyholder when that event occurs.

However, premium revenue for an accident and health insurance contract of long duration, and therefore an additional liability, is recognized under paragraph 21 of Statement No. 60 before the occurrence of the last event that causes an obligation to pay insurance benefits under the contract to be incurred. Statement No. 60 thus requires a liability to be recognized before the obligation is incurred, which is a violation of the definition of a liability.

When an insurance company receives premiums for accident and health insurance, it incurs, instead of obligations for future insured events, the following:

- A risk that it might in the future incur obligations for insured events
- An obligation to pay for short-rate cancellations of the policies upon the demand of the insureds

Obligations for short-rate cancellations of policies are the only obligations insurance companies incur to policyholders of accident and health insurance when premiums from the policyholders are received.

Life Insurance. In a term life insurance contract, the insurance enterprise promises to pay a benefit if the policyholder dies within a specified period. The enterprise becomes unconditionally required to pay the benefit if and when the death occurs. The insurance enterprise should be considered to incur an obligation to pay the benefit at that time.

This conclusion is consistent with Statement No. 60, which describes term life insurance contracts as short-duration contracts subject to the requirements of paragraph 17. The death of the policyholder is the insured event that calls for the recognition of a liability to pay the benefit.

Whole life insurance contracts, guaranteed-renewable term life insurance contracts, and endowment contracts differ from term life insurance contracts in that the death of the policyholder is not a condition for payment of benefits. This is because both the insurance enterprise and the policyholder intend the benefit to be paid. The enterprise promises to pay the benefit when the policyholder dies if the policyholder paid premiums on regularly scheduled dates until the time of death. The enterprise becomes unconditionally required to pay the benefit when it receives the first premium from the policyholder.

The enterprise should be considered to incur an obligation to pay the benefit at that time.

This conclusion is consistent with Statement No. 60, which describes whole life contracts, guaranteed-renewable term life contracts, and endowment contracts as long-duration contracts subject to the requirements of paragraph 21. Liabilities under those contracts are required to be recognized when premiums become due from policyholders.

Annuities. In a life annuity with a period certain, the policyholder pays a specified amount of money and the insurance enterprise promises to pay specified amounts at specified future dates to the policyholder or, if the policyholder dies before completion of the payments, to a beneficiary. A life annuity with a period certain is in substance a loan in which the policyholder is the lender and the insurance enterprise is the borrower.

In a straight life annuity, the policyholder pays a specified amount of money and the insurance enterprise promises to pay a specified amount to the policyholder on regularly scheduled dates until the policyholder dies. A straight life annuity is essentially the same as a pension contract, but without the complication of vesting provisions.

In the remainder of this chapter, the term *annuity* refers to a straight life annuity. In an annuity contract, the insurance enterprise becomes unconditionally required at the time the policyholder pays for the annuity to make all promised payments. The enterprise should be considered to incur an obligation to make the payments at that time.

This conclusion is consistent with Statement No. 60, which describes annuity contracts as long-duration contracts subject to the requirements of paragraph 21.

Probable Amounts of Insurance Liabilities

Determining the probable amounts of liabilities for life insurance benefits presents problems that differ from those encountered in determining the probable amounts of liabilities for other kinds of insurance benefits.

Life Insurance. If a life insurance enterprise is solvent, the probable amount of an obligation to pay benefits to a policyholder under term life insurance generally should equal the amount the insurance enterprise is obligated to pay. This is because the period between the

date of the policyholder's death, which is when the obligation is incurred, and the date the benefit is paid is relatively short.

In contrast, under ordinary life insurance (including a whole life, a guaranteed-renewable term life, or an endowment policy), the period between the date an obligation is incurred to a policyholder—which is when the first premium is paid—and the date the benefit is paid is relatively long. If each obligation were considered separately, a determination could be made as to whether benefits probably will be paid to each policyholder. However, that approach to determining the probable amounts of the liabilities to policyholders is not satisfactory. Because many policies are canceled, it would be likely to result in overestimates or underestimates of the number of policyholders who will receive benefits.

However, actuaries have developed statistics on how long people in general live beyond a certain age. These statistics can be used to predict when unidentified policyholders are likely to die. The predictions are sufficiently accurate so that a determination can be made about the total amount that probably will be paid to discharge all present obligations to policyholders who will receive benefits.

A life insurance company cannot determine whether a single total specified amount probably will be paid, but it should be able to determine whether any total amount within a range of consecutive total amounts probably will be paid. Such a determination is a type 1 ambiguous probable amount of a liability incurred jointly to all policyholders who will receive benefits. The range of amounts in terms of which the probable amount is described is likely to be sufficiently narrow to permit satisfactory accounting for the liability.

Other Kinds of Insurance. Determining amounts that probably will be paid in annuities by an insurance company under straight life policies involves essentially the same process as the one used to determine the amounts that probably will be paid in pensions by an employer. (This was discussed in chapter 8.) Actuarial techniques need to be used to calculate the probable amount of a liability that is incurred jointly to holders of annuity policies. That liability has a type 1 ambiguous probable amount.

When an insured event pertaining to accident, illness, property, or liability insurance occurs, the insurance enterprise incurs an obligation to the policyholder to pay all benefits required under the insurance contract. The amounts of the benefits will be determined by the outcome of future events and are not specified in the contract.

The probable amounts of the liabilities could be determined for each policyholder separately. However, this approach is not satisfactory for the same reason it is unsatisfactory in determining the probable amounts of liabilities that employers incur to retired employees to pay the costs of illness or accident, as discussed in chapter 8. The probable amount of a liability to pay accident or health insurance benefits should be determined jointly for all policyholders who have experienced accident or illness. The probable amount is a type 1 ambiguous probable amount.

Insurance Liabilities: Requirements for Calculating the Stated Amounts

As discussed in the section on when an insurance liability is incurred, paragraphs 17 and 21 of Standards Statement No. 60 distinguish between liabilities for insurance benefits that pertain to (1) insured events that have occurred and (2) insured events that have not occurred. Different requirements for calculating the stated amounts apply to each. In the remainder of this chapter, the requirements will be discussed as they would apply to liabilities whose times of incurrence are determined according to the recommendations of this study.

Insured Events That Have Occurred. Paragraph 18 of Statement No. 60 states that a liability for insured events that have occurred "shall be based on the estimated ultimate cost of settling the claims (including the effects of inflation and other societal and economic factors) using past experience adjusted for current trends, and any other factors that would modify past experience." Paragraph 18 further states that "changes in estimates of claim costs resulting from the continuous review process and differences between estimates and payments for claims shall be recognized in income of the period in which the estimates are changed or payments are made."

The tentativeness of estimates of "ultimate cost" makes it unlikely that an insurance enterprise will be able to determine whether some specified cost probably will be incurred. The enterprise will probably have to determine a range of amounts of which one is the cost that probably will ultimately be incurred. In the terms of this study, the ultimate cost is the probable amount of the liability, which has a type 1 ambiguous probable amount.

Statement No. 60 does not require liabilities pertaining to insured events that have been incurred to be stated at any particular kind of

amount. Paragraph 60 (d) merely requires disclosure of the stated amounts of such liabilities "that are presented at present value in the financial statements and the range of interest rates used to discount those liabilities."

As already discussed, such a liability has a type 1 ambiguous probable amount, and stating a liability of any kind with a type 1 ambiguous probable amount at its probable amount is not feasible. However, stating such a liability at one of the specified amounts in terms of which its probable amount is described is feasible. As discussed in chapter 2, FASB Standards Statement No. 5 requires a liability that reflects recognition of losses and that has a type 1 ambiguous probable amount to be stated at the minimum amount within the range of amounts in terms of which the probable amount is described.

Statement No. 60 does not describe the amounts that would be discounted to state such liabilities at present value. I believe FASB intended that amounts within the ranges in terms of which the probable amounts are described would be discounted. If the liabilities are to be stated at present value, choices have to be made as to which amounts are to be discounted within those ranges.

In practice, insurance companies state many liabilities pertaining to insured events that have occurred at amounts within the ranges that describe their probable amounts. As already discussed, this is permitted by FASB. For example, American International Group, Inc., reported in its balance sheet for the year ended December 31, 1989, a liability stated at $12,958,481,000 and described as "reserve for losses and loss expenses." Note 1 described the liability as follows:

> Losses and loss expenses are charged to income as incurred. The reserve for losses and loss expenses represents the accumulation of estimates for reported losses and includes provisions for losses incurred but not reported. The methods of determining such estimates and establishing resulting reserves, including amounts relating to reserves for estimated unrecoverable reinsurance, are continually reviewed and updated. Adjustments resulting therefrom are reflected in income currently.

No mention was made in the financial statements that the liability was stated at an amount calculated by discounting. If the liability had been stated at such an amount, it would have been necessary to disclose that fact.

Financial statements in which insurance liabilities are apparently stated at amounts pertaining to their probable amounts provide no information on how those amounts were selected from the ranges of

amounts that describe the probable amounts. Evidence that many such liabilities are stated at the minimum amount or at a low amount within the range was provided in a recent study of insurance liabilities conducted by Tillinghast, an actuarial consulting firm, and reported in the *New York Times* on April 4, 1991:

> Tillinghast studied 53 large insurers recently. It found that the $13.2 billion in reserves the companies had set aside by December 31, 1984, were 20 percent too low by the end of 1987, based on the payouts the insurers had made. Over the 10 years ended [December 31,] 1986, Tillinghast said, the reserves of the same 53 insurers were too low each year by between 10 and 25 percent.

The article should also have pointed out that prediction errors are unavoidable when accounting for such liabilities. There is no reason, apart from a desire for conservative financial reporting, why those companies should have stated the liabilities at amounts other than those at which they did state them, assuming that liabilities should be stated at amounts pertaining to their probable amounts. However, there is a more satisfactory method of stating an insurance liability than at one of the amounts in terms of which its probable amount is described.

Insured Events That Have Not Occurred. Paragraph 21 of Statement No. 60 requires that a liability pertaining to insured events that have not occurred be stated at "the present value of future benefits to be paid to or on behalf of policyholders and related expenses less the present value of future net premiums (portion of gross premium required to provide for all benefits and expenses)." The "present value of future benefits to be paid" is the only one of the two described present values that pertains to the liability. The "present value of future net premiums" pertains to an asset and should not be subtracted from the other present value when calculating the stated amount of the liability. In the remainder of this discussion, the stated amount of the liability is assumed to be the present value of future benefits to be paid.

Paragraph 21 further notes that the stated amount of the liability "shall be estimated using methods that include assumptions, such as estimates of expected investment yields, mortality, morbidity, terminations, and expenses." All such estimates except those of investment yields are needed to determine a total amount of future benefits to be paid, and this amount is discounted to calculate the stated amount of the liability. The tentativeness of the estimates needed to determine such a total amount makes it unlikely that an insurance

enterprise will be able to determine whether some specified amount probably will be paid. The enterprise will probably have to determine a range of amounts within which one is the amount that probably will be paid. In the terms of this study, the total of future benefits to be paid that is discounted is an amount that pertains to the probable amount of the liability, which has a type 1 ambiguous probable amount.

However, this conclusion is valid only for the date on which the liability is incurred. This is because paragraph 21 states that "original assumptions shall continue to be used in subsequent accounting periods to determine changes in the liability... unless a premium deficiency exists." According to paragraph 35, a "premium deficiency" is a prediction that a loss will be incurred on a block of insurance contracts for which a liability is recognized. (Insurance enterprises consider each block of contracts to incur a separate liability.) In other words, changes in the estimates ("the assumptions") made over the term of the liability are not permitted to affect the determination of the liability's stated amount, except in the event of a premium deficiency. As a result, the amounts that are discounted at reporting dates after the liability has been incurred may not pertain to the probable amount of the liability at those dates.

Statement No. 60 does not describe the rate required for discounting, other than that it is derived from "investment yields." However, the AICPA Industry Audit Guide *Audits of Stock Life Insurance Companies* describes the discount rate that is used in practice:

> The rate of interest used in an actuarial valuation is an expression of a composite yield rate assumed on the funds invested or to be invested to provide for the future benefits and expenses. Since in most instances the investments include equity securities and real estate as well as debt securities, the yield rate includes dividends, rental income, and interest. Such a yield rate should be net of investment expenses.[1]

The Guide apparently refers to an "actuarial valuation" because the stated amount of the liability is to be calculated by means of actuarial techniques. The Guide seems to imply that the purpose of the discounting is to measure the funding amount of the liability under the same investment strategy as the one used by the insurance enterprise to buy investments intended to provide the money needed to dis-

1. AICPA Industry Audit Guide, *Audits of Stock Life Insurance Companies* (New York: AICPA, 1991), p. 75.

charge the liability. If the collection of investments is interpreted as the contents of a fund, the investment strategy used to measure the liability's funding amount is a symmetrical investment strategy. As discussed in chapter 8, some accountants recommend measuring the funding amount of a pension or postretirement benefits liability under such a strategy. Its use in measuring the funding amount of an insurance liability will be discussed later in this chapter.

Discounting at the rate described in the Guide produces the liability's funding amount only at the date the liability was incurred. This is because, as already discussed, Statement No. 60 does not permit changes in estimates to affect the stated amount of the liability, except in the event of a premium deficiency. According to paragraph 35, such estimates include those of "investment yields," from which the rate used for discounting is derived. Changes in all these estimates must affect the stated amount of the liability if the liability is to be aptly described as stated at its funding amount over the term of its existence.

Insurance Liabilities: Proposals

As already discussed, Statement No. 60 does not specify the kind of amount at which a liability pertaining to insured events that have occurred by the reporting date should be stated. Accountants connected with the insurance industry have frequently considered whether such a liability should be discounted. Those in favor of discounting justify it by the need to conform with APB Opinion 21 and the fact of inflation. As I understand it, the approach is based on the assumption that the liability must be stated either at an amount that is within the range of amounts that describe its probable amount or at an amount calculated by discounting such an amount. However, such a liability can also be stated at another kind of amount, not calculated by discounting, as will be discussed later in this chapter.

Inflation. The fact of inflation was offered as a justification for discounting in a draft of an issues paper on discounting insurance liabilities prepared by the AICPA Insurance Companies Committee. Although the issues paper was never completed, the following argument is still popular:

> *It is inconsistent to recognize as an expense today the anticipated effects of future price changes on existing unpaid claims (reported as liabilities), but not recognize at the same time the offsetting effect of the time value of money. To record claims at ultimate cost produces an improper*

> *measurement of the cost of services being provided.* This point is illustrated by a lifetime worker's compensation claim that is subject to future escalation based on the consumer price index or other price change indicator. Assuming a price change factor of just 5 percent, the total cost of a 25-year claim subject to escalation would be more than three times as great as a claim not subject to escalation. By discounting the claim, the adjustment for the time value of money would substantially offset the anticipated escalation in benefits. [Emphasis added]

This argument is not clear, but I interpret it as follows.

An insurance company invests the premiums it receives. The profits on the investments—interest, dividends, and capital gains—offset the cost of the benefits paid to claimants. The liability should be discounted at the expected rate of profit on the invested premiums. That will cause the profits on investments pertaining to particular premiums to be matched with the costs of benefits paid to the policyholders who supplied those premiums. This argument will be discussed later in this chapter.

APB Opinion 21. AICPA Statement of Position 78-6, *Accounting for Property and Liability Insurance Companies,* paragraph 38, observes that an argument can be made that liabilities pertaining to insured events that have occurred by the reporting date should be discounted only as they apply "to those types of losses that are payable in fixed installments over a long period of time, such as workers' compensation and other forms of disability insurance." According to this argument, such liabilities are discounted because they are "contractual obligations to pay money on fixed or determinable dates as contemplated in APB Opinion 21."

Paragraph 2 of APB Opinion 21 states that "the principles discussed in this Opinion are applicable to receivables and payables which represent contractual rights to receive money or contractual obligations to pay money on fixed or determinable dates." Whether this means that the opinion applies to liabilities pertaining to disability insurance is not clear. If it does, the only apparent way to apply it is to state the liability initially at the amount calculated by discounting future payments that pertain to the liability's probable amount at the imputed interest rate, determined in the manner described in paragraphs 13 and 14. In a credit sale in which a note containing an unconditional promise to pay money is issued, the discounted amount under the imputed rate can be interpreted as the fair value of the note, as discussed in chapter 6. However, no such notes are issued by insurance enterprises when they incur liabilities pertaining to disabil-

ity insurance. Therefore, the stated amounts of such liabilities calculated by discounting must be given another interpretation.

The interest rates described in paragraphs 13 and 14 of Opinion 21 provide satisfactory evidence of the hypothetical borrowing rate used to calculate the hypothetical proceeds of a liability incurred in an ordinary credit purchase. Those interest rates might also provide satisfactory evidence of the hypothetical borrowing rate applicable to a liability for disability insurance. An argument might be made that a liability for disability insurance should be stated on each reporting date over the term of its existence at an amount calculated by discounting at the hypothetical borrowing rate some amount pertaining to the probable amount of the liability. The money that would have been borrowed in the hypothetical loan—the stated amount of the existing liability—is the hypothetical proceeds, assuming that the current hypothetical borrowing rate is used on each reporting date.

The payments that pertain to the probable amount of a discounted liability for disability insurance are associated with a particular level of uncertainty regarding their correspondence in amount and number with the payments that will actually be made to disabled claimants. This uncertainty exists in part because the number of payments depends on the length of the periods of disability, which must be predicted. Although the use of actuarial techniques to make such predictions decreases the level of uncertainty below what it would be had the predictions been made for each claimant separately, it is still much higher than the level associated with future payments to a lender in an ordinary loan.

Use of the hypothetical borrowing rate for discounting implies that the payments made to the hypothetical lender would be associated with the level of uncertainty pertaining to the insurance liability. Hence, the hypothetical loan would entail a risk to the lender greater than the risk entailed in an ordinary loan. The lender in the hypothetical loan would therefore demand an interest rate much higher than the one that would be demanded in an ordinary loan. For this reason, the interest rates described in paragraphs 13 and 14 of Opinion 21, which are rates incurred in ordinary loans, are not satisfactory evidence of the hypothetical borrowing rate applicable to a liability for disability insurance.

Selecting an Attribute for Insurance Liabilities

Insurance liabilities are stated at two kinds of amounts under the requirements and proposals discussed in this chapter: hypothetical

proceeds and funding amounts. Stating them at the hypothetical proceeds should be rejected for the same reasons given in chapter 4 for rejecting the statement of a liability incurred in a fixed-payment loan at the hypothetical proceeds. Another reason not to state such liabilities at the hypothetical proceeds is that no evidence can be obtained of the amount of money that would have been borrowed in a loan with the same repayment terms as the payment terms applicable to insurance liabilities. This is because of the high degree of uncertainty regarding the amounts of the future payments.

Insurance liabilities, like any other liability, should theoretically be stated at the smallest burden that could be substituted at the reporting date for the later one. This involves stating the liabilities at the lesser of the creditor's acceptable early-discharge amount and the funding amount. The creditor's acceptable early-discharge amount is seldom if ever known for insurance liabilities. They should therefore be stated at their funding amounts.

Insurance liabilities have either unambiguous probable amounts or type 1 ambiguous probable amounts. The funding amounts of insurance liabilities with type 1 ambiguous probable amounts should be calculated by using the maximum total amounts that probably will be paid. The reasons for using the maximum amounts were given in chapter 8 in the discussion of pension and postretirement benefits liabilities, most of which have type 1 ambiguous probable amounts.

Funding Amount of an Insurance Liability Under FASB Statement No. 76

As discussed in previous chapters, the funding amounts of liabilities in loans, credit purchases, and leases should be calculated under the investment strategy specified in FASB Statement No. 76, which involves synchronization. In order for the funding amount of any liability to be calculated using synchronization, the predicted dates at which payments making up the liability's probable amount will be made must be no later than the dates at which payments are required under debt securities currently available for purchase. Although Statement No. 76 is not intended to apply to insurance liabilities, the funding amount of an insurance liability could be measured under the investment strategy specified in the Statement when synchronization is feasible.

In some circumstances, however, some of the future payments that make up the probable amount of an insurance liability will probably be made later than the dates at which payments are required under debt securities currently available for purchase. The funding

amounts of such liabilities can be measured under the investment strategy specified in Statement No. 76, with an additional procedure applicable to payments that probably will be made after the last payments under currently available securities. For those payments, the investment strategy would have to be based on partial synchronization. As discussed in chapter 8, the funding amount can be measured with or without discounting.

Use of a Symmetrical Investment Strategy

As discussed in the section on the requirements for calculating the stated amounts of insurance liabilities, an AICPA Industry Audit Guide seems to imply that insurance liabilities pertaining to insured events that have not occurred should be stated at their funding amounts measured under a symmetrical investment strategy. The Guide provides no argument for using that strategy, but one was implied in a draft of an issues paper prepared by the Insurance Companies Committee of the AICPA, which discusses the question of whether insurance liabilities pertaining to insured events that have occurred should be discounted. Although the argument addresses only those insurance liabilities, it also applies to insurance liabilities pertaining to insured events that have not occurred.

According to the draft, some accountants "believe that discounting claims [insurance liabilities] is a means of achieving a matching of all elements of revenue and expense, including investment income, over the policy term." This view was amplified as follows:

> Some believe that all items of revenue and expense should be recognized during the policy term. At present, property liability premium income and acquisition expenses are normally recognized on a pro rata basis over the policy term. Property and liability claims are recorded as incurred, which means that they are also recognized during the policy term. Therefore, the only item of revenue or expense that is not fully recognized during the policy term and [for which] no attempt is made to do so, is investment income. Investment income is recognized over the period the claims remain unpaid. They believe that an attempt should be made to recognize all items of revenue and expense during the policy term. This can be accomplished by discounting property and liability claims as is presently done by life insurance enterprises.

Investment income is associated with the term of an insurance policy in that a premium is collected at the beginning of the term and is used to buy a security. If "all items of revenue and expense should be recognized during the policy term," an argument can be made that

income on the investments should be recognized in the period during which the investments are made, instead of in the periods during which income on the investments is received, the prices of investments owned increase, or the investments are sold. The purpose of discounting would be to recognize the income by stating the liability at an amount smaller than the probable amount.

To achieve that result, the discounting of insurance liabilities would have to meet the following conditions:

1. During any period in which investments are made, the cost of the investments must equal the initial stated amount of the insurance liability incurred in the period.
2. The excess of the total amount that eventually will be paid to discharge the liability over the initial stated discounted amount must equal the investment income from buying, holding, and selling the investments.

Those two conditions are not realistic and are not likely to be met in practice. If they could be met, the stated amount of the liability would be its funding amount. However, a funding amount for the liability should not be determined solely in order to satisfy the two conditions, because investment income should not be recognized before income on investments is received, before the prices of investments owned increase, or before investments are sold. Nor is the use of the strategy justified simply because it is symmetrical, that is, because it is the strategy used for funding. This argument should be rejected for the same reasons given in chapter 8 regarding the funding amounts of pension and postretirement benefits liabilities. The use of the symmetrical investment strategy for measuring the funding amounts of insurance liabilities therefore should be rejected.

Uncertain Payment Dates

AICPA Statement of Position (SOP) 78-6, *Accounting for Property and Liability Insurance Companies*, was superseded by FASB Standards Statement No. 60. Paragraph 38 of the SOP describes an argument against discounting insurance liabilities of property and liability insurance enterprises, which are among the liabilities for which discounting is not required under Statement No. 60. The argument is still popular and needs to be considered.

The argument is confined to liabilities that pertain to "losses [that] involve estimates of both the amounts and the timing of the pay-

ments." The paragraph states that an argument can be made against discounting those liabilities on the grounds that "there is too much subjectivity inherent in establishing estimates of losses that will not be paid until some undetermined future dates." According to the argument, discounting those liabilities "would imply a greater degree of precision than is warranted." The only liabilities that would be discounted are those that pertain to "losses that are payable in fixed installments over a long period of time, such as workers' compensation insurance and other forms of disability insurance."

Both the liabilities that would be discounted and the liabilities that would not be discounted have type 1 ambiguous probable amounts. The only difference between them relevant to discounting is that the probable amounts of the discounted liabilities pertain to payment dates that can be predicted accurately and the probable amounts of the undiscounted liabilities pertain to payment dates that are not likely to be accurately predicted. The argument thus appears to object to discounting solely as it applies to uncertain payment dates, which are said to give the stated amounts of the liabilities "too much subjectivity."

The argument also applies to stating the liabilities at their funding amounts, the calculation of which also involves predictions of payment dates. For the purposes of this discussion, an illustration showing the effect of different payment date predictions on calculations of the funding amount of an insurance liability would be unnecessarily complex. The following illustration shows their effect on a simpler kind of liability with an unambiguous probable amount.

An enterprise incurs a liability on December 31, 1990. The probable amount is $100,000. The payment is to be made on a single future date that is uncertain, but will probably be no earlier than December 31, 1991, and no later than December 31, 1995.

The liability is to be stated at the funding amount on December 31, 1990, calculated by discounting $100,000 at a rate of 10 percent per year. If it is assumed that payment will be made on December 31, 1991, the funding amount will be $90,909.[2] If it is assumed that payment will be made on December 31, 1995, the funding amount will be $62,092.[3]

The objective of funding a liability is to substitute a smaller current burden for a later larger burden. If management funds the

2. $\$100{,}000 \times 1.10^{-1} = \$90{,}909$

3. $\$100{,}000 \times 1.10^{-5} = \$62{,}092$

liability on December 31, 1990, it will have to buy sufficient securities to ensure the availability of enough money to make the payment on the earliest probable date. Management will therefore have to pay $90,909 to fund the liability. That is the funding amount of the liability on December 31, 1990.

Uncertain payment dates do not justify refraining from stating an insurance liability at its funding amount. If an insurance liability with uncertain payment dates is stated at the funding amount, it should be calculated on the assumption that payment will be made at the earliest probable date. Actuarial techniques can be used to determine the range of dates within which payment probably will be made.

For those who object to discounting insurance liabilities solely as it applies to liabilities with uncertain payment dates, stating such liabilities at the funding amount should be preferable to not discounting them at all. In the absence of discounting they would be stated at an even higher amount, that is, at the probable amount of the liability, which in the illustration would be $100,000 instead of the funding amount of $90,909.

Conclusion on Accounting for Insurance Liabilities

Insurance liabilities should be stated at their funding amounts. The funding amounts should be measured under the investment strategy specified in Statement No. 76, modified if necessary to provide for partial synchronization. The funding amounts should be measured assuming payment of the maximum amount within the range of amounts in terms of which the probable amount of the liability is described. The maximum amount should be used for the same reason given in chapter 8 regarding pension or postretirement benefits liabilities.

When a Liability for Income Taxes Is Incurred

No liabilities for income taxes are required to be recognized under current GAAP, except for the amounts reported in current tax returns. However, FASB has taken steps almost certain to result in a requirement to recognize additional liabilities to pay income taxes in circumstances in which no additional liabilities have been incurred.

Total Income and Total Deductions. An analysis of the U.S. federal income tax law as it applies to corporations is necessary to

determine when corporations incur liabilities to pay federal income taxes. Such an analysis also can be used to determine when individuals incur liabilities to pay federal income taxes and when corporations and individuals incur liabilities to pay state and local income taxes.

The federal income tax law requires corporations to file income tax returns for specific years. A return filed by a corporation contains two kinds of amounts: total income and total deductions. The law requires a corporation to report amounts that make up total income if specified events have occurred. For example, sales must be reported in certain circumstances if goods were sold. The law permits the corporation to report amounts that make up total deductions if other specified events have occurred. For example, depreciation can be reported if depreciable assets were previously bought.

The law requires a corporation to pay income tax for a specific year if (1) specified events have occurred that require amounts making up total income to be reported in that year, (2) specified events have occurred that permit amounts making up total deductions to be reported, and (3) total income exceeds total deductions.

The occurrence of an event that an income tax law requires to have occurred in order for reporting of an amount as part of total income to be required for a specific year is one way in which an entity can become unconditionally required to pay an income tax pertaining to that return, provided that reporting the amount contributes to the excess of total income over total deductions. In contrast, the occurrence of an event that an income tax law requires to have occurred in order for reporting of an amount as part of total deductions to be permitted does not have such an effect. Instead, such an event can prevent an entity from becoming unconditionally required to pay an income tax, or it can cause the entity to become unconditionally required to pay an income tax smaller than the one it would otherwise have been unconditionally required to pay.

The Year of the Return. With one exception, all the events that an income tax law requires to occur in order for an entity to become unconditionally required to pay income tax are events that occur in the year of the return. The exception is the purchase of a bond at a discount. The income tax laws require portions of the discount to be reported as interest income in the years in which the taxpayer owns the bond.

An obligation to pay income tax based on the return for a specific year should be considered to be incurred when the last event occurs that the income tax laws require in order for the payment of an income

tax based on the return to become unconditionally required. The last event occurs in the year of the return. To consider the obligation or part of the obligation to be incurred in a previous year would usually be to consider it to be incurred before the occurrence of any of the events required by the income tax laws. That would not be reasonable.

The amount of the obligation should be considered to be the amount of income tax that the law and regulations require to be reported in the return. If the entity probably will pay that amount, a liability based on it should be considered to be incurred in the year of the return.

When a bond is bought at a discount, an obligation pertaining to future amortization of the discount can reasonably be considered to be incurred. The purchase of the bond is the last specified event that results in payment of a specified amount of income tax attributable to amortization (or that results in a reduction in the amount of tax reduced by a carryback or carryforward of a loss). However, this obligation is too trivial for a liability based on it to be recognized.

Any income tax liability is a short-term liability. Therefore, the amount at which it is stated does not materially differ under any of the procedures for calculating the stated amounts of liabilities discussed in this study.

Temporary Differences. Under APB Opinion 11, *Accounting For Income Taxes,* an item called a *deferred income tax credit,* which pertains to the payment of income taxes, is, in certain circumstances, to be reported among the liabilities in the balance sheet. FASB Concept Statement No. 6, *Elements of Financial Statements*, paragraph 241, concludes that that item is not a liability. I agree. The items reported in financial statements under APB Opinion 11 are not elements of financial statements, as that term is used in Concept Statement No. 6. Consequently, the opinion should not be used to account for income taxes.

In December 1987, FASB issued Statement of Financial Accounting Standards No. 96, *Accounting for Income Taxes,* to replace Opinion 11. As amended, Statement No. 96 is effective for fiscal years beginning after December 15, 1992. In June 1991, FASB issued an exposure draft of a pronouncement intended to replace Statement No. 96 before it becomes effective. As they apply to the recognition of liabilities, Statement No. 96 and the exposure draft do not differ significantly in their stated requirements. The principal features of FASB Statement No. 96 that apply to the recognition of liabilities will be discussed in the remainder of this section. Any differences between

the features of FASB Statement No. 96 that are discussed and the exposure draft will be described.

Statement No. 96 (paragraphs 1 and 7) requires "income taxes currently payable" to be recognized as a liability, as this study recommends. It also requires recognition of a "deferred tax liability," which paragraph 206 defines as "the amount of deferred tax consequences attributable to temporary differences that will result in net taxable amounts in future years."

The principal temporary differences that result in the recognition of a deferred tax liability under Statement No. 96 are of a kind called *timing differences*. Footnote 8 to paragraph 11 describes these as "differences between the periods in which transactions affect taxable income and the periods in which they enter into the determination of pretax accounting income." The principal timing differences that result in the recognition of deferred tax liabilities are those that pertain to installment sales and depreciation.

Paragraph 17 states that, "in concept, this statement requires determination of the amount of taxes payable... in each future year as if a [separate] tax return [will be] prepared for the net amount of temporary differences that will result in taxable... amounts in each of those years." The exposure draft proposes to eliminate the concept. Paragraph 17 of the exposure draft calls for use of the "enacted marginal tax rate," which paragraph 18 describes as "the enacted tax rate expected to apply to the last dollars of taxable income in the periods in which the deferred tax liability or asset is estimated to be settled or realized."

Income Tax Consequences. FASB Statement No. 96 focuses on the tax consequences of an event, what it describes in paragraph 206 as "the effects on income taxes—current or deferred—of an event." Paragraph 2 makes this statement:

> Income taxes currently payable for a particular year usually include the *tax consequences* of most events that are recognized in the financial statements for that year. However, because some significant exceptions exist, income taxes currently payable for a year:
>
> a. May include the tax consequences of some events recognized in financial statements for an earlier or later year.
> b. May not include the tax consequences of some other events recognized in financial statements for the current year.

Statement No. 96 is primarily concerned with these two kinds of tax consequences. Paragraph 7 states that "the objective of accounting

for income taxes is to recognize the amount of current and deferred taxes payable or refundable at the date of the financial statements (a) as a result of all events that have been recognized in the financial statements and (b) as measured by the provisions of enacted tax laws." Therefore, "a current or deferred tax liability or asset is recognized for the current or deferred tax consequences of all events that have been recognized in the financial statements."

In discussing the tax consequences associated with a deferred tax liability or asset, paragraph 6 of the exposure draft refers to them as "future" tax consequences instead of "deferred" tax consequences, which clarifies the meaning.

According to the definition of a liability, incurrence of an obligation is caused by events. To meet the objective described in Statement No. 96, the event that is assumed to cause an obligation to pay income taxes to be incurred is the preparation of financial statements in a particular way. If what is meant by "events" in the definition includes events within financial reporting, that would conflict with what is meant by the word in Concept Statement No. 6, which deals specifically with liabilities. Various statements in the pronouncement (including the one cited in chapter 2) make it clear that the events must be events outside of financial reporting.

The objective of accounting for income taxes described in Statement No. 96 would not conflict with Concept Statement No. 6 if the preparation of financial statements in a way that results in timing differences affected the amount of income taxes paid or the times of payment. Financial statements are prepared in a way that has such effects only in the case of the LIFO conformity provision and the alternative minimum tax provision. However, in neither case do the timing differences result in the recognition of liabilities under Statement No. 96.

According to any reasonable understanding of the word, obligations are incurred independently of how financial statements are prepared, and they would be incurred *even if financial statements were not prepared.* Meeting the objective described in Statement No. 96 causes liabilities for income taxes to be presented in periods other than those in which obligations for income taxes were incurred.

A more satisfactory objective of accounting for income taxes is to recognize assets and liabilities pertaining to income taxes when they are obtained or incurred, as determined by events outside of financial reporting.

Although the objective described in Statement No. 96 is intended to support deferred tax accounting, it does not do so. In installment

sales accounting, the objective is met either with or without deferred tax accounting. In depreciation, the objective cannot be met by means of deferred tax accounting.

Installment sales. A taxpayer may sell goods in one year and expect to collect the proceeds from the customer in a following year or years. For certain kinds of sales, the income tax law permits the taxpayer to choose between reporting the profit on the sale as a component of taxable income for the year of the sale and reporting the profit as a component of taxable income for the year or years in which the proceeds are received. Prudent taxpayers choose the second option.

When the second option is chosen, reporting the profit as a component of pretax accounting income for the year of the sale creates a timing difference. In that year, taxable income is less than pretax accounting income by the amount of the profit. Taxable income exceeds pretax accounting income by the same amount for the year or years in which the proceeds are collected. In that sense, the timing difference is said to reverse.

Standards Statement No. 96 requires a deferred income tax liability to be recognized in the year in which a timing difference pertaining to installment sales occurs. The liability is considered to be discharged when the timing difference completely reverses. Collection in any year has an income tax consequence, which is the portion of the income tax paid for that year that is attributable to the profit on the sale included in taxable income for that year. The same portion also is an income tax consequence of the sale.

Both collection and sale are events that are recognized in the financial statements of the seller, and both have the same income tax consequence. Statement No. 96 requires the income tax consequence to be recognized in the financial statements of the year of the sale if the seller recognizes the sale in that year's financial statements. This procedure, which requires recognition of a deferred income tax liability, meets the objective of accounting for income taxes described in paragraph 7 of FASB Statement No. 96. However, that objective is also met by recognizing the income tax consequence in the year or years in which the collections are recognized. The latter procedure would not require recognition of a deferred income tax liability.

Depreciation. A taxpayer who buys a depreciable asset may select a depreciation method to calculate pretax accounting income different from the method selected to calculate taxable income. Pru-

dent taxpayers select methods for income tax purposes that cause the maximum depreciation to be reported as early as possible. Such a taxpayer may report depreciation in pretax accounting income for the earlier years of the asset's life that is less than the depreciation reported in taxable income for the same years. In such a case, the taxpayer must report depreciation in pretax accounting income for the later years of the asset's life that is greater than the depreciation reported in taxable income for the same years.

Pretax accounting income exceeds taxable income by a specific amount in earlier years and is less than taxable income by the same amount in later years. In that sense, the *timing* difference is said to reverse.

Standards Statement No. 96 requires a deferred income tax liability to be recognized in the year in which a timing difference pertaining to depreciation occurs. The liability is considered to be discharged when the timing difference completely reverses.

Paragraph 10 of Statement No. 96 explains why deferred tax liabilities must be recognized in connection with depreciation in order to meet the objective of paragraph 7:

> *Expenses or losses that are deductible before they are recognized in financial income.* The cost of an asset (for example, depreciable personal property) may have been deducted for tax purposes faster than it was depreciated for financial reporting. Amounts received upon future recovery of the amount of the asset for financial reporting will exceed the remaining tax basis of the asset, and the excess will be taxable when the asset is recovered.

Paragraph 10 provides this illustration in explanation:

> The amount of an enterprise's depreciable assets reported in its financial statements is $1,500, and their tax basis is $900. The $600 difference might be attributable to accelerated deductions for tax purposes.... Future recovery of the $1,500 reported amount of the depreciable assets will result in $600 of taxable amounts in future years because the tax basis of those assets is only $900.

	Financial Reporting	*Tax Return*
Income before depreciation	$1,500	$1,500
Depreciation	1,500	900
Income before taxes...	$ —	$ 600

The only event described in paragraph 10 that has tax consequences is the sale of goods in an amount equal to the depreciation

expense recognized in the financial statements ($1,500 in the illustration). However, the tax consequences of the sale are recognized in the financial statements for the same year in which the sale would be recognized in the absence of deferred tax accounting.

Statement No. 96 might have attempted to justify deferred tax accounting by contending that reporting depreciation is to recognize the using up of the asset. However, that process is recognized neither in the financial statements nor in income tax returns, and therefore it has no tax consequences.

AICPA Accounting Research Bulletin No. 43, *Restatement and Revision of Accounting Research Bulletins*, chapter 9C, paragraph 5, explains the purpose of recognizing depreciation in financial statements:

> The cost of a productive facility is one of the costs of the services it renders during its useful economic life. Generally accepted accounting principles require that this cost be spread over the expected useful life of the facility in such a way as to allocate it as equitably as possible to the periods during which services are obtained from the use of the facility. This procedure is known as depreciation accounting, a system of accounting which aims to distribute the cost or other basic value of tangible capital assets, less salvage (if any), over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. *It is a process of allocation, not of valuation.* [Emphasis added]

According to this explanation, recognizing depreciation in a given year does not involve the recognition of any event that occurs in that or any other year. Recognizing events pertaining to the use of the asset in a given year would involve valuation, not allocation.

Statement No. 96 provides no satisfactory explanation for why deferred tax accounting in connection with depreciation is necessary to meet the objective described in paragraph 7. In order for deferred tax accounting to be required for that purpose, there must be some event pertaining to depreciation that has tax consequences that would be recognized in the financial statements for a year other than the one in which the event would be recognized in the absence of deferred tax accounting. There is no such event.

Liabilities Based on Good Effects. I can think of only one way to explain the incurrence of a deferred income tax liability for depreciation without introducing financial reporting, and that is in terms of an income tax postponement. The most advantageous depreciation method permitted for income tax purposes is one that permits the maximum depreciation to be reported in the earlier years of the asset's

life. This entails reporting for income tax purposes in the later years of the asset's life a smaller depreciation than would be reported under the least advantageous method. In the earlier years, the taxpayer pays a smaller income tax than would otherwise be paid, assuming taxes are paid in those years. In later years, the taxpayer pays a larger income tax than would otherwise be paid, assuming taxes are paid in those years.

The difference in income tax can be considered to be a separable amount of income tax, payment of which is postponed from earlier to later years. A deferred income tax liability for depreciation might be understood as a liability to pay the postponed income tax. The last event that causes the liability to be incurred might be considered to be the use in the earlier year's income tax return of the most advantageous, instead of the least advantageous, depreciation method. However, that event simply postpones payment of a specific amount of income tax, which is an advantageous effect. It does not result in payment of the specific amount—a disadvantageous effect—which would have to be paid even in the absence of the event. Events that do not result in the payment of specific amounts of income taxes—events that in fact have advantageous effects—should not be considered to cause liabilities to be incurred to pay them.

Conclusion on Reporting Income Taxes. Recognizing an item for deferred income taxes pertaining to depreciation or to an installment sale as a liability as of a particular date entails recognizing as a liability a portion of the income tax that probably will be required based on the return for a future year. Such a recognition would usually entail considering obligations pertaining to income taxes based on returns for specific years to be incurred before the occurrence of any of the events that the income tax laws require for payments based on the returns to become unconditionally required. Such a recognition violates the definition of a liability and is unsatisfactory.

I therefore must come to another conclusion that departs from the accounting literature. A liability to pay an income tax based on the return for a specific year should not be recognized until the last event occurs that causes the related obligation to be incurred. That event is the last one in the year for which the return is required that causes the payment associated with that return to become unconditionally required. In effect, this rules out reporting liabilities for deferred income taxes.[4]

4. See William C. Dent and Paul Rosenfield, "No More Deferred Taxes," *Journal of Accountancy* (February 1983), pp. 44–55, for arguments consistent with those of this study.

Three methods of accounting for income taxes have been developed: the deferred method, the liability method, and the net of tax method. The deferred method and the liability method should not be used for the reasons given in this chapter. Further analysis is needed to determine whether the net of tax method should be used.

Nonmonetary Liabilities

Nonmonetary liabilities result from obligations to deliver goods or perform services in the future. For example, sellers often promise to repair or replace goods within a specified period after sale if they are found to have been defective when sold. When goods are sold with warranties, an obligation is incurred to repair or replace defective items. The sale is the last substantive condition that must be met for the repair or replacement to become required.

If each obligation to customers is considered separately, no liability can be considered to be incurred to any one of them. This is because few of the goods sold by the typical enterprise are defective. Hence, no determination can be made for any particular customer that the purchased goods probably will be repaired or replaced.

However, an enterprise that provides warranties does incur a liability to customers to repair or replace defective goods. Such enterprises can usually determine a trend in the return of defective goods by customers in general. From this can be extrapolated a prediction of the quantity and kinds of goods that probably will be repaired or replaced in the future to discharge all present obligations to customers. Such a determination justifies the conclusion that a liability has been incurred jointly to all customers whose defective goods will be replaced or repaired.

The number of such customers and their names cannot be determined. Nor can the enterprise determine the number of each kind of defective good that probably will be repaired or replaced. However, a range within which lies the quantity that probably will be repaired or replaced can be specified.

The future sacrifices of economic benefits that are the liability can be interpreted in two ways. The reporting entity is understood to sacrifice the opportunity to put to other use the goods that will be delivered or the services that will be performed. Alternatively, the entity is understood to sacrifice the opportunity to sell the goods or services to a third party. That sacrifice can be quantified as the largest amount of money the entity would be able to obtain by selling the goods or services.

A determination can be made about the total amount of money understood in that way that probably will be sacrificed to discharge the liability. This determination is referred to in this study as the *probable amount* of a nonmonetary liability. The probable amount cannot be determined without ambiguity. The most that can be determined is that any total amount within a range of consecutive total amounts probably will be sacrificed. The probable amount is thus a type 1 ambiguous probable amount.

The probable amount of a nonmonetary liability can reasonably be said to be an attribute of the liability in that it is a quantification of the probable future sacrifices of economic benefits that are the liability. Other kinds of amounts also can reasonably be said to be attributes of nonmonetary liabilities. For example, nonmonetary liabilities are incurred by magazine publishers when they receive advance payments to deliver magazines over the subscription period. The total of the amounts received from subscribers can reasonably be said to be an attribute of the liability.

