INTRODUCTION

The October 27, 2000 FASB Exposure Draft, Accounting for Financial Instruments with Characteristics of Liabilities, Equity, or Both, (hereafter the ED) provides criteria for classifying financing instruments—financial instruments used for financing purposes—or their components as either liabilities or equity on firms' balance sheets. It responds to the fact that financing instruments and firms' capital structures have become so complex that firms' balance sheet classifications of these instruments are conceptually problematic and cross-sectionally inconsistent. For example, some firms classify complex financing instruments, such as mandatorily redeemable preferred stock, in the "mezzanine" between the liability and equity sections of the balance sheet, while others classify the same instruments as liabilities or equity. Because the mezzanine is not acknowledged in current accounting concepts or standards, its meaning is vague and its use inconsistent. The Committee supports the FASB's development of standards to classify financing instruments in a consistent and conceptually sound fashion. However, we also recognize that this task involves various difficult conceptual and practical issues. This article discusses these issues and makes recommendations.
To highlight the distinct classification and valuation issues across different types of instruments, we distinguish and define below the following classes of financing instruments:

- Simple
- Compound, with:
  - separable components
  - inseparable components
- Hybrid

The most difficult issues arise with inseparable compound and hybrid financing instruments.

A simple financing instrument has a single component that is either straight debt or common equity. A compound financing instrument consists of multiple components; at least one is a liability and one is equity. The components of a compound financing instrument may be separable, meaning that the components can be independently valued through their lives. A bond with an attached warrant is a separable compound financing instrument. Alternatively, when the components of a compound financing instrument are inseparable, the instrument has liability and equity components that can be defined separately for valuation purposes, but the instrument's ultimate payoff is either as a liability or as equity, not both. Convertible debt is an inseparable compound financing instrument. A hybrid financing instrument has characteristics of a liability and equity but does not have distinct components that are straight debt or common equity. Preferred stock is a hybrid instrument.

This article summarizes the Committee's four main comments on the ED.1

1) The ED classifies most complex financing instruments as liabilities, yielding a very heterogeneous set of liabilities and an artificially narrow set of equities. This decreases the usefulness of the balance sheet both for assessing a firm's solvency and for valuing its residual claims.

2) The ED does not clearly link the classification of financing instruments on the balance sheet to the related costs on the income statement, rendering analysis of the two financial statements through ratios such as return on equity difficult.

3) The ED's classification of hybrid and inseparable compound financing instruments relies on contractual provisions such as mandatory redemption rather than economic substance.

4) The ED bases the valuation of inseparable compound instruments on the relative fair values of the components, with embedded options valued incrementally above the value of the host instrument. This approach does not properly reflect the following two factors:

   a) the probabilities that these instruments will be settled as debt or equity, and
   b) the joint values of multiple, interacting options.

Because reliable valuation is generally difficult for inseparable compound financing instruments, expanded measurement guidance is needed.

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1 The Committee's original comment letter to the FASB also included comments on proposals regarding the ED's proposed accounting for noncontrolling interests.
Issue 1. The ED's Classification Approach and the Resulting Heterogeneity of Liabilities

The ED classifies components of financing instruments (hereafter financing components) only as liabilities or equity; a “mezzanine” classification is not allowed. The basic principles of classification involve the two-step process in Paragraph 17 of the ED:

17. An entity that issues a financial instrument shall classify the components of that instrument as follows:
   a. A financial instrument component that is an outstanding share of stock of the issuer and that does not embody an obligation on the part of the issuer shall be classified as equity.
   b. A financial instrument component that embodies an obligation on the part of the issuer shall be classified as a liability unless it satisfies the criteria in (c) below.
   c. A financial instrument component that embodies an obligation shall be classified as equity if either of the following criteria is met:
      (1) The obligation requires (or permits at the issuer’s discretion) settlement by issuance of a fixed number of the issuer’s equity shares.
      (2) The obligation requires (or permits at the issuer’s discretion) settlement by issuance of a variable number of the issuer’s equity shares and both of the following conditions are met:
          (a) Any change in the obligation’s monetary value is attributable to and equal to the change in fair value of a fixed number of the issuer’s equity shares. [A footnote in the ED is omitted here.]
          (b) The monetary value of the obligation changes in the same direction as the change in the fair value of the underlying equity shares.

The classification criteria in Paragraph 17 depend on whether the financing instrument is an obligation, which represents a duty or responsibility to transfer assets or equity shares to the financial instrument holder, and the nature of that obligation. Parts (a) and (b) comprise the first step of the classification process, in which any financing component that requires the firm to transfer cash or other assets is classified as a liability and any component that does not require the firm to transfer anything to the holder is classified as equity. Part (c) is the second step of the process, directed at obligations that require the firm to transfer equity shares. When the change in the monetary value of a financing component is equal to the change in the fair value of a fixed number of equity shares, the component is classified as equity; otherwise it is classified as a liability.2

The ED’s classification approach restricts the classification of instruments as equity and effectively uses the liability category as a default balance sheet classification for complex financing instruments. This approach largely reverses current practice in which the liability section of the balance sheet is relatively clean and the equity section contains a diverