Statement of Financial Accounting Concepts No. 7

CON7 Status Page

Using Cash Flow Information and Present Value in Accounting Measurements

February 2000

Financial Accounting Standards Board
of the Financial Accounting Foundation
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CON 7: Using Cash Flow Information and Present Value in Accounting Measurements

CON 7 HIGHLIGHTS

[Best understood in context of full Statement]

- Most accounting measurements use an observable marketplace-determined amount, like cash received or paid, current cost, or current market value. However, accountants quite often must use estimated future cash flows as a basis for measuring an asset or a liability. This Statement provides a framework for using future cash flows as the basis for accounting measurements at initial recognition or fresh-start measurements and for the interest method of amortization. It provides general principles that govern the use of present value, especially when the amount of future cash flows, their timing, or both are uncertain. It also provides a common understanding of the objective of present value in accounting measurements.

- The Board decided to limit this Statement to measurement issues and not to address recognition questions. The Board also decided that this Statement will not specify when fresh-start measurements are appropriate. The Board expects to decide whether a particular situation requires a fresh-start measurement or some other accounting response on a project-by-project basis.

- The objective of using present value in an accounting measurement is to capture, to the extent possible, the economic difference between sets of estimated future cash flows. Without present value, a $1,000 cash flow due tomorrow and a $1,000 cash flow due in 10 years appear the same. Because present value distinguishes between cash flows that might otherwise appear similar, a measurement based on the present value of estimated future cash flows provides more relevant information than a measurement based on the undiscounted sum of those cash flows.

- To provide relevant information in financial reporting, present value must represent some observable measurement attribute of assets or liabilities. In the absence of observed transaction prices, accounting measurements at initial recognition and fresh-start measurements should attempt to capture the elements that taken together would comprise a market price if one existed, that is, fair value. While the expectations of an entity's

management are often useful and informative, the marketplace is the final arbiter of asset and liability values. Moreover, the entity must pay the market's price when it acquires an asset or settles a liability in a current transaction, regardless of its intentions or expectations. Nevertheless, for some assets and liabilities, management's estimates may be the only available information. In such cases, the objective is to estimate the price likely to exist in the marketplace, if there were a marketplace.

- An accounting measurement that uses present value should reflect the uncertainties inherent in the estimated cash flows; otherwise, items with different risks may appear similar. This Statement describes the effect of uncertainties about the amount and timing of estimated future cash flows on the measurement of an asset or a liability.

- Accounting applications of present value have typically used a single set of estimated cash flows and a single interest rate. This Statement introduces the expected cash flow approach, which differs from the traditional approach by focusing on explicit assumptions about the range of possible estimated cash flows and their respective probabilities. In contrast, the traditional approach treats those uncertainties implicitly in the selection of an interest rate. By incorporating a range of possible outcomes, the expected cash flow approach accommodates the use of present value techniques when the timing of cash flows is uncertain.

- The measurement of liabilities involves different problems from the measurement of assets; however, the underlying objective is the same. This Statement describes techniques for estimating the fair value of liabilities.

- This Statement also examines the role of the entity's credit standing in measurements of its liabilities at initial recognition and fresh-start measurements. It explains the Board's conclusion that the most relevant measurement of an entity's liabilities should always reflect the credit standing of the entity.

- This Statement describes the factors that, if present, typically suggest that an interest method of allocation should be considered. It also describes the factors that must be considered in implementing that amortization method.

- While this Statement does not address the circumstances that would prompt a fresh-start measurement, it does address the accounting for a change in the estimated amount or timing of future cash flows. If the timing or amount of estimated cash flows changes, and the item is not subject to a fresh-start measure, the interest method of allocation should be altered by a catch-up approach that adjusts the carrying amount to the present value of the revised estimated future cash flows, discounted at the original effective interest rate.

Statements of Financial Accounting Concepts

This Statement of Financial Accounting Concepts is one of a series of publications in the Board's conceptual framework for financial accounting and reporting. Statements in the series are intended to set forth objectives and fundamentals that will be the basis for development of financial accounting and reporting standards. The objectives identify the goals and purposes of financial reporting. The fundamentals are the underlying concepts of financial accounting—concepts that guide the selection of transactions, events, and circumstances to be accounted for; their recognition and measurement; and the means of summarizing and communicating them to interested parties. Concepts of that type are fundamental in the sense that other concepts flow from them and repeated reference to them will be necessary in establishing, interpreting, and applying accounting and reporting standards.

The conceptual framework is a coherent system of interrelated objectives and fundamentals that is expected to lead to consistent standards and that prescribes the nature, function, and limits of financial accounting and reporting. It is expected to serve the public interest by providing structure and direction to financial accounting and reporting to facilitate the provision of evenhanded financial and related information that helps promote the efficient allocation of scarce resources in the economy and society, including assisting capital and other markets to function efficiently.

Establishment of objectives and identification of fundamental concepts will not directly solve financial accounting and reporting problems. Rather, objectives give direction, and concepts are tools for solving problems.

The Board itself is likely to be the most direct beneficiary of the guidance provided by the Statements in this series. They will guide the Board in developing accounting and reporting standards by providing the Board with a common foundation and basic reasoning on which to consider merits of alternatives.

However, knowledge of the objectives and concepts the Board will use in developing standards also should enable those who are affected by or interested in financial accounting standards to understand better the purposes, content, and characteristics of information provided by financial accounting and reporting. That knowledge is expected to enhance the usefulness of, and confidence in, financial accounting and reporting. The concepts also may provide some guidance in analyzing new or emerging problems of financial accounting and reporting in the absence of applicable authoritative pronouncements.

Statements of Financial Accounting Concepts do not establish standards prescribing accounting procedures or disclosure practices for particular items or events, which are issued by the Board as Statements of Financial Accounting Standards. Rather, Statements in this series describe concepts and relations that will underlie future financial accounting standards and

practices and in due course serve as a basis for evaluating existing standards and practices.

The Board recognizes that in certain respects current generally accepted accounting principles may be inconsistent with those that may derive from the objectives and concepts set forth in Statements in this series. However, a Statement of Financial Accounting Concepts does not (a) require a change in existing generally accepted accounting principles; (b) amend, modify, or interpret Statements of Financial Accounting Standards, Interpretations of the FASB, Opinions of the Accounting Principles Board, or Bulletins of the Committee on Accounting Procedure that are in effect; or (c) justify either changing existing generally accepted accounting and reporting practices or interpreting the pronouncements listed in item (b) based on personal interpretations of the objectives and concepts in the Statements of Financial Accounting Concepts.

Because a Statement of Financial Accounting Concepts does not establish generally accepted accounting principles or standards for the disclosure of financial information outside of financial statements in published financial reports, it is not intended to invoke application of Rule 203 or 204 of the Rules of Conduct of the Code of Professional Ethics of the American Institute of Certified Public Accountants (or successor rules or arrangements of similar scope and intent).*

Like other pronouncements of the Board, a Statement of Financial Accounting Concepts may be amended, superseded, or withdrawn by appropriate action under the Board's *Rules of Procedure.*

GLOSSARY OF TERMS

Best estimate

The single most-likely amount in a range of possible estimated amounts; in statistics, the estimated mode. In the past, accounting pronouncements have used the term *best estimate* in a variety of contexts that range in meaning from “unbiased” to “most likely.” This Statement uses *best estimate* in the latter meaning, as distinguished from the expected amounts described below.

Estimated cash flow and **expected cash flow**

In the past, accounting pronouncements have used the terms *estimated cash flow* and *expected cash flow* interchangeably. In this Statement:

Estimated cash flow refers to a single amount to be received or paid in the future.
Expected cash flow refers to the sum of probability-weighted amounts in a range of possible estimated amounts; the estimated mean or average.

Fair value of an asset (or liability)

The amount at which that asset (or liability) could be bought (or incurred) or sold (or settled) in a current transaction between willing parties, that is, other than in a forced or liquidation sale.

Fresh-start measurements

Measurements in periods following initial recognition that establish a new carrying amount unrelated to previous amounts and accounting conventions. Some fresh-start measurements are used every period, as in the reporting of some marketable securities at fair value under FASB Statement No. 115, *Accounting for Certain Investments in Debt and Equity Securities*. In other situations, fresh-start measurements are prompted by an exception or "trigger," as in a remeasurement of assets under FASB Statement No. 121, *Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed Of*.

Interest methods of allocation

Reporting conventions that use present value techniques in the absence of a fresh-start measurement to compute changes in the carrying amount of an asset or liability from one period to the next. Like depreciation and amortization conventions, interest methods are grounded in notions of historical cost. The term *interest methods of allocation* refers both to the convention for periodic reporting and to the several approaches to dealing with changes in estimated future cash flows.

Present value and expected present value

The current measure of an estimated future cash inflow or outflow, discounted at an interest rate for the number of periods between today and the date of the estimated cash flow. The present value of $X due n periods in the future and discounted at an interest rate of i per period is computed using the formula:

$$X/(1 + i)^n$$

Expected present value refers to the sum of probability-weighted present values in a range of estimated cash flows, all discounted using the same interest rate convention.

INTRODUCTION

1. Most accounting measurements use an observable marketplace-determined amount—cash or the value of other assets received or paid, current cost, or current market value. Observable marketplace amounts are generally more reliable and are more efficiently determined than measurements that must employ estimates of future cash flows. When observable amounts are not available, accountants often turn to **estimated cash flows** [1] to determine the carrying amount

of an asset or a liability. Those cash flows usually occur in one or more future periods, prompting questions about whether the accounting measurement should reflect the **present value** or the undiscounted sum of those cash flows. The Board and its predecessors have been reluctant to extend the use of present value techniques without a framework for their use. For example, in paragraph 6 of APB Opinion No. 10, *Omnibus Opinion—1966*, the Accounting Principles Board observed:

> Pending further consideration of this subject and the broader aspects of discounting as it is related to financial accounting in general and until the Board reaches a conclusion on this subject, it is the Board's opinion that, except for applications existing on the exposure date of this Opinion (September 26, 1966) with respect to transactions consummated prior to that date, deferred taxes should not be accounted for on a discounted basis.

2. In October 1988, the Board began a project to consider the broader aspects of present value in accounting measurements. Several accounting pronouncements that followed Opinion 10 used present value techniques, with considerable variation among those applications. Other pronouncements might have used present value techniques but did not. In adding this project to its agenda, the Board sought to better explain when present value is an appropriate measurement tool and how that tool should be used.

3. In December 1990, the Board issued a Discussion Memorandum, *Present Value-Based Measurements in Accounting*. The Discussion Memorandum identified three approaches for the project. The Board might:

a. Decide that no further steps are necessary
b. Identify specific areas in which new or amended accounting pronouncements are necessary
c. Develop a new FASB Statement of Financial Accounting Concepts.

4. The Board issued 32 Statements of Financial Accounting Standards between December 1990 and December 1999. Of those Statements, 15 addressed recognition and measurement issues and 11 addressed the use of present value techniques. In its deliberation of those pronouncements and its work on this Statement, the Board became aware that descriptions of measurement attributes in FASB Concepts Statement No. 5, *Recognition and Measurement in Financial Statements of Business Enterprises,* were inadequate in determining when and how to use present value in accounting measurements.

5. Paragraph 67 of Concepts Statement 5 describes five measurement attributes used in financial statements:

a. Historical cost (historical proceeds)
b. Current cost
c. Current market value

d. Net realizable (settlement) value
e. Present (or discounted) value of future cash flows.

6. The discussion in Concepts Statement 5 of three of those attributes (current cost, current market value, and net realizable value) focuses on measurements at initial recognition and **fresh-start measurements** in subsequent periods. The discussion of the historical cost attribute focuses on measurement at initial recognition and subsequent amortization or allocation. The present value measurement attribute described in Concepts Statement 5 is an amortization method that could be applied after an asset or liability is recognized and measured using historical cost, current cost, or current market value.

7. In recent years, the Board has identified **fair value** as the objective for most measurements at initial recognition and fresh-start measurements in subsequent periods. Concepts Statement 5 does not use the term fair value. However, some of the measurement attributes described in Concepts Statement 5 may be consistent with fair value. At initial recognition, the cash or equivalent amount paid or received (historical cost or proceeds) is usually assumed to approximate fair value, absent evidence to the contrary. Current cost and current market value both fall within the definition of fair value. Net realizable value and present value, as described in Concepts Statement 5, are not consistent with fair value.

8. In February 1996, the Board issued an FASB Special Report, *The FASB Project on Present Value Based Measurements, an Analysis of Deliberations and Techniques.* The Special Report analyzed:

a. Responses to the 1990 Discussion Memorandum and subsequent Board deliberations
b. How the Board dealt with present value in other projects
c. Techniques for thinking about present value problems that use an **expected cash flow** approach
d. Issues raised by the **interest method of allocation.**

9. In June 1997, the Board issued an Exposure Draft of a Proposed Statement of Financial Accounting Concepts, *Using Cash Flow Information in Accounting Measurements.* After considering comments received and redeliberating the provisions of that Exposure Draft, the Board changed its conclusions about the objective of present value in accounting measurement and the role of an entity's credit standing in the measurement of its liabilities. Those changes were deemed sufficient to warrant reexposure and in March 1999, the Board issued a second Exposure Draft, *Using Cash Flow Information and Present Value in Accounting Measurements.*

10. The Board's counterparts in other countries also are examining measurement questions that center on using information about estimated future cash flows and present value. In April 1997, the United Kingdom's Accounting Standards Board (UK ASB) published a working paper, *Discounting in Financial Reporting.* A working group representing accounting standard setters from Australia, Canada, New Zealand, the United Kingdom, the International Accounting

Standards Committee (IASC), and the United States (commonly known as the G4+1) has discussed present value issues on several occasions. International Accounting Standard 37, *Provisions, Contingent Liabilities and Contingent Assets,* makes extensive use of present value techniques. In 1998, the IASC added a project on present value to its agenda. However, the Board is not aware of any accounting standard setter that has incorporated the objectives and conceptual basis for using present value techniques in financial accounting measurement in its conceptual framework.

11. This Statement provides a framework for using future cash flows as the basis for an accounting measurement. The framework:

a. Describes the objective of present value in accounting measurements
b. Provides general principles governing the use of present value, especially when the amount of future cash flows, their timing, or both are uncertain.

SCOPE

12. This Statement addresses measurement issues and does not address recognition questions. Paragraph 6 of Concepts Statement 5 defines *recognition* in the following terms:

> Recognition is the process of formally recording or incorporating an item into the financial statements of an entity as an asset, liability, revenue, expense, or the like. Recognition includes depiction of an item in both words and numbers, with the amount included in the totals of the financial statements. For an asset or liability, recognition involves recording not only acquisition or incurrence of the item but also later changes in it, including changes that result in removal from the financial statements. [Footnote reference omitted.]

13. While the Board decided that its work on present value should focus on measurement, leaving recognition questions for other projects, it observes that recognition and measurement are related to one another. For example, a decision to change the measurement attribute (for example, a change from amortized cost to fair value) also raises recognition questions. In some cases, a measurement governs whether or not a change in the carrying amount will be recognized and provides the basis for the subsequent carrying amount. Lower-of-cost-or-market rules are one example. However, the convention that governs recognition and the measurement attribute need not be the same. For example, FASB Statement No. 121, *Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed Of,* uses a recognition convention based on undiscounted cash flows. The measurement of impairment is based on fair value.

14. This Statement does not specify when fresh-start measurements are appropriate. Accountants frequently face situations in which a change in an asset or liability can be recognized by either a fresh-start measurement or an adjustment to the existing amortization convention. The events and circumstances that prompt a fresh-start measurement vary from one

situation to the next, and information about estimated future cash flows is sometimes part of the remeasurement determination. The Board expects to decide whether a particular situation requires fresh-start measurement or some other accounting response on a project-by-project basis.

15. The conclusions reached in this Statement apply only to measurements at initial recognition, fresh-start measurements, and amortization techniques based on future cash flows. This Statement does not apply to measurements based on the amount of cash or other assets paid or received or on observation of fair values in the marketplace. If such transactions or observations are present, the measurement would be based on them, not on future cash flows.

16. Statements of Financial Accounting Concepts are intended to set forth objectives and fundamentals that will be the basis for development of financial accounting and reporting standards. It is not surprising that parts of this and other Concepts Statements conflict with some of the specific accounting standards issued in the past. Those standards were developed over several decades. Individual standards usually address specific problems and reflect the compromises and technological limitations of their time. Appendix B outlines 21 instances in which the Board and its predecessors have used present value techniques in measuring assets and liabilities recognized in financial statements. A review of other accounting guidance reveals many more, along with situations in which present value techniques could have been used but were not. The Board does not intend to revisit existing accounting standards and practice solely as a result of issuing this Statement. Instead, it will use this Statement in developing future accounting standards as issues arise and are added to the Board's technical agenda.

PRESENT VALUE AT INITIAL RECOGNITION OR IN FRESH-START ACCOUNTING MEASUREMENT

17. If a price for an asset or liability or an essentially similar asset or liability can be observed in the marketplace, there is no need to use present value measurements. The marketplace assessment of present value is already embodied in such prices.

18. Accounting measurement is a broad topic, and a comprehensive reconsideration of measurement was beyond the scope of this Statement. Throughout its consideration of present value, the Board focused on a set of fundamental questions relevant to measurements and amortization conventions that employ present value techniques:

a. What is the objective, or objectives, of present value when it is used in measurements at initial recognition of assets or liabilities?
b. Does the objective differ in subsequent fresh-start measurements of assets and liabilities?
c. Do measurements of liabilities require different objectives, or present different problems, than measurements of assets?
d. How should estimates of cash flows and interest rates be developed?

e. What is the objective, or objectives, of present value when it is used in the amortization of existing assets and liabilities?
f. If present value is used in the amortization of assets and liabilities, how should the technique be applied when estimates of cash flows change?

19. The present value formula is a tool used to incorporate the time value of money in a measurement. In their simplest form, present value techniques capture the amount that an entity demands (or that others demand from it) for money that it will receive (or pay) in the future. Present value is one of the foundations of economics and corporate finance, and the computation of present value is part of most modern asset-pricing models, including option-pricing models. Moreover, the present value of estimated future cash flows is implicit in all market prices, including the historical cost recorded when an entity purchases an asset for cash. That relationship is readily apparent when applied to financial assets like loans or bonds, but it extends to all assets and liabilities recognized in the financial statements.

20. The objective of using present value in an accounting measurement is to capture, to the extent possible, the economic difference between sets of future cash flows. For example, each of the 5 assets listed below has a future cash flow of $10,000:

a. An asset with a fixed contractual cash flow of $10,000 due in 1 day. The cash flow is certain of receipt.
b. An asset with a fixed contractual cash flow of $10,000 due in 10 years. The cash flow is certain of receipt.
c. An asset with a fixed contractual cash flow of $10,000 due in 1 day. The amount that ultimately will be received is uncertain. It may be less than $10,000 but will not be more.
d. An asset with a fixed contractual cash flow of $10,000 due in 10 years. The amount that ultimately will be received is uncertain. It may be less than $10,000 but will not be more.
e. An asset with an *expected* cash flow of $10,000 due in 10 years. The amount that ultimately will be received is uncertain, but it may be as high as $12,000, as low as $8,000, or some other amount within that range.

21. Four of those assets have the same contractual cash flow ($10,000), and the expected cash flow from the fifth is also that amount. Few would argue that they are economically the same or that a rational marketplace participant would pay the same price for each. The assets are distinguished from one another in timing and uncertainty, but an accounting measurement based on undiscounted cash flows would measure all five at the same amount. In contrast, present value helps to distinguish between unlike items that might otherwise appear similar. A present value measurement that incorporates the uncertainty in estimated future cash flows always provides more relevant information than a measurement based on the undiscounted sum of those cash flows or a discounted measurement that ignores uncertainty. (Refer to Appendix A for a numerical illustration.)

22. Any combination of cash flows and interest rates could be used to compute a present

value, at least in the broadest sense of the term. However, present value is not an end in itself. Simply applying an arbitrary interest rate to a series of cash flows provides limited information to financial statement users and may mislead rather than inform. To provide relevant information for financial reporting, present value must represent some observable measurement attribute of assets or liabilities. (As noted in paragraph 25, this Statement identifies that attribute as fair value.)

23. A present value measurement that fully captures the economic differences between the five assets described in paragraph 20 would necessarily include the following elements:

a. An estimate of the future cash flow, or in more complex cases, series of future cash flows at different times [2]
b. Expectations about possible variations in the amount or timing of those cash flows
c. The time value of money, represented by the risk-free rate of interest
d. The price for bearing the uncertainty inherent in the asset or liability
e. Other, sometimes unidentifiable, factors including illiquidity and market imperfections.

24. Existing accounting conventions differ in the extent to which they incorporate those five elements.

a. *Fair value* captures all five elements using the estimates and expectations that marketplace participants would apply in determining the amount at which that asset (or liability) could be bought (or incurred) or sold (or settled) in a current transaction between willing parties.
b. *Value-in-use* and *entity-specific measurements* [3] attempt to capture the value of an asset or liability in the context of a particular entity. Entity-specific measurement can be applied to capture all five elements. However, the measurement substitutes the entity's assumptions for those that marketplace participants would make. For example, an entity computing the entity-specific measurement of an asset would use its expectations about its use of that asset rather than the use assumed by marketplace participants. [4]
c. *Effective-settlement* measurements represent the current amount of assets that if invested today at a stipulated interest rate will provide future cash inflows that match the cash outflows for a particular liability. As used in current accounting standards, effective-settlement measurements exclude the price component that marketplace participants demand for bearing uncertainty about the future cash flows and the price component attributed to the entity's credit standing.
d. *Cost-accumulation* or *cost-accrual* measurements attempt to capture the costs (usually incremental costs) that an entity anticipates it will incur in acquiring an asset or satisfying a liability over its expected term. Those measurements exclude other assumptions that would be included in an estimate of fair value. For example, an entity that is accruing the costs of settling a liability would typically exclude the overhead, profit margin, and risk premium (the price for bearing uncertainty) that third parties would incorporate in the price they would charge to assume the liability. [5]

Present Value and Fair Value

25. The only objective of present value, when used in accounting measurements at initial recognition and fresh-start measurements, is to estimate fair value. Stated differently, present value should attempt to capture the elements that taken together would comprise a market price if one existed, that is, fair value.

26. Among their many functions, markets are systems that transmit information in the form of prices. Marketplace participants attribute prices to assets and, in doing so, distinguish the risks and rewards of one asset from those of another. Stated differently, the market's pricing mechanism ensures that unlike things do not appear alike and that like things do not appear to be different (a qualitative characteristic of accounting information). An observed market price encompasses the consensus view of all marketplace participants about an asset or liability's utility, future cash flows, the uncertainties surrounding those cash flows, and the amount that marketplace participants demand for bearing those uncertainties.

27. A transaction in the marketplace—an exchange for cash at or near to the date of the transaction—is the most common trigger for accounting recognition, and accountants typically accept actual exchange prices as fair value in measuring those transactions, absent persuasive evidence to the contrary. Indeed, the usual condition for using a measurement other than the exchange price is a conclusion that the stated price is not representative of fair value. [6] The Board could not identify any persuasive rationale for using a measurement objective other than fair value, simply because the asset or liability is recognized without an accompanying cash transaction.

28. In the absence of a cash transaction, accountants turn to other techniques for the initial measurement of an asset or liability, but the measurement objective remains the same. The process begins by determining whether others have bought or sold the same or similar items in recent cash transactions. Thus, if the entity receives U.S. Treasury securities in an exchange transaction, the initial measurement of those securities is based on the observed price of transactions by others. The same fair value objective applies in initial measurements of nonmonetary assets acquired in exchange transactions. Paragraph 18 of APB Opinion No. 29, *Accounting for Nonmonetary Transactions*, states the basic principle as follows:

> . . . general accounting for nonmonetary transactions should be based on the fair values of the assets (or services) involved which is the same basis as that used in monetary transactions. Thus, the cost of a nonmonetary asset acquired in exchange for another nonmonetary asset is the fair value of the asset surrendered to obtain it, and a gain or loss should be recognized on the exchange. The fair value of the asset received should be used to measure the cost if it is more clearly evident than the fair value of the asset surrendered. Similarly, a nonmonetary asset received in a nonreciprocal transfer should be recorded at the fair value of

the asset received. [Footnote reference omitted.]

29. If there are no observable transactions for similar assets or liabilities, the entity may be required to use estimates of future cash flows in the measurement. The same fair value objective can be found in APB Opinion No. 21, *Interest on Receivables and Payables.* Paragraph 13 of Opinion 21 concludes with the following description of the measurement objective, captured in a description of the interest 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.

30. The principles that apply to measurements at initial recognition also apply to fresh-start measurements. The interest rate described in Opinion 21 embodies the same notion as the "rate commensurate with the risks involved" described in Statement 121. The Board could not identify any rationale for taking a different view in subsequent fresh-start measurements (as opposed to depreciation and amortization conventions) than the view that would pertain to measurements at initial recognition. Information that is relevant at initial recognition does not become less so if the asset or liability is subject to a fresh-start measurement.

31. The various alternatives to fair value that are described in paragraph 24 share certain characteristics. Each alternative (a) adds factors that are not contemplated in the price of a market transaction for the asset or liability in question, (b) inserts assumptions made by the entity's management in the place of those that the market would make, and/or (c) excludes factors that would be contemplated in the price of a market transaction. Stated differently, each alternative either adds characteristics to the asset or liability for which marketplace participants will not pay or excludes characteristics for which marketplace participants demand and receive payment.

32. An entity's best estimate of the present value of cash flows will not necessarily equal the fair value of those uncertain cash flows. There are several reasons why an entity might expect to realize or pay cash flows that differ from those expected by others in the marketplace. Those include:

a. The entity's managers might intend different use or settlement than that anticipated by others. For example, they might intend to operate a property as a bowling alley, even though others in the marketplace consider its highest and best use to be a parking lot.
b. The entity's managers may prefer to accept risk of a liability (like a product warranty) and manage it internally, rather than transferring that liability to another entity.
c. The entity might hold special preferences, like tax or zoning variances, not available to others.

d. The entity might hold information, trade secrets, or processes that allow it to realize (or avoid paying) cash flows that differ from others' expectations.
e. The entity might be able to realize or pay amounts through use of internal resources. For example, an entity that manufactures materials used in particular processes acquires those materials at cost, rather than the market price charged to others. An entity that chooses to satisfy a liability with internal resources may avoid the markup or anticipated profit charged by outside contractors.

33. The items listed above constitute some of an entity's perceived advantages or disadvantages relative to others in the marketplace. If the entity measures an asset or liability at fair value, its comparative advantage or disadvantage will appear in earnings as it realizes assets or settles liabilities for amounts different than fair value. The effect on earnings appears when the advantage is employed to achieve cost savings or the disadvantage results in excess costs. In contrast, if the entity measures an asset or liability using a measurement other than fair value, its comparative advantage or disadvantage is embedded in the measurement of the asset or liability at initial recognition. If the offsetting entry is to revenue or expense, measurements other than fair value cause the future effects of this comparative advantage or disadvantage to be recognized in earnings at initial measurement.

34. FASB Concepts Statement No. 1, *Objectives of Financial Reporting by Business Enterprises,* identifies three objectives of financial reporting. The financial statements and accompanying notes should provide information:

a. That is useful to present and potential investors and creditors and other users in making rational investment, credit, and similar decisions (paragraph 34)
b. That helps present and potential investors and creditors and other users in assessing the amounts, timing, and uncertainty of prospective cash receipts from dividends or interest and the proceeds from the sale, redemption, or maturity of securities or loans (paragraph 37)
c. That tells about the economic resources of an enterprise, the claims to those resources (obligations of the enterprise to transfer resources to other entities and owners' equity), and the effects of transactions, events, and circumstances that change resources and claims to those resources (paragraph 40).

35. Some have suggested that measurements other than fair value, like management's best estimate of future cash flows, are more consistent with the second objective of financial reporting. They reason that management's estimate of the most likely cash inflow or outflow is superior to fair value as a predictor of future cash flows. However, management's best estimate communicates no information about the uncertainty of future cash flows—a key element of the second objective. Such measurement excludes uncertainty, the price that marketplace participants demand for bearing uncertainty (risk premium), and the assumptions that marketplace participants would use in gauging estimated future cash flows. It provides some information but fails to provide the most relevant information for meeting the first and third objectives.

36. While the expectations of an entity's management are often useful and informative, the marketplace is the final arbiter of asset and liability values. Present value measurements with an objective of fair value are, within the limits of estimation, independent of the entity performing the measurement. As a result, fair value provides a neutral basis for comparing one entity with another. A particular entity may, in fact, possess advantages or disadvantages relative to others. The use of fair value in measurements at initial recognition or fresh-start measurements results in accounting recognition of the economic impact of those advantages or disadvantages as they are realized, rather than at initial recognition. For measurements at initial recognition or fresh-start measurements, fair value provides the most complete and representationally faithful measurement of the economic characteristics of an asset or a liability.

37. Finally, fair value represents a price and, as such, provides an unambiguous objective for the development of the cash flows and interest rates used in a present value measurement. In contrast, the alternative measurements all accept an element of arbitrariness in the selection of the estimated cash flows and interest rate. For example, some might argue that an asset-earning rate is appropriate for cost-accumulation measurement of liabilities. Others might argue for an incremental-borrowing or embedded interest rate. There is little conceptual basis, if any, for judging which of those arguments is correct. Proponents of those alternatives often judge the acceptability of a measurement objective based on the intent of management as to how it plans to use an asset or settle a liability. However, an entity must pay the market's price when it acquires an asset or settles a liability in a current transaction, regardless of its intentions or expectations.

38. Adopting fair value as the objective of present value measurements does not preclude the use of information and assumptions based on an entity's expectations. As a practical matter, an entity that uses cash flows in accounting measurements often has little or no information about some or all of the assumptions that marketplace participants would use in assessing the fair value of an asset or a liability. In those situations, the entity must necessarily use the information that is available without undue cost and effort in developing cash flow estimates. The use of an entity's own assumptions about future cash flows is compatible with an estimate of fair value, as long as there are no contrary data indicating that marketplace participants would use different assumptions. If such data exist, the entity must adjust its assumptions to incorporate that market information.

The Components of a Present Value Measurement

39. Paragraph 23 describes the following elements that together capture the economic differences between various assets and liabilities: [7]

a. An estimate of the future cash flow, or in more complex cases, series of future cash flows at different times
b. Expectations about possible variations in the amount or timing of those cash flows
c. The time value of money, represented by the risk-free rate of interest

d. The price for bearing the uncertainty inherent in the asset or liability
e. Other, sometimes unidentifiable, factors including illiquidity and market imperfections.

40. This Statement contrasts two approaches to computing present value, either of which may be used to estimate the fair value of an asset or a liability, depending on the circumstances. In the expected cash flow approach discussed in this Statement, only the third factor listed in paragraph 39 (the time value of money, represented by the risk-free rate of interest) is included in the discount rate; the other factors cause adjustments in arriving at risk-adjusted expected cash flows. In a traditional approach to present value, adjustments for factors (b)–(e) described in paragraph 39 are embedded in the discount rate.

General Principles

41. The techniques used to estimate future cash flows and interest rates will vary from one situation to another depending on the circumstances surrounding the asset or liability in question. However, certain general principles govern any application of present value techniques in measuring assets or liabilities:

a. To the extent possible, estimated cash flows and interest rates should reflect assumptions about the future events and uncertainties that would be considered in deciding whether to acquire an asset or group of assets in an arm's-length transaction for cash.
b. Interest rates used to discount cash flows should reflect assumptions that are consistent with those inherent in the estimated cash flows. Otherwise, the effect of some assumptions will be double counted or ignored. For example, an interest rate of 12 percent might be applied to contractual cash flows of a loan. That rate reflects expectations about future defaults from loans with particular characteristics. That same 12 percent rate should not be used to discount expected cash flows because those cash flows already reflect assumptions about future defaults.
c. Estimated cash flows and interest rates should be free from both bias and factors unrelated to the asset, liability, or group of assets or liabilities in question. For example, deliberately understating estimated net cash flows to enhance the apparent future profitability of an asset introduces a bias into the measurement.
d. Estimated cash flows or interest rates should reflect the range of possible outcomes rather than a single most-likely, minimum, or maximum possible amount.

Traditional and Expected Cash Flow Approaches to Present Value

42. A present value measurement begins with a set of future cash flows, but existing accounting standards employ a variety of different approaches in specifying cash flow sets. Some applications of present value use contractual cash flows. When contractual cash flows are not available, some applications use an estimate of the single most-likely amount or **best estimate**.

43. Accounting applications of present value have traditionally used a single set of estimated

cash flows and a single interest rate, often described as "the rate commensurate with the risk." In effect, although not always by conscious design, the traditional approach assumes that a single interest rate convention can reflect all the expectations about the future cash flows and the appropriate risk premium. The Board expects that accountants will continue to use the traditional approach for some measurements. In some circumstances, a traditional approach is relatively easy to apply. For assets and liabilities with contractual cash flows, it is consistent with the manner in which marketplace participants describe assets and liabilities, as in "a 12 percent bond."

44. The traditional approach is useful for many measurements, especially those in which comparable assets and liabilities can be observed in the marketplace. However, the Board found that the traditional approach does not provide the tools needed to address some complex measurement problems, including the measurement of nonfinancial assets and liabilities for which no market for the item or a comparable item exists. The traditional approach places most of the emphasis on selection of an interest rate. A proper search for "the rate commensurate with the risk" requires analysis of at least two items—one asset or liability that exists in the marketplace and has an observed interest rate and the asset or liability being measured. The appropriate rate of interest for the cash flows being measured must be inferred from the observable rate of interest in some other asset or liability and, to draw that inference, the characteristics of the cash flows must be similar to those of the asset being measured. Consequently, the measurer must do the following:

a. Identify the set of cash flows that will be discounted.
b. Identify another asset or liability in the marketplace that appears to have similar cash flow characteristics.
c. Compare the cash flow sets from the two items to ensure that they are similar. (For example, are both sets contractual cash flows, or is one contractual and the other an estimated cash flow?)
d. Evaluate whether there is an element in one item that is not present in the other. (For example, is one less liquid than the other?)
e. Evaluate whether both sets of cash flows are likely to behave (vary) in a similar fashion under changing economic conditions.

45. The Board found the expected cash flow approach to be a more effective measurement tool than the traditional approach in many situations. In developing a measurement, the expected cash flow approach uses all expectations about possible cash flows instead of the single most-likely cash flow. For example, a cash flow might be $100, $200, or $300 with probabilities of 10 percent, 60 percent, and 30 percent, respectively. The expected cash flow is $220. [8] The expected cash flow approach thus differs from the traditional approach by focusing on direct analysis of the cash flows in question and on more explicit statements of the assumptions used in the measurement.

46. The expected cash flow approach also allows use of present value techniques when the

timing of cash flows is uncertain. For example, a cash flow of $1,000 may be received in 1 year, 2 years, or 3 years with probabilities of 10 percent, 60 percent, and 30 percent, respectively. The example below shows the computation of **expected present value** in that situation. Again, the expected present value of $892.36 differs from the traditional notion of a best estimate of $902.73 (the 60 percent probability) in this example. [9]

Present value of $1,000 in 1 year at 5%	$ 952.38	
Probability	10.00%	$ 95.24
Present value of $1,000 in 2 years at 5.25%	$ 902.73	
Probability	60.00%	541.64
Present value of $1,000 in 3 years at 5.50%	$ 851.61	
Probability	30.00%	255.48
Expected present value		$ 892.36

47. In the past, accounting standard setters have been reluctant to permit use of present value techniques beyond the narrow case of "contractual rights to receive money or contractual obligations to pay money on fixed or determinable dates." That phrase, which first appeared in accounting standards in paragraph 2 of Opinion 21, reflects the computational limitations of the traditional approach—a single set of cash flows that can be assigned to specific future dates. The Accounting Principles Board recognized that the amount of cash flows is almost always uncertain and incorporated that uncertainty in the interest rate. However, an interest rate in a traditional present value computation cannot reflect uncertainties in timing. A traditional present value computation, applied to the example above, would require a decision about which of the possible timings of cash flows to use and, accordingly, would not reflect the probabilities of other timings.

48. While many accountants do not routinely use the expected cash flow approach, expected cash flows are inherent in the techniques used in some accounting measurements, like pensions, other postretirement benefits, and some insurance obligations. They are currently allowed, but not required, when measuring the impairment of long-lived assets and estimating the fair value of financial instruments. The use of probabilities is an essential element of the expected cash flow approach, and one that may trouble some accountants. They may question whether assigning probabilities to highly subjective estimates suggests greater precision than, in fact, exists. However, the proper application of the traditional approach (as described in paragraph 44) requires the same estimates and subjectivity without providing the computational transparency of the expected cash flow approach.

49. Many estimates developed in current practice already incorporate the elements of expected cash flows informally. In addition, accountants often face the need to measure an asset or liability using limited information about the probabilities of possible cash flows. For

example, an accountant might be confronted with the following situations:

a. The estimated amount falls somewhere between $50 and $250, but no amount in the range is more likely than any other amount. Based on that limited information, the estimated expected cash flow is $150 [(50 + 250)/2].
b. The estimated amount falls somewhere between $50 and $250, and the most likely amount is $100. However, the probabilities attached to each amount are unknown. Based on that limited information, the estimated expected cash flow is $133.33 [(50 + 100 + 250)/3].
c. The estimated amount will be $50 (10 percent probability), $250 (30 percent probability), or $100 (60 percent probability). Based on that limited information, the estimated expected cash flow is $140 [(50 × .10) + (250 × .30) + (100 × .60)].

50. Those familiar with statistical analysis may recognize the cases above as simple descriptions of (a) *uniform,* (b) *triangular,* and (c) *discrete* distributions. [10] In each case, the estimated expected cash flow is likely to provide a better estimate of fair value than the minimum, most likely, or maximum amount taken alone.

51. Like any accounting measurement, the application of an expected cash flow approach is subject to a cost-benefit constraint. In some cases, an entity may have access to considerable data and may be able to develop many cash flow scenarios. In other cases, an entity may not be able to develop more than general statements about the variability of cash flows without incurring considerable cost. The accounting problem is to balance the cost of obtaining additional information against the additional reliability that information will bring to the measurement. The Board recognizes that judgments about relative costs and benefits vary from one situation to the next and involve financial statement preparers, their auditors, and the needs of financial statement users.

52. Some maintain that expected cash flow techniques are inappropriate for measuring a single item or an item with a limited number of possible outcomes. They offer an example of an asset or liability with two possible outcomes: a 90 percent probability that the cash flow will be $10 and a 10 percent probability that the cash flow will be $1,000. They observe that the expected cash flow in that example is $109 [11] and criticize that result as not representing either of the amounts that may ultimately be paid.

53. Assertions like the one just outlined reflect underlying disagreement with the measurement objective. If the objective is accumulation of costs to be incurred, expected cash flows may not produce a representationally faithful estimate of the expected cost. However, this Statement adopts fair value as the measurement objective. The fair value of the asset or liability in this example is not likely to be $10, even though that is the most likely cash flow. Instead, one would expect the fair value to be closer to $109 than to either $10 or $1,000. While this example is a difficult measurement situation, a measurement of $10 does not incorporate the uncertainty of the cash flow in the measurement of the asset or liability. Instead, the uncertain cash flow is presented as if it were a certain cash flow. No rational marketplace participant

would sell an asset (or assume a liability) with these characteristics for $10.

54. In recent years, financial institutions and others have developed and implemented a variety of pricing tools designed to estimate the fair value of assets and liabilities. It is not possible here to describe all of the many (often proprietary) pricing models currently in use. However, those tools often build on concepts similar to those outlined in this Statement as well as other developments in modern finance, including option pricing and similar models. For example, the well-known Black-Scholes option pricing model uses the elements of a fair value measurement described in paragraph 23 as appropriate in estimating the fair value of an option. To the extent that a pricing model includes each of the elements of fair value, its use is consistent with this Statement.

Relationship to Accounting for Contingencies

55. Some have questioned whether the fair value objective and expected cash flow approach described in this Statement conflict with FASB Statement No. 5, *Accounting for Contingencies*, and FASB Interpretation No. 14, *Reasonable Estimation of the Amount of a Loss.* Statement 5 is primarily directed toward determining whether loss contingencies should be recognized and devotes little attention to measurement beyond the requirement that the amount of a loss can be reasonably estimated. This Statement focuses on the choice of a measurement attribute (fair value) and the application of a measurement technique (present value) rather than the decision to recognize a loss. The decision to recognize an asset or liability (or a change in an existing asset or liability) is different from the decision about a relevant measurement attribute. However, there are unavoidable interactions between accounting recognition and measurement, as discussed in paragraphs 56–61.

56. When using estimated cash flow information, fair value measurements may appear to incorporate elements that could not be recognized under the provisions of Statement 5. For example, the fair value of a loan necessarily incorporates expectations about potential default, whereas under Statement 5, a loss cannot be recognized until it is probable that a loss event has occurred. Expectations about potential default are usually embodied in the interest rate, but they can also be expressed as adjustments to the expected cash flows (refer to Appendix A). Similarly, the amount that a third party would charge to assume an uncertain liability necessarily incorporates expectations about future events that are not probable, as that term is used in Statement 5. However, the use of *probable* in the first recognition criterion of Statement 5 refers to the likelihood that an asset has been impaired or a liability incurred. The term does not reference the individual cash flows or factors that would be considered in estimating the fair value of the asset or liability.

57. The potential for interaction between recognition (Is an asset impaired or does a liability exist?) and measurement (How much is the loss or the liability?) is inescapable. For example, a slight change in the assumptions from paragraphs 52 and 53—replacing a 90 percent probability

of $10 with a 90 percent probability of $0—would lead some to a conclusion under Statement 5 that no liability should be recognized. The probable amount of loss described in Statement 5 is $0, but the expected cash flow is $100. [12] On the other hand, if the entity has 10 potential liabilities with those characteristics, and the outcomes are independent of one another, some would conclude that the entity has a probable loss of $1,000. They might argue that 1 of the 10 potential liabilities will probably materialize and that recognizing a loss is consistent with Statement 5. Recognition issues like these are among the most intractable in accounting and are beyond the scope of this Statement.

58. The second recognition criterion in Statement 5 focuses on the ability to estimate the *amount of loss.* When describing liabilities, the *amount of loss* often has been used to describe an estimate of the most likely outcome and the accumulation of cash flows associated with that outcome. However, the estimated costs of ultimately settling a liability are not the same as the fair value of the liability itself; those costs are only one element in determining the fair value of that liability. As described in paragraph 23, measuring the fair value of an asset or liability entails the estimate of future cash flows, an assessment of their possible variability, the time value of money, and the price that marketplace participants demand for bearing the uncertainty inherent in those cash flows.

59. Once the recognition decision is reached, the amount of loss is sometimes reported through an adjustment to the existing amortization or reporting convention rather than through a fresh-start measurement. For example, FASB Statement No. 114, *Accounting by Creditors for Impairment of a Loan*, determines the amount of loss using a revised estimate of cash flows (which can be determined using an expected-cash-flow approach) and the historical effective interest rate—an adjustment within the amortization convention. (A fresh-start measurement would use the revised estimate of cash flows and a current interest rate.) Amortization and depreciation conventions other than the interest method are beyond the scope of this Statement. Adjustments to the interest method of allocation are discussed in paragraphs 89–100.

60. Other losses are reported through a fresh-start measurement of the asset. In those cases, the measurement principles are consistent with those described in this Statement. As mentioned earlier, Statement 121 is an example of a situation in which fair value is used in a fresh-start measurement to measure the amount of loss.

61. Although Statement 5 does not provide explicit measurement guidance for recognized loss contingencies, Interpretation 14 provides some measurement guidance. Interpretation 14 applies to the situation in which "no amount within the range [of loss] is a better estimate than any other amount" (paragraph 3). In those limited circumstances, the Interpretation prescribes a measurement equal to the minimum value in the range. It was developed to address measurement of losses in situations in which a single most-likely amount is not available. The measurement concepts described in this Statement focus on expected cash flows as a tool for measuring fair value and, as outlined earlier, the minimum amount in a range is not consistent with an estimate of fair value.

Risk and Uncertainty

62. An estimate of fair value should include the price that marketplace participants are able to receive for bearing the uncertainties in cash flows—the adjustment for risk—if the amount is identifiable, measurable, and significant. An arbitrary adjustment for risk, or one that cannot be evaluated by comparison to marketplace information, introduces an unjustified bias into the measurement. On the other hand, excluding a risk adjustment (if it is apparent that marketplace participants include one) would not produce a measurement that faithfully represents fair value. There are many techniques for estimating a risk adjustment, including matrix pricing, option-adjusted spread models, and fundamental analysis. However, in many cases a reliable estimate of the market risk premium may not be obtainable or the amount may be small relative to potential measurement error in the estimated cash flows. In such situations, the present value of expected cash flows, discounted at a risk-free rate of interest, may be the best available estimate of fair value in the circumstances.

63. Present value measurements, like many other accounting measurements, occur under conditions of uncertainty. In this Statement, the term *uncertainty* refers to the fact that the cash flows used in a present value measurement are estimates, rather than known amounts. (Even contractual amounts, like the payments on a loan, are uncertain because some borrowers default.) That uncertainty has accounting implications because it has economic consequences. Businesses and individuals routinely enter into transactions based on expectations about uncertain future events. The outcome of those events will place the entity in a financial position that may be better or worse than expected, but until the uncertainties are resolved, the entity is *at risk*.

64. In common usage, the word *risk* refers to any exposure to uncertainty in which the exposure has potential negative consequences. This broad use of the term often leads to misunderstandings. Risk is a relational concept, and a particular risk can only be understood in context. For example, consider 2 lenders that have each made 1,000 loans. Each lender could describe itself as being at risk with regard to the loans but their respective descriptions may have very different meanings. The first lender might describe itself as at risk that some of the 1,000 loans will default. The second lender might observe that it expects 150 loans to default and has set the interest rate accordingly. The second lender might then describe its risk as the chance that actual defaults will vary from the expected 150. Even though the two are describing the same economic activity (lending), they are likely to misunderstand one another unless each clearly describes the uncertainty and related exposure.

65. In most situations, marketplace participants are said to be *risk averse* or perhaps *loss averse*. A risk-averse investor prefers situations with a narrower range of uncertainty over situations with greater range of uncertainty relative to an expected outcome. A loss-averse investor places relatively greater importance on the likelihood of loss than on the potential for gain. Both types of marketplace participants seek compensation, referred to as a *risk premium*, for accepting uncertainty. Stated differently, given a choice between (a) an asset with expected

cash flows that are uncertain and (b) another asset with cash flows of the same expected amount but no uncertainty, marketplace participants will place a higher value on (b) than (a). Similarly, marketplace participants generally seek to demand more to assume a liability with expected cash flows that are uncertain than to assume a liability with cash flows of the same expected amount but no uncertainty. This phenomenon can also be described with the financial axiom, "the greater the risk, the greater the return."

66. The behavior of a risk-averse marketplace participant can be illustrated by comparing two of the assets listed in paragraph 20. Asset B has a *promised* cash flow of $10,000, due 10 years hence, and there is no uncertainty about the cash flow. (A U.S. Treasury instrument is an example of Asset B.) Asset E has an *expected* cash flow of $10,000, due 10 years hence; however, the expected cash flows from Asset E are uncertain. Actual cash flows from Asset E may be as high as $12,000 or as low as $8,000, or some other amount within that range. If the risk-free rate of interest for 10-year instruments is 5 percent, a risk-averse marketplace participant would pay about $6,139 [13] for Asset B. The risk-averse individual would pay something less for Asset E because of the uncertainty involved. (While the expected cash flow of $10,000 incorporates the uncertainty in cash flows from Asset E, that amount does not incorporate the premium that marketplace participants demand for bearing that uncertainty.) There are markets, like state lotteries, in which participants are risk seeking rather than risk averse. In those markets, participants pay more than an asset's expected cash flow in the hope of reaping a windfall. While they exist, those markets are not typical of situations encountered in financial reporting.

67. The objective of including uncertainty and risk in accounting measurements is to imitate, to the extent possible, the market's behavior toward assets and liabilities with uncertain cash flows. This should not be confused with notions of bias designed to intentionally understate the reported amount of an asset or overstate the reported amount of a liability. In paragraph 96 of FASB Concepts Statement No. 2, *Qualitative Characteristics of Accounting Information,* the Board observed:

> The Board emphasizes that any attempt to understate results consistently is likely to raise questions about the reliability and the integrity of information about those results and will probably be self-defeating in the long run. That kind of reporting, however well-intentioned, is not consistent with the desirable characteristics described in this Statement. On the other hand, the Board also emphasizes that imprudent reporting, such as may be reflected, for example, in overly optimistic estimates of realization, is certainly no less inconsistent with those characteristics. Bias in estimating components of earnings, whether overly conservative or unconservative, usually influences the timing of earnings or losses rather than their aggregate amount. As a result, unjustified excesses in either direction may mislead one group of investors to the possible benefit or detriment of others.

68. If prices for an asset or liability or an essentially similar asset or liability can be observed in the marketplace, there is no need to use present value measurements. (The marketplace assessment of present value is already embodied in the price.) However, if observed prices are unavailable, present value measurements are often the best available technique with which to estimate what a price would be. An entity typically will be able to estimate the expected cash flows from an asset or liability, but the appropriate risk premium consistent with fair value may be difficult to determine.

69. Modern finance theory offers several insights into the problem of determining an appropriate risk premium. *Portfolio theory* holds that the degree of risk in any particular asset should not be measured in isolation. Instead, risk should be assessed by the extent to which a particular asset adds to or diminishes the total risk in a portfolio of assets. This suggests in turn that markets do not allow a premium for risk that can be eliminated by diversification. In particular, modern finance theory suggests that uncertainties that are particular to individual assets (referred to as *specific* or *idiosyncratic* risk) are minimized in the marketplace by combination with other assets with different risk profiles. Uncertainty that cannot be diversified (referred to as *systematic* risk) is described as the tendency of returns on an asset to covary with the market for all assets. Portfolio theory suggests that, in an efficient market, the amount attached to the risk premium would be expected to be small relative to expected cash flows, except to the extent of systematic risk.

70. Another group of economists question both the assumptions and the predictive power of the conventional finance theory described in paragraph 69. Proponents of *behavioral finance* dispute the notion of a *rational investor* assumed in conventional finance. Instead, they look to fields like psychology for insights. This branch of economics suggests that risk premiums vary based on the distribution of possible outcomes (for example, when there are remote chances of large losses or gains). Some also suggest that prices are influenced by recent experience and the *framing* of decisions.

71. Research in economics and finance has achieved powerful insights, but the applicability of those insights to measuring particular assets or liabilities is not always clear. For example, theoretical pricing models like the Capital Asset Pricing Model (CAPM) require strict assumptions that some find inconsistent with their perceptions of real-world markets or observed human behaviors. Moreover, the asset and liability measurement problems most likely to prompt use of present value measurement are those least likely to satisfy the restrictive assumptions inherent in many theoretical models.

Relevance and Reliability

72. Present value measurements are straightforward if an asset has contractual cash flows and a readily determinable market value. Of course, those conditions make present value measurements unnecessary. There is a longstanding preference in accounting for measurements

based on observable marketplace amounts and transactions. The Board expects that accountants will continue to use observed amounts, when available, to determine the fair value of an asset or liability. However, many assets and liabilities do not have readily observable values derived from marketplace transactions.

73. Any measurement based on estimates is inherently imprecise, whether that measurement portrays the sum of cash flows or their present value. Estimates of the future usually turn out to have been incorrect to some extent, and actual cash flows often differ from estimates. The Concepts Statements acknowledge that neither relevance nor reliability is the paramount characteristic of accounting information. The two must be balanced against one another, and the weight given to each will vary from one situation to the next. However, a simple choice between present value and undiscounted measurement often presents a false dilemma. Techniques like the use of expected cash flows can extend the application of present value to measurements for which it was previously considered unsuitable. The use of simplifying assumptions allows accountants to develop present value measurements that are sufficiently reliable and certainly more relevant than undiscounted measurements.

74. Present value measurements are more complex than the simple summing of estimated future cash flows. Accountants may reach different conclusions about the amount and timing of future cash flows and the appropriate adjustments for uncertainty and risk. However, that possibility must be balanced against the prospect that an undiscounted measurement may make assets or liabilities appear comparable when they are not. Paragraph 20 described 5 assets with undiscounted cash flows of $10,000. Users of financial statements can take little comfort in a measurement that makes those five dissimilar assets appear similar.

Present Value in the Measurement of Liabilities

75. The concepts outlined in this Statement apply to liabilities as well as to assets. However, the measurement of liabilities sometimes involves problems different from those encountered in the measurement of assets and may require different techniques in arriving at fair value. When using present value techniques to estimate the fair value of a liability, the objective is to estimate the value of the assets required currently to (a) settle the liability with the holder or (b) transfer the liability to an entity of comparable credit standing.

76. To estimate the fair value of an entity's notes or bonds payable, accountants attempt to estimate the price at which other entities are willing to hold the entity's liabilities as assets. That process involves the same techniques and computational problems encountered in measuring assets. For example, the proceeds from a loan are the price that a lender paid to hold the borrower's promise of future cash flows as an asset. Similarly, the fair value of a bond payable is the price at which that security trades, as an asset, in the marketplace. As outlined in paragraphs 78–81, this estimate of fair value is consistent with the objective of liability measurement described in the preceding paragraph.

77. On the other hand, some liabilities are owed to a class of individuals who do not usually sell their rights as they might sell other assets. For example, entities often sell products with an accompanying warranty. Buyers of those products rarely have the ability or inclination to sell the warranty separately from the covered asset, but they own a warranty asset nonetheless. Some of an entity's liabilities, like an obligation for environmental cleanup, are not the assets of identifiable individuals. However, such liabilities are sometimes settled through assumption by a third party. In estimating the fair value of such liabilities accountants attempt to estimate the price that the entity would have to pay a third party to assume the liability.

Credit Standing and Liability Measurement

78. The most relevant measure of a liability always reflects the credit standing of the entity obligated to pay. Those who hold the entity's obligations as assets incorporate the entity's credit standing in determining the prices they are willing to pay. When an entity incurs a liability in exchange for cash, the role of its credit standing is easy to observe. An entity with a strong credit standing will receive more cash, relative to a fixed promise to pay, than an entity with a weak credit standing. For example, if 2 entities both promise to pay $500 in 5 years, the entity with a strong credit standing may receive about $374 in exchange for its promise (a 6 percent interest rate). The entity with a weak credit standing may receive about $284 in exchange for its promise (a 12 percent interest rate). Each entity initially records its respective liability at fair value, which is the amount of proceeds received—an amount that incorporates that entity's credit standing.

79. The effect of an entity's credit standing on the fair value of particular liabilities depends on the ability of the entity to pay and on liability provisions that protect holders. Liabilities that are guaranteed by governmental bodies (for example, many bank deposit liabilities in the United States) may pose little risk of default to the holder. Other liabilities may include sinking-fund requirements or significant collateral. All of those aspects must be considered in estimating the extent to which the entity's credit standing affects the fair value of its liabilities.

80. The role of the entity's credit standing in a settlement transaction is less direct but equally important. A settlement transaction involves three parties—the entity, the parties to whom it is obligated, and a third party. The price of the transaction will reflect the competing interests of each party. For example, suppose Entity A has an obligation to pay $500 to Entity B 3 years hence. Entity A has a poor credit rating and therefore borrows at a 12 percent interest rate.

a. In a settlement transaction, Entity B would never consent to replace Entity A with an entity of lower credit standing. All other things being equal, Entity B might consent to replace Entity A with a borrower of similar credit standing and would probably consent to replace Entity A with a more creditworthy entity.
b. Entity C has a good credit rating and therefore borrows at a 6 percent interest rate. It might willingly assume Entity A's obligation for $420 (the present value at 6 percent). Entity C

has no incentive to assume the obligation for less (a higher interest rate) if it can borrow at 6 percent because it can receive $420 for an identical promise to pay $500.

c. However, if Entity A were to borrow the money to pay Entity C, it would have to promise $590 ($420 due in 3 years with accumulated interest at 12 percent).

81. Based on the admittedly simple case outlined above, the fair value of Entity A's liability should be approximately $356 (the present value of $500 in 3 years at 12 percent). The $420 price demanded by Entity C includes the fair value of Entity A's liability ($356) plus the price of an upgrade in the credit quality of the liability. There may be situations in which an entity might pay an additional amount to induce others to enter into a settlement transaction. Those cases are analogous to the purchase of a credit guarantee and, like the purchase of a guarantee, the additional amount represents a separate transaction rather than an element in the fair value of the entity's original liability.

82. The effect of an entity's credit standing on the measurement of its liabilities is usually captured in an adjustment to the interest rate, as illustrated above. This is similar to the traditional approach to incorporating risk and uncertainty in the measurement of assets and is well suited to liabilities with contractual cash flows. An expected cash flow approach may be more effective when measuring the effect of credit standing on other liabilities. For example, a liability may present the entity with a range of possible outflows, ranging from very low to very high amounts. There may be little chance of default if the amount is low, but a high chance of default if the amount is high. In situations like this, the effect of credit standing may be more effectively incorporated in the computation of expected cash flows.

83. The role of an entity's credit standing in the accounting measurement of its liabilities has been a controversial question among accountants. The entity's credit standing clearly affects the interest rate at which it borrows in the marketplace. The initial proceeds of a loan, therefore, always reflect the entity's credit standing at that time. Similarly, the price at which others buy and sell the entity's loan includes their assessment of the entity's ability to repay. The example in paragraph 80 demonstrates how the entity's credit standing would affect the price it would be required to pay to have another entity assume its liability. However, some have questioned whether an entity's financial statements should reflect the effect of its credit standing (or changes in credit standing).

84. Some suggest that the measurement objective for liabilities is fundamentally different from the measurement objective for assets. In their view, financial statement users are better served by liability measurements that focus on the entity's obligation. They suggest a measurement approach in which financial statements would portray the present value of an obligation such that two entities with the same obligation but different credit standing would report the same carrying amount. Some existing accounting pronouncements take this approach, most notably FASB Statements No. 87, *Employers' Accounting for Pensions,* and No. 106, *Employers' Accounting for Postretirement Benefits Other Than Pensions.*

85. However, there is no convincing rationale for why the initial measurement of some liabilities would necessarily include the effect of credit standing (as in a loan for cash) while others might not (as in a warranty liability or similar item). Similarly, there is no rationale for why, in initial or fresh-start measurement, the recorded amount of a liability should reflect something other than the price that would exist in the marketplace. Consistent with its conclusions on fair value (refer to paragraph 30), the Board found no rationale for taking a different view in subsequent fresh-start measurements of an existing asset or liability than would pertain to measurements at initial recognition.

86. Some argue that changes in an entity's credit standing are not relevant to users of financial statements. In their view, a fresh-start measurement that reflects changes in credit standing produces accounting results that are confusing. If the measurement includes changes in credit standing, and an entity's credit standing declines, the fresh-start measurement of its liabilities declines. That decline in liabilities is accompanied by an increase in owners' equity, a result that they find counterintuitive. How, they ask, can a bad thing (declining credit standing) produce a good thing (increased owners' equity)?

87. Like all measurements at fair value, fresh-start measurement of liabilities can produce unfamiliar results when compared with reporting the liabilities on an amortized basis. A change in credit standing represents a change in the relative positions of the two classes of claimants (shareholders and creditors) to an entity's assets. If the credit standing diminishes, the fair value of creditors' claims diminishes. The amount of shareholders' residual claim to the entity's assets may appear to increase, but that increase probably is offset by losses that may have occasioned the decline in credit standing. Because shareholders usually cannot be called on to pay a corporation's liabilities, the amount of their residual claims approaches, and is limited by, zero. Thus, a change in the position of borrowers necessarily alters the position of shareholders, and vice versa.

88. The failure to include changes in credit standing in the measurement of a liability ignores economic differences between liabilities. Consider the case of an entity that has two classes of borrowing. Class One was transacted when the entity had a strong credit standing and a correspondingly low interest rate. Class Two is new and was transacted under the entity's current lower credit standing. Both classes trade in the marketplace based on the entity's current credit standing. If the two liabilities are subject to fresh-start measurement, failing to include changes in the entity's credit standing makes the classes of borrowings seem different—even though the marketplace evaluates the quality of their respective cash flows as similar to one another.

ACCOUNTING ALLOCATIONS THAT EMPLOY PRESENT VALUE (INTEREST METHODS OF ALLOCATION)

89. Present value techniques also are used in periodic reporting conventions known collectively as *interest methods of allocation.* Most accountants are familiar with interest methods in the amortization of discount or premium, as outlined in Opinion 21. Similar techniques are used in a variety of situations, and questions about interest methods of allocation have arisen in several FASB projects.

90. Financial statements usually attempt to represent the changes in assets and liabilities from one period to the next. By using current information and assumptions, fresh-start measurements capture all the factors that create change, including (a) physical consumption of assets (or reduction of liabilities), (b) changes in estimates, and (c) holding gains and losses that result from price changes. In contrast, accounting allocations are planned approaches designed to represent only the first factor—consumption or reduction. The second factor—changes in estimates—may receive some recognition, but the effects of a change often have been spread over future periods. The third factor—holding gains and losses—generally has been excluded from allocation systems.

91. In principle, the purpose of all accounting allocations is to report changes in the value, utility, or substance of assets and liabilities over time. Paragraph 149 of FASB Concepts Statement No. 6, *Elements of Financial Statements,* describes the use of accounting allocations as follows:

> However, many assets yield their benefits to an entity over several periods, for example, prepaid insurance, buildings, and various kinds of equipment. Expenses resulting from their use are normally allocated to the periods of their estimated useful lives (the periods over which they are expected to provide benefits) by a "systematic and rational" allocation procedure, for example, by recognizing depreciation or other amortization. Although *the purpose of expense allocation is the same as that of other expense recognition—to reflect the using up of assets as a result of transactions or other events or circumstances affecting an entity*—allocation is applied if causal relations are generally, but not specifically, identified. [Emphasis added.]

92. Accounting allocations attempt to relate the change in an asset or liability to some observable real-world phenomenon. Simple straight-line depreciation relates that change to the estimated useful life of the asset. If one-half of the life has passed, then straight-line depreciation should have charged one-half of the original cost (net of salvage value) to expense. Other depreciation techniques rely on more specific relations like the number of units produced, but the principle is the same. An interest method relates changes in the reported amount with

changes in the present value of a set of future cash inflows or outflows.

93. However precisely they may be described, allocation methods are only representations—they are not measurements of an asset or liability. The selection of a particular allocation method and the underlying assumptions always involve a degree of arbitrariness. As a result, no allocation method can be demonstrated to be superior to others in all circumstances. The Board will continue to decide whether to require an interest method of allocation on a project-by-project basis. While an interest method could be applied to any asset or liability, it is generally considered more relevant than other methods when applied to assets and liabilities that exhibit one or more of the following characteristics:

a. The transaction giving rise to the asset or liability is commonly viewed as a borrowing and lending.
b. Period-to-period allocation of similar assets or liabilities employs an interest method.
c. A particular set of estimated future cash flows is closely associated with the asset or liability.
d. The measurement at initial recognition was based on present value.

94. Like all allocation systems, the manner in which an interest method of allocation is applied can greatly affect the pattern of income or expense. In particular, the interest method requires a careful description of the following:

a. The cash flows to be used (promised cash flows, expected cash flows, or some other estimate)
b. The convention that governs the choice of an interest rate (effective rate or some other rate)
c. How the rate is applied (constant effective rate or a series of annual rates)
d. How changes in the amount or timing of estimated cash flows are reported.

95. Existing accounting pronouncements vary in the extent to which they provide the guidance outlined in paragraph 94, and they vary considerably in their choice of cash flow and interest rate conventions. However, in most situations, the interest method is based on contractual cash flows and assumes a constant effective interest rate over the life of those cash flows. That is, the method uses promised cash flows (rather than expected cash flows) and bases the interest rate on the single rate that equates the present value of the promised cash flows with the initial price of the asset or liability.

96. A complete description of an interest method of allocation includes the mechanism for accommodating changes in estimated cash flows. Actual cash flows often occur sooner or later and in greater or lesser amounts than expected. If the variation is ignored, either the asset or liability will be fully amortized before all of the cash flows occur or a balance may remain after the last cash flow. In contrast, a change in market interest rates does not create a similar problem for a fixed-rate asset or liability, because the change in rates does not change the cash flows. The interest method is grounded in historical cost notions, and, in this context, a change in

prevailing interest rates is akin to a price change. Unless the change in rates also changes estimated cash flows, as in the case of a variable-rate loan, the rate change has no effect on the amortization scheme.

97. Changes from the original estimate of cash flows, in either timing or amount, can be accommodated in the interest amortization scheme or included in a fresh-start measurement of the asset or liability. As indicated in paragraph 14, the Board decided not to address in this Statement the conditions that might govern the choice between those two approaches. If the amount or timing of estimated cash flows changes and the item is not remeasured, the interest amortization scheme must be altered to incorporate the new estimate of cash flows. The following techniques have been used to address changes in estimated cash flows:

a. A prospective approach computes a new effective interest rate based on the carrying amount and remaining cash flows.
b. A catch-up approach adjusts the carrying amount to the present value of the revised estimated cash flows, discounted at the original effective interest rate.
c. A retrospective approach computes a new effective interest rate based on the original carrying amount, actual cash flows to date, and remaining estimated cash flows. The new effective interest rate is then used to adjust the carrying amount to the present value of the revised estimated cash flows, discounted at the new effective interest rate.

98. The Board considers the catch-up approach to be preferable to other techniques for reporting changes in estimated cash flows because it is consistent with the present value relationships portrayed by the interest method and can be implemented at a reasonable cost. Under the catch-up approach, the recorded amount of an asset or liability, as long as estimated cash flows do not change, is the present value of the estimated future cash flows discounted at the original effective interest rate. If a change in estimate is effected through the catch-up approach, the measurement basis after the change will be the same as the measurement basis for the same asset or liability before the change in estimate (estimated cash flows discounted at the original effective rate).

99. In contrast to the catch-up approach, the prospective approach obscures the impact of changes in estimated cash flows and, as a result, produces information that is less useful and relevant. The interest rate that is derived under the prospective approach is unrelated to the rate at initial recognition or to current market rates for similar assets and liabilities. The amount that remains on the balance sheet can be described as “the unamortized amount,” but no more.

100. The retrospective approach has been used in some pronouncements, and some consider it the most precise and complete of the three approaches listed in paragraph 97. However, the retrospective approach requires that entities retain a detailed record of all past cash flows. The costs of maintaining a complete record of all past cash flows usually outweigh any advantage provided by this approach.

COMPARISON OF THE CASH FLOW AND INTEREST RATE CONCEPTS IN THIS STATEMENT WITH THOSE USED IN OTHER ACCOUNTING MEASUREMENTS

101. The wide range of interest rate conventions and cash flow conventions used in existing accounting pronouncements was one of the factors that prompted the Board to add a present value project to its agenda. Accounting applications of present value have traditionally focused on the rate of interest applied to promised cash flows or, in the absence of a contract, a single most-likely estimate of future cash flows. That emphasis is consistent with the traditional accounting view of present value in which the interest rate is assumed to capture all the uncertainties and risks inherent in the cash flow estimate. However, a particular rate properly should consider (a) the uncertainties and risks of cash flows attributed to a particular asset or liability and (b) the objective of the measurement. This section compares the present value concepts in this Statement with cash flow and interest rate conventions found in existing accounting pronouncements.

102. Many accounting pronouncements simply specify "an appropriate rate" with little or no additional guidance. The appropriate rate of interest, however, does not exist in a vacuum. There is no way to identify the appropriate rate of interest without first understanding (a) the nature of the underlying estimated cash flows, (b) the assumptions used in estimating cash flows, and (c) the objective of the measurement. Without a specific objective of the measurement, such as a price, the selection of an interest rate necessarily includes an element of arbitrariness. In many cases, the measurement objective is apparent from the topic addressed in the pronouncement. For example, the reference to interest rates in APB Opinion No. 16, *Business Combinations,* arises in connection with a business combination accounted for as a purchase (in which the measurement objective is fair value).

Incremental Borrowing Rates

103. Some accounting pronouncements specify use of the entity's "incremental borrowing rate." Under certain conditions, the incremental borrowing rate may be consistent with the present value concepts in this Statement. If the rate is applied to promised cash flows to determine the fair value of a liability and if the terms of the liability are similar to those that the entity could obtain in an incremental borrowing, the resulting measurement would approximate the fair value of the entity's liability (refer to paragraph 78).

104. An entity's borrowing rate is rarely, if ever, appropriate for the measurement of that entity's assets. The uncertainties and risks embodied in a particular asset are usually unrelated to the risks assumed by those who hold the entity's obligations as assets. There are cases in which

recognition of a liability and its measurement using present value are accompanied by recognition of an asset measured at a similar amount. However, in those situations, present value is used only to measure the liability. The recorded amount of the asset presumably is its fair value, as evidenced by the value of the debt incurred to acquire the asset.

Asset-Earning Rates

105. Some accounting pronouncements specify that the rate the entity expects to earn from invested assets be used in the measurement of liabilities. Conventions that employ asset-based or expected-earning rates to measure liabilities are designed primarily to obtain particular patterns of recognized income or to present a purported symmetry between carrying amounts of assets and carrying amounts of liabilities. However, the expected-earning rates on actual or hypothetical asset portfolios are usually unrelated to the uncertainties and risks inherent in the liability's estimated cash flows. When used in the measurement of liabilities, asset-based or expected-earning rates are not consistent with the present value concepts described in this Statement.

106. Some have suggested that the cash flows from particular assets may mirror a liability's cash flows, such that a change in one offsets a change in the other. For example, the fair value of a promise to deliver 100 shares of stock in a particular company is (before considering the effect of credit standing) equal to the fair value of the stock. In concept, a marketplace participant should be indifferent (before considering the effect of credit standing) about holding (a) an entity's liability as an asset or (b) a portfolio of assets having the same cash flows (in timing and amount) as the entity's liability.

107. For some financial instruments, the cash flows of the instruments are indexed or closely related to the value of particular financial assets. In such cases, the values of the assets are clearly related to the values of the underlying liabilities. Some have suggested extending the use of *replicating portfolios* in estimating the fair value of other liabilities. This is one of several techniques that the Board is addressing as it studies issues related to the fair value of financial instruments. Many modern pricing models, including the Black-Scholes model for pricing options, are built on replicating portfolios. However, the simple use of expected-earning rates to measure liabilities obscures both the investment risks inherent in the entity's assets and the uncertainties and risks inherent in the liabilities, which are different and unrelated risks.

108. Some have suggested that asset-earning rates are appropriate if a legal or contractual funding arrangement exists. They reason that a funding arrangement links the liability to a particular group of assets, or to the return from those assets. This notion is not consistent with the present value concepts in this Statement. Unless the liability obligates the entity to deliver specific assets, there is no relationship between the value of the assets and the cash flows necessary to meet the obligation. Accounting pronouncements have allowed balance sheet offsetting of funding assets against an obligation in some limited situations (like accounting for

pensions); even so, those display conventions should not alter the underlying measurement concepts.

Implicit Offsetting

109. Some suggest that the factors that affect estimated future cash flows offset one another, making present value unnecessary. In their view, the undiscounted sum of future cash flows implicitly captures those offsetting factors. The time value of money, inflation, and uncertainty interact with one another. They do not, however, cancel each other (except by coincidence). For example, $1 of cash flow due 10 years hence and indexed to inflation is not worth $1 today. The indexed amount returns the cost of inflation but does not provide for the time value of money, which exists even when inflation does not. Marketplace participants demand a real (inflation-free) interest rate after removing the effects of inflation from their expectations.

This Statement was adopted by the affirmative vote of five members of the Financial Accounting Standards Board. Messrs. Larson and Trott dissented.

Messrs. Larson and Trott dissent from this Statement because of its adoption of fair value as the sole objective of using cash flow information and present value in accounting measurements at initial recognition and fresh-start measurements. They agree with the guidance in the Statement for using cash flow information and present value if the objective is to estimate fair value. However, they believe that cash flow information and present value used in cost-accumulation and other measurements also produces relevant information.

Members of the Financial Accounting Standards Board:

Edmund L. Jenkins, *Chairman*
Anthony T. Cope
John M. Foster
Gaylen N. Larson
James J. Leisenring
Gerhard G. Mueller
Edward W. Trott

Appendix A: ILLUSTRATIONS OF APPLYING PRESENT VALUE IN ACCOUNTING MEASUREMENTS

Assets

110. Paragraph 20 describes 5 assets, each with an undiscounted measurement of $10,000:

Asset A: An asset with a fixed contractual cash flow of $10,000 due in 1 day. The cash flow is certain of receipt.

Asset B: An asset with a fixed contractual cash flow of $10,000 due in 10 years. The cash flow is certain of receipt.

Asset C: An asset with a fixed contractual cash flow of $10,000 due in 1 day. The amount that ultimately will be received is uncertain. It may be less than $10,000 but will not be more.

Asset D: An asset with a fixed contractual cash flow of $10,000 due in 10 years. The amount that ultimately will be received is uncertain. It may be less than $10,000 but will not be more.

Asset E: An asset with an *expected* cash flow of $10,000 due in 10 years. The amount that ultimately will be received is uncertain, but it may be as high as $12,000, as low as $8,000, or some other amount within that range.

111. Four of those assets have the same contractual cash flow ($10,000), and the expected cash flow from the fifth is also that amount. For Asset A, the promise of a certain amount tomorrow, the nominal amount is very close to fair value. The other assets need further adjustment to arrive at an accounting measurement that embodies the differences between them.

Time Value of Money

112. Assets B, D, and E represent cash to be received 10 years hence, while Assets A and C promise cash tomorrow. Using the rate of interest for 10-year default risk-free assets (5 percent), the present value of Assets B, D, and E is $6,139. For Asset B, the promise of an amount certain of receipt in 10 years, that measurement is likely to be a good estimate of fair value.

Adjustment for Expectations

113. Assets A and C each promise $10,000 tomorrow, but no rational entity would pay the same price for each promise. While the buyer might pay close to $10,000 for Asset A, it would pay no more than it expects to collect from Asset C. If the buyer expects that, on average, promises like Asset C pay 80 percent of the amount promised, the buyer would not expect to pay more than $8,000 for Asset C. If the buyer expects a similar performance from promises like Asset D, the buyer would expect to pay no more than $4,911 (Asset B—$6,139—times 80 percent). The expected cash flow from Asset E already includes the probability-weighted average of expectations, so no further adjustment is necessary. The measurement process described in this Statement has now produced four different (but as yet, unadjusted for risk) measurements for the five assets.

Asset A: A certain cash flow of $10,000 due in 1 day—measured at $10,000

Asset B: A certain cash flow of $10,000 due in 10 years—measured at $6,139

Asset C: An uncertain cash flow of $10,000 due in 1 day—measured at $8,000

Asset D: An uncertain cash flow of $10,000 due in 10 years—measured at $4,911

Asset E: An expected cash flow of $10,000 due in 10 years—measured at $6,139.

Risk Premium

114. As mentioned in paragraphs 62–74, marketplace participants typically seek compensation for accepting uncertainty. A risk-averse investor would usually demand some incentive before choosing to invest in Asset C (which may return more or less than the expected $8,000) or Asset E rather than investing a comparable amount in Asset A (which is certain to return the promised amount). The amounts assigned to risk premiums in this example are provided to illustrate the computation rather than to indicate amounts that might be applied in actual measurements.

115. Computationally, the steps described in the preceding paragraphs could be included as adjustments to cash flows or to the interest rate, as illustrated below:

Components in Cash Flows

	Asset A Certain Tomorrow	Asset B Certain 10 Years	Asset C Uncertain Tomorrow	Asset D Uncertain 10 Years	Asset E Uncertain 10 Years
Contractual (promised) cash flow	$ 10,000	$ 10,000	$ 10,000	$ 10,000	
Adjustment to reflect expectations			(2,000)	(2,000)	
Expected cash flow	10,000	10,000	8,000	8,000	$ 10,000
Adjustment to reflect risk premium			(50)	(500)	(500)
Adjusted cash flows	$ 10,000	$ 10,000	$ 7,950	$ 7,500	$ 9,500
Present value at 5 percent (risk-free rate)	$ 10,000	$ 6,139	$ 7,950	$ 4,604	$ 5,832

Components in Interest Rates

	Asset A	Asset B	Asset C	Asset D	Asset E
Time value element		5.000%		5.000%	5.000%
Adjustment to reflect expectations				2.370	
Adjustment to reflect risk premium				0.695	0.540
Effective interest rate		5.000%		8.065%	5.540%

116. If an asset or a liability has contractually defined cash flows and an observed price, there is an interest rate that equates the present value of the promised cash flows with that price. [14] The observed interest rate distinguishes assets from one another and reflects the market's consensus of expectations about the risks inherent in the *promised* cash flows. However, there is always the chance that an asset's cash flows may vary from the original promise in amount, timing, or both. Each marketplace participant makes its own assessment of the *expected* cash flows in deciding whether to accept or reject the market price.

Liabilities without Contractual Cash Flows

117. Some liabilities obligate an entity to perform certain tasks or provide services rather than to pay cash to some other party that holds the entity's obligation as an asset. Product warranty, postretirement health care, and environmental remediation are all examples. Liabilities of this sort usually do not have contractual cash flows like those found in the previous example. The

estimate of fair value, in those circumstances, begins with expected cash flows. To assist readers in understanding the difference between fair value, entity-specific measurement, and cost accumulation, the example below compares the computations involved in each measurement approach. Like the example in paragraph 115, this example also shows how factors could be incorporated in adjustments either to expected cash flows or to the risk-free rate of interest.

118. The example portrays computations for an entity's liability to perform site reclamation. Those tasks will actually be performed 10 years in the future. To estimate fair value, the entity begins by building up the amounts that a contractor would use in developing the price that it would charge to perform the work. Significant assumptions are:

a. In this case, management estimates the minimum, most likely, and maximum amounts for significant items. The expected cash flow is the average of those three estimates. [15]
b. Labor costs are based on the entity's cost structure and estimated use. Management has no reason to believe that its costs differ from those of others in the industry. If its costs were less than (or greater than) marketplace labor costs, it would adjust the estimate to market levels in order to estimate fair value.
c. A contractor would include an allocation of overhead and the costs of its equipment. Management uses the entity's internal transfer-pricing percentages, applied to labor costs. It has no reason to believe that these percentages differ from those used by outside contractors.
d. A contractor typically adds a markup on labor and allocated internal costs. That markup provides the contractor's profit margin on the job. The amount used represents management's understanding of the amount that contractors in the industry charge for projects of this sort.
e. The entity manufactures several of the chemicals used in the process. However, a contractor would have to pay the market price for those chemicals and would charge that price to the job. Accordingly, the fair value estimate uses the sales price of the chemicals rather than the entity's cost of manufacturing them.
f. Management uses industry norms to estimate the value of salvaged assets on the site.
g. Projects of this sort are subject to unexpected subsurface crashes caused by unforeseeable geological conditions. Engineers estimate that there is a 1-in-10 chance of a subsurface crash and that the cost of dealing with a crash is $100,000.
h. A contractor would typically demand a premium for bearing the uncertainty inherent in "locking in" the price today for a project that will not occur for 10 years. Management estimates the amount of that premium at $42,000 in the fair value estimate and $31,194 in the entity-specific measurement.
i. The entity has a credit rating of BB. The credit discount represents the difference between the entity's incremental cost of unsecured 10-year borrowing (8.7 percent) and the risk-free rate of interest, expressed as an adjustment to cash flows. [16]

	Minimum	Most Likely	Maximum	Fair Value	Entity-Specific Measurement	Cost Accumulation
Labor costs (refer to assumption b)	$ 50,000	$ 75,000	$ 150,000	$ 91,667	$ 91,667	$ 91,667
Allocated overhead and equipment charges (c)	40,000	60,000	120,000	73,333	73,333	
Contractor's markup (d)				33,000		
Chemicals, supplies, and materials, at market (e)	40,000	65,000	130,000	78,333		
Chemicals, supplies, and materials, at cost (e)	20,000	32,500	65,000		39,167	39,167
Salvage, based on industry norms (f)	—	(5,000)	(12,500)	(5,833)	(5,833)	(5,833)
		Probability	**Amount**			
Subsurface crash (g)		10%	100,000	10,000	10,000	10,000
		90%	—			
				$ 280,500	$ 208,333	$ 135,000
Inflation rate				4%	4%	4%
Expected cash flows				$ 415,209	$ 308,384	$ 199,833
Market risk premium (h)				42,000	31,194	
Credit discount (i)				(133,830)	(99,398)	(58,493)
Expected cash flows, adjusted for risk				$ 323,379	$ 240,180	$ 141,340
Present value at 5 percent (risk-free rate)				$ 198,527	$ 147,450	$ 86,770
Components of an Interest Rate Applied to Expected Cash Flows						
Time value				5.000%	5.000%	5.000%
Market risk premium				(1.047)	(1.047)	
Credit discount				3.700	3.700	3.700
Effective interest rate				7.653%	7.653%	8.700%

Appendix B: APPLICATIONS OF PRESENT VALUE IN FASB STATEMENTS AND APB OPINIONS

119. A Statement of Financial Accounting Concepts does not change existing pronouncements, nor does issuance of a Concepts Statement indicate that the Board plans to reconsider existing pronouncements. The accompanying table is presented to assist readers in understanding the differences between the conclusions reached in this Statement and those found in FASB Statements and APB Opinions that employ present value techniques in recognition, measurement, or amortization (period-to-period allocation) of assets and liabilities in the statement of financial position. Accounting measurements that use cash flow information, and thus raise questions of present value, also reside in FASB Technical Bulletins, AICPA Statements of Position and Audit and Accounting Guides, and in consensus decisions of the FASB's Emerging Issues Task Force.

Application	Account Measured	Significant Assumptions	Comment or Citation
APB Opinion No. 12, *Omnibus Opinion—1967*			
Amortization	Debt payable and related premium or discount	Inherent rate	First reference to the interest method of allocation.
APB Opinion No. 16, *Business Combinations*			
Measurement at initial recognition	Asset acquired by incurring liabilities	Rate not addressed	"An asset acquired by incurring liabilities is recorded at cost—that is, at the present value of the amounts to be paid" (paragraph 67(b)).
Measurement at initial recognition	Receivables acquired or liabilities assumed in a purchase business combination	Appropriate current interest rates	
Amortization	Receivables acquired or liabilities assumed in a purchase business combination	Effective rate	"An acquiring corporation should record periodically as a part of income the accrual of interest on assets and liabilities recorded at acquisition date at the discounted values of amounts to be received or paid" (paragraph 88).
APB Opinion No. 21, *Interest on Receivables and Payables*			
Measurement at initial recognition	Note exchanged for property, goods, or services	Fair value	"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" (paragraph 13).

Amortization	Note exchanged for property, goods, or services	Effective rate	". . . 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" (paragraph 15; footnote reference omitted).

APB Opinion No. 26, *Early Extinguishment of Debt*

Measurement at initial recognition	Valuation of an exchange effected by direct exchange of new securities—paragraph 3(c)	Not addressed	

FASB Statement No. 13, *Accounting for Leases*

Classification	Capital lease or operating lease	See Comment	The lessee's incremental borrowing rate is used unless (a) the lessor's implicit rate can be determined and (b) the implicit rate is less than the incremental borrowing rate.
Measurement at initial recognition	Balance of capital lease asset and initial amount of related lease obligation	See Comment	The lessee's incremental borrowing rate is used unless (a) the lessor's implicit rate can be determined and (b) the implicit rate is less than the incremental borrowing rate.
Amortization	Unearned income in sales-type or direct-financing lease	Effective rate	The unearned income shall be amortized to income over the lease term so as to produce a constant periodic rate of return on the net investment in the lease.
Amortization, change in estimated cash flows	Unearned income in sales-type or direct-financing lease	See Comment	Treatment of the change in estimate depends on the source of the change and its effect on classification.

Amortization	Balance of capital lease asset and initial amount of related lease obligation	Effective rate	

FASB Statement No. 22, *Changes in the Provisions of Lease Agreements Resulting from Refundings of Tax-Exempt Debt*

Fresh-start measurement	Lessor—Debt payable, investment in lease Lessee—Capital lease obligation	Effective rate on new borrowing	If the refunding results in an extinguishment of debt for the lessor, then both lessee and lessor follow debt extinguishment accounting. The lessor shows no net effect on future reported income. The lessee reports a gain or loss on extinguishment of the capital lease obligation.
Amortization, change in estimated cash flows	Lessee—Capital lease obligation	Prospective approach	If the refunding does not result in an extinguishment, then both lessor and lessee reflect the adjustment in future interest streams. Again, there is no net effect (or negligible effect) on the lessor. The lessee reports an adjustment in future interest expense.

FASB Statement No. 28, *Accounting for Sales with Leasebacks*

Measurement at initial recognition	Deferred profit on sale-leaseback	Same as in Statement 13	If the leaseback is an operating lease, the deferred profit is the present value of the remaining minimum lease payments, but is amortized straight-line.

FASB Statement No. 60, *Accounting and Reporting by Insurance Enterprises*

Measurement at initial recognition and fresh-start measurement	Claim liability—short-duration contracts	Cash flows are estimated based on the ultimate cost of settling the claims	The interest rate is not specified in Statement 60; however, additional disclosures are required if claim liabilities are reported as a present value.

Measurement at initial recognition and amortization	Liability for future policyholder benefits and deferred policy acquisition costs—long-duration contracts	Long-term expected earning rate on invested assets	The liability is equal to the present value of future benefit payments, net of the present value of future net benefit premiums (the portion of gross premiums needed to provide for benefits). Deferred cost is amortized using the same interest method and same assumptions applied to the liability.
Fresh-start measurement	Loss due to premium deficiency—long-duration contracts	Long-term expected earning rate on invested assets	Loss recognition is required if the present value (at current interest rates) of estimated policy benefits and costs exceeds the sum of (a) the present value of estimated future gross premiums and (b) recorded liability net of the unamortized balance of deferred costs.

FASB Statement No. 63, *Financial Reporting by Broadcasters*

Measurement at initial recognition	License right asset and license payable	Looks to Opinion 21	This Statement provides a free-choice option between two methods. The initial balance of the asset and liability can both be measured based on the present value of the license payments. The initial balance of the asset and liability can both be measured based on the gross amount of license payments.
Amortization	License right asset and license payable	Effective rate	If the present value method is used, then the liability is amortized using an interest method. The asset is amortized using a constant percentage of revenue, regardless of the method used in initial measurement.

FASB Statement No. 66, *Accounting for Sales of Real Estate*

Measurement at initial recognition	Deferred profit from the sale of improvements accompanied by a lease of underlying land	See Comments	Rate of the primary debt if the lease is not subordinated. Rate of secondary debt if the lease is subordinated.

FASB Statement No. 72, *Accounting for Certain Acquisitions of Banking or Thrift Institutions*

Amortization	Intangible asset arising from business combinations in certain situations	Constant (effective) rate	"Amortization shall be at a constant rate when applied to the carrying amount of those interest-bearing assets that, based on their terms, are expected to be outstanding at the beginning of each subsequent period. The prepayment assumptions, if any, used to determine the fair value of the long-term interest-bearing assets acquired also shall be used in determining the amount of those assets expected to be outstanding" (paragraph 5, footnote reference omitted).

FASB Statement No. 87, *Employers' Accounting for Pensions*

Measurement at initial recognition and fresh-start measurement	Accumulated benefit obligation and projected benefit obligation	Effective settlement rate	"Assumed discount rates shall reflect the rates at which the pension benefits could be effectively settled. . . . 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" (paragraph 44).

FASB Statement No. 90, *Regulated Enterprises—Accounting for Abandonments and Disallowances of Plant Costs*

Fresh-start measurement, abandonment	Regulatory asset	Incremental borrowing rate	If full recovery of certain costs is allowed, then a loss is recorded for the amount of any costs that are disallowed.
Amortization	Regulatory asset	Effective rate	The regulatory asset or valuation account, net of deferred taxes, is amortized using an interest method that produces a constant effective yield on the net asset.
Fresh-start measurement, disallowance of costs	Carrying amount of plant costs	Incremental borrowing rate	If partial or no return is to be allowed on the abandoned plant costs or portion of a recently completed plant, then a loss is computed based on the present value of the amounts that will be included in future rates.

FASB Statement No. 91, *Accounting for Nonrefundable Fees and Costs Associated with Originating or Acquiring Loans and Initial Direct Costs of Leases*

Amortization	Net investment in a loan	Effective rate	Origination fees and costs are reflected over the life of the loan as an adjustment of the yield on the net investment in the loan.

FASB Statement No. 97, *Accounting and Reporting by Insurance Enterprises for Certain Long-Duration Contracts and for Realized Gains and Losses from the Sale of Investments*

Amortization	Deferred policy acquisition costs	The rate at which interest is credited to policyholder balances	Amortization is based on the present value of expected gross profits.
Amortization, change in estimate	Deferred policy acquisition costs	The rate at which interest is credited to policyholder balances	The Statement permits catch-up or retrospective approach.

FASB Statement No. 106, *Employers' Accounting for Postretirement Benefits Other Than Pensions*

Measurement at initial recognition and fresh-start remeasurement	Accumulated postretirement benefit obligation Expected postretirement benefit obligation	Effective settlement rate	". . . as opposed to 'settling' the obligation, which incorporates the insurer's risk factor, 'effectively settling' the obligation focuses only on the time value of money and ignores the insurer's cost for assuming the risk of experience losses" (paragraph 188).

FASB Statement No. 113, *Accounting and Reporting for Reinsurance of Short-Duration and Long-Duration Contracts*

Classification	Whether contract meets risk-transfer criteria and qualifies for reinsurance accounting	Not specified	"Significance of loss shall be evaluated by comparing the present value of all cash flows, determined as described in paragraph 10, with the present value of the amounts paid or deemed to have been paid to the reinsurer" (paragraph 11, footnote reference omitted).
Amortization	Deferred gain	Effective rate	Statement 113 requires an interest method when amounts and timing can be reasonably estimated, and a pro rata method in other cases.

FASB Statement No. 114, *Accounting by Creditors for Impairment of a Loan*

Amortization	Net carrying amount of an impaired loan	Original effective rate	The "discounted" approach adopted in the Statement is a "catch-up" approach to the interest method of allocation. That is, the balance is adjusted to the present value of estimated future cash flows, using the original effective interest rate.

FASB Statement No. 116, *Accounting for Contributions Received and Contributions Made*

Measurement at initial recognition	Pledges receivable or payable	Rate commensurate with the risks involved	The objective is to estimate the fair value of the pledge receivable.

Amortization	Pledges receivable or payable	Effective rate	The interest element in amortization is classified as contribution revenue or expense.

FASB Statement No. 121, *Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed Of*

Fresh-start remeasurement	Carrying amount of impaired long-lived assets	Rate commensurate with the risks involved	The objective is to estimate the fair value of the impaired asset.

FASB Statement No. 125, *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities*

Measurement at initial recognition and fresh-start measurement	Fair value of assets obtained and liabilities incurred in a sale Relative fair value of retained interests	Rate commensurate with the risks involved	The objective is to estimate fair value.

Footnotes

CON7 Overview Footnote *--Rule 203 prohibits a member of the American Institute of Certified Public Accountants from expressing an opinion that financial statements conform with generally accepted accounting principles if those statements contain a material departure from an accounting principle promulgated by the Financial Accounting Standards Board, unless the member can demonstrate that because of unusual circumstances the financial statements otherwise would have been misleading. Rule 204 requires members of the Institute to justify departures from standards promulgated by the Financial Accounting Standards Board for the disclosure of information outside of financial statements in published financial reports.

CON7 Footnote 1--Words that appear in the glossary are set in **boldface type** the first time they appear.

CON7 Footnote 2--In complex measurements, such as measurements of liabilities settled by providing services, cash flow estimates necessarily include elements like overhead and profit margins inherent in the price of goods and services.

CON7 Footnote 3--In this Statement, the terms *value-in-use* and *entity-specific measurement* are considered to be synonymous.

CON7 Footnote 4--The entity-specific value (resulting from entity-specific measurement) can be characterized as the amount at which independent willing parties that share the same information and ability to generate the entity's estimated cash flows would agree to a transaction that exchanges the estimated future cash flows for a current amount. The UK ASB took a similar view of value-in-use in paragraph 3.4 of its April 1997 working paper, *Discounting in Financial Reporting*. There, the ASB described value in use as "the market value of the cash flows expected by the entity." The IASC adopted a similar description in IAS 36, *Impairment of Assets,* which defines value-in-use as "the present value of estimated future cash flows expected to arise from the continuing use of an asset and from its disposal at the end of its useful life" (paragraph 5).

CON7 Footnote 5--Appendix A includes an example of the computation of fair value, entity-specific measurement, and cost accumulation.

CON7 Footnote 6--The presence of "unstated rights or privileges" described in paragraph 7 of APB Opinion No. 21, *Interest on Receivables and Payables,* is one example of a factor that would lead to this conclusion.

CON7 Footnote 7--The effect of the entity's credit standing on the measurement of its liabilities is discussed in paragraphs 75–88.

CON7 Footnote 8--($100 × .1) + ($200 × .6) + ($300 × .3) = $220. The traditional notion of a

best estimate or most-likely amount in this example is $200.

CON7 Footnote 9--Interest rates usually vary with the length of time until settlement, a phenomenon described as the *yield curve*.

CON7 Footnote 10--The uniform and triangular distributions are *continuous* distributions. For further information about these and other distributions, refer to:

- M. Evans, N. Hastings, and B. Peacock, *Statistical Distributions,* 2d ed. (New York: John Wiley & Sons, Inc., 1993).
- N. Johnson, S. Kotz, and N. Balakrishnan, *Continuous Univariate Distributions,* 2d ed., vol. 2. (New York: John Wiley & Sons, Inc., 1995).

CON7 Footnote 11--($10 × .9) + ($1,000 × .1) = $109. For purposes of illustration, this example ignores the time value of money.

CON7 Footnote 12--($0 × .9) + ($1,000 × .1) = $100. For purposes of illustration, this example ignores the time value of money.

CON7 Footnote 13--$6,139 is the present value of $10,000 discounted for 10 years at 5 percent.

CON7 Footnote 14--That interest rate is sometimes referred to in accounting pronouncements as the *internal rate of return,* the *implicit rate,* or the *effective interest rate* in the promised cash flows.

CON7 Footnote 15--In other situations, management may be able to develop more robust estimates, probabilities, and scenarios. For example, management might assign specific probabilities to the minimum, most-likely, and maximum possible cash flows. The case presented here is for purposes of illustration only, as are the individual amounts applied to various assumptions.

CON7 Footnote 16--The effect of an entity's credit standing is usually expressed as an adjustment to the interest rate. This example demonstrates how that adjustment can be expressed as an adjustment to expected cash flows.