Roman Weil makes the following proposal for accounting for nonmonetary liabilities under warranties:

> Sometimes, the amount of an obligation discharged in the future depends on uncertain future prices, as in the cases of negative salvage values and product warranty obligations, discussed above. When the accountant makes estimates of future payments for specific goods and services, will those estimates be based on expected future costs or on current costs for equivalent goods or services? The correct discount rate will depend on the choice. If forecasts of future cash flows involve nominal (that is, actual) dollar amounts, then the discount rate should include anticipated general inflation. If forecasts involve real dollar cash flows, then discount using a rate that excludes anticipated inflation.[5]

This proposal is not clear. My interpretation of it can best be expressed through an illustration. Assume that a reporting entity incurs a liability to customers on December 31, 1990, to deliver specified goods under warranties on December 31, 1992. Management decides to state the liability on December 31, 1990, at the amount calculated by discounting at the current prime interest rate the maximum amount that probably will be sacrificed—in the sense that has been described—on December 31, 1992, to discharge the liability. To calculate that amount, management decides to use the inflation com-

5. Roman L. Weil, "Role of the Time Value of Money in Financial Reporting," *Accounting Horizons* (December 1990), p. 59.

ponent of the current prime rate to predict the maximum rate of inflation over the next two years. Management believes that this rate will approximate the maximum rate at which the average price of the goods that will be delivered will increase over that period.

Accordingly, management determines that the current prime interest rate would be a minimum of 3 percent per year, if borrowers and lenders believed there would be no inflation over the next two years. The current prime rate is 8 percent per year. The inflation component of the rate is therefore a maximum of 5 percent per year, the maximum rate of inflation that borrowers and lenders presumably believe will occur over the next two years.

Management determines that if no inflation were to occur in the next two years, the reporting entity would have to sacrifice on December 31, 1992—on the basis of prices in effect on December 31, 1990—a maximum of $1,000 to discharge the liability. Management assumes that the general price level and the average price of the goods that will be delivered on December 31, 1992, will increase at 5 percent per year over the next two years. Management accordingly calculates the maximum amount that probably will be sacrificed on December 31, 1992, as $1,103 ($1,000 $\times$ 1.05^2). Since management decided to calculate the stated amount of the liability on December 31, 1990, by discounting the maximum amount by the current prime rate, which is 8 percent, the stated amount is $945 ($1,103 $\times$ 1.08^{-2}).

According to Weil, management should have saved time by refraining from calculating the maximum amount that probably will be paid. Instead, it could have calculated the stated amount of the liability by discounting the $1,000 maximum amount by 3 percent per year—the minimum prime rate in the absence of inflation. The amount calculated would then have been $945 ($1,000 $\times$ 1.03^{-2}), the same as the amount calculated by the lengthier procedure.

Future prices need to be predicted in order to calculate the probable amounts of nonmonetary liabilities. Weil's approach is only one of several that can be used. Another is to predict future prices by extrapolating from the trend in past price changes. However, evaluating these various approaches is beyond the scope of this study.

A nonmonetary liability should be stated at its funding amount. The funding amount of a nonmonetary liability should be calculated as recommended in chapter 7 regarding a liability with a type 1 ambiguous probable amount that is incurred in a variable-payment loan, credit purchase, or lease.

Appendix

The Interest Formula as Used in Accounting for Liabilities

Both the interest method and the discounting of liabilities in accounting are applications of the compound interest formula.

The Formula

Determining the amounts to be paid in fixed-payment loans involves the application of either the formula for the calculation of simple interest or the formula for the calculation of compound interest. The simple interest formula is not used in accounting for liabilities. The term *interest formula* will be used in this Appendix to refer to the compound interest formula.

To calculate interest in a fixed-payment loan, the loan term is divided into equal periods. The formula is written so that it applies to a loan in which the lender makes a single payment to the borrower, at the beginning of the first period, and the borrower makes a designated number of payments to the lender, one at the end of each period. In the case of a revolving credit loan, each payment to the borrower is treated as a separate loan subject to a separate application of the interest formula.

Terms in the Interest Formula. The interest formula contains four variables, represented here by the letters P, r, i, and n as follows:

P = the payment by the lender to the borrower

r = a receipt by the lender from the borrower

i = the interest rate during a period

n = the number of periods in the loan

The periods covered by the loan are numbered consecutively, beginning with 1. These numbers are assigned to r as subscripts, representing a receipt at the end of the designated payment period. The last receipt by the lender is designated r_n.

The interest formula can be written with r_n on one side of the equation and all the other elements on the other side:

$$P(1+i)^n - r_1(1+i)^{n-1} - r_2(1+i)^{n-2} \ldots - r_{n-2}(1+i)^2 - r_{n-1}(1+i) = r_n$$

The formula can also be written with P on one side of the equation and all the other elements on the other side:

$$r_n(1+i)^{-n} + r_{n-1}(1+i)^{1-n} + r_{n-2}(1+i)^{2-n} \ldots + r_2(1+i)^{-2} + r_1(1+i)^{-1} = P$$

Accumulation and Discounting. In any fixed-payment loan, either P is given and r_n must be solved for, or r_n is given and P must be solved for. Solving for r_n is called *accumulation*. Solving for P is called *discounting*.

The interest formula is usually used in accumulation when the borrower is to make equal payments to the lender. In such circumstances the formula is written as follows:

$$\frac{P(1+i)^n}{2+i} = r_1, r_2, \ldots, r_n$$

The formula written in this way is called the *annuity formula*.

To illustrate the use of the annuity formula, assume that a loan is to involve a payment of $1,000 to a borrower on December 31, 1990, and two equal payments by the borrower on December 31, 1992 and 1993. An interest rate of 10 percent per year is agreed to. The amount of each payment is calculated as follows using the annuity formula:

$$\frac{1{,}000\ (1.10)^3}{2.10} = r_2 = r_3 = \$634$$

Bonds and Notes. The interest formula is used in discounting in the issuance of bonds or notes. As applied to the issuance of a note containing a promise to make two payments—one at the end of the second period and one at the end of the third period after issuance—the formula is written as follows:

$$r_3(1+i)^{-3} + r_2(1+i)^{-2} = P$$

To illustrate, assume that an entity prepares a promissory note in which it promises to pay $5,000 on December 31, 1992, and $7,000 on December 31, 1993. The entity sells (discounts) the note to a bank on December 31, 1990, and the two agree to use an interest rate of 12 percent per year to calculate the price of the note. The formula produces a price of $8,968:

$$\$7{,}000\ (1.12)^{-3} + \$5{,}000\ (1.12)^{-2} = \$8{,}968$$

Consolidation of Formulas. The interest formula is a consolidation of a set of formulas, one for each period of the loan. Each formula, except the one for the final period, produces a balance—represented by b followed by a subscript number—for the end of each period. The balance pertains to the end of the period indicated by the number. For example, the balance at the end of the third period is represented as b_3. The formula for the final period produces the final payment of the borrower.

The sole significance of these formulas to a borrower and lender in a fixed-payment loan is in the calculation of interest. A balance assigned to the end of any period does not represent an amount that the borrower is required or permitted to pay at that time or at any other time. The formulas can be consolidated into a single formula in which the b's are omitted. Only the consolidated formula—the interest formula—is relevant to borrowers and lenders.

As it is written for accumulation, the set of consolidating formulas that produces the interest formula comprises the following:

$$\begin{aligned} P(1+i) - r_1 &= b_1 \\ b_1(1+i) - r_2 &= b_2 \\ &\cdots \\ b_{n-2}(1+i) - r_{n-1} &= b_{n-1} \\ b_{n-1}(1+i) &= r_n \end{aligned}$$

The set can also be consolidated so as to produce the interest formula as it is written for discounting.

The set of formulas for a loan of three periods with a payment to the lender at the end of the second and third periods (to use the previous example of the promissory note) comprises the following:

$$\begin{aligned} P(1+i) &= b_1 \\ b_1(1+i)-r_2 &= b_2 \\ b_2(1+i) &= r_3 \end{aligned}$$

Inserting the payment amounts and interest rate from the illustration produces these results:

$$\begin{aligned} \$8{,}968\ (1.12) &= \$10{,}044 \\ \$10{,}044\ (1.12) - \$5{,}000 &= \$6{,}250 \\ \$6{,}250\ (1.12) &= \$7{,}000 \end{aligned}$$

Interest Method

Under the interest method, the amount assigned to a liability in a fixed-payment loan, credit purchase, or lease at the end of any period, as that word is used in APB Opinion 12, paragraph 16, is the amount assigned to the liability at the beginning of the period, plus an amount calculated by multiplying the beginning stated amount by a constant rate, less any amount paid by the debtor at the end of the period. The arguments for the interest method discussed in chapter 3 imply that the first period begins when the loan, credit purchase, or lease is made. They also imply that any reporting date over the term of the loan, credit purchase, or lease must coincide with the date at which a period ends. In theory, that requirement determines the length of a period. For example, if reporting dates occur every December 31 and a loan is made on December 15, a period in theory cannot exceed a half month in length.

In practice, the interest method can depart from theory without producing materially different results. For example, satisfactory results can often be achieved if it is assumed that the loan, credit purchase, or lease is made at the reporting date that follows the date on which it is in fact made. Alternatively, it can be assumed that a payment by the debtor is made at the reporting date that follows the actual payment date.

The stated amounts of a liability under the interest method are represented by b's in the set of consolidating formulas that make up the

interest formula. If the liability of the borrower in the illustration is accounted for under the interest method, it will be stated at \$10,044 (b_1 in the formulas) on December 31, 1991, and at \$6,250 (b_2 in the formulas) on December 31, 1992.

Discounting Liabilities

The interest formula as it is written for discounting can be used to determine the stated amount of a liability at a reporting date by representing future payments as r and the interest rate as i and solving for P. The procedure is commonly known as *discounting the liability*.

Determining the Period. To apply discounting, the period between the reporting date and the date of the last payment must be divided into equal periods. Theoretically, the reporting date is the first day of the first period, and all future payments occur on the last day of each period. In practice, discounting can depart from theory without producing materially different results. For example, satisfactory results can often be achieved if it is assumed that a future payment will be made at the reporting date that follows the date on which it is required to be made.

Implicit Rate. A liability in a fixed-payment loan is stated initially at the amount of money borrowed; in certain circumstances, a liability in a fixed-payment credit purchase or capital lease is stated initially at the fair value of the property bought or leased. The amount of money borrowed or the fair value can be represented by P in the interest formula as it is written for discounting, and the future payments making up the probable amount of the liability can be represented by r. The interest rate that then satisfies the formula is called the *implicit rate* in FASB Concept Statement No. 5, paragraph 67.

A liability in a fixed-payment loan, credit purchase, or lease that is stated initially at the amount of money borrowed or at the fair value of the property may be stated at subsequent reporting dates at amounts calculated by discounting the future payments making up the probable amounts of the liability by the implicit rate. The stated amounts are the same as the amounts at which the liability would be stated under the interest method, although the interest formula is applied differently in the two procedures.

Historical Rate. A liability in a credit purchase or lease may be stated initially at an amount calculated by discounting the future

payments making up the probable amount by a given rate. The liability may be stated at subsequent reporting dates at amounts calculated by discounting the future payments making up the probable amounts by the same rate. If the rate initially used for discounting is the same as the one used at subsequent reporting dates, it is called a *historical rate* in FASB Concept Statement No. 5, paragraph 67.

The stated amounts of the liability at subsequent dates under historical rate discounting are the same as the stated amounts under the interest method, although the interest formula is used differently in the two procedures.

Equivalence of the Interest Method and Implicit or Historical Rate Discounting

In the case of a loan, credit purchase, or lease of any given number of periods, the interest method can be proved to be equivalent, in this sense, to implicit or historical rate discounting.

The following formulas making up the interest formula for accumulation apply to a loan, credit purchase, or lease of five periods:

$$P(1 + i) - r_1 = b_1 \quad (1)$$
$$b_1(1 + i) - r_2 = b_2 \quad (2)$$
$$b_2(1 + i) - r_3 = b_3 \quad (3)$$
$$b_3(1 + i) - r_4 = b_4 \quad (4)$$
$$b_4(1 + i) = r_5 \quad (5)$$

Rewritten and presented in reverse, these become the formulas making up the interest formula for discounting that applies to a loan, credit purchase, or lease of five periods:

$$r_5(1 + i)^{-1} = b_4 \quad (6)$$
$$b_4(1 + i)^{-1} + r_4(1 + i)^{-1} = b_3 \quad (7)$$
$$b_3(1 + i)^{-1} + r_3(1 + i)^{-1} = b_2 \quad (8)$$
$$b_2(1 + i)^{-1} + r_2(1 + i)^{-1} = b_1 \quad (9)$$
$$b_1(1 + i)^{-1} + r_1(1 + i)^{-1} = P \quad (10)$$

Formula (6) is a single formula for discounting from the end of period five to the end of period four. A single formula for discounting from the end of period five to the end of period three can be produced by consolidating formulas (6) and (7) as follows:

$$r_5(1 + i)^{-2} + r_4(1 + i)^{-1} = b_3 \quad (11)$$

A single formula for discounting from the end of period five to the end of period two can be produced by consolidating formulas (6), (7), and (8) as follows:

$$r_5(1 + i)^{-3} + r_4(1 + i)^{-2} + r_3(1 + i)^{-1} = b_2 \tag{12}$$

A single formula for discounting from the end of period five to the end of period one can be produced by consolidating formulas (6), (7), (8), and (9) as follows:

$$r_5(1 + i)^{-4} + r_4(1 + i)^{-3} + r_3(1 + i)^{-2} + r_2(1 + i)^{-1} = b_1 \tag{13}$$

Formula (1) is the formula for using the interest method to calculate the stated amount of the liability incurred in the loan, credit purchase, or lease at the end of period one. Formula (13) is the formula for using implicit or historical rate discounting to calculate the stated amount of the liability at the end of period one. Both formulas produce the same stated amount, b_1.

Formulas (1) and (2) are the formulas for using the interest method to calculate the stated amount of the liability at the end of period two. Formula (12) is the formula for using implicit or historical rate discounting to calculate the stated amount at the end of period two. Both sets of formulas produce the same stated amount, b_2.

Formulas (1), (2), and (3) are the formulas for using the interest method to calculate the stated amount of the liability at the end of period three. Formula (11) is the formula for using implicit or historical rate discounting to calculate the stated amount at the end of period three. Both sets of formulas produce the same stated amount, b_3.

Formulas (1), (2), (3), and (4) are the formulas for using the interest method to calculate the stated amount of the liability at the end of period four. Formula (6) is the formula for using implicit or historical rate discounting to calculate the stated amount at the end of period four. Both sets of formulas produce the same stated amount, b_4.

In general, the interest method and implicit or historical rate discounting therefore produce the same results as applied to liabilities incurred in fixed-payment loans, credit purchases, and leases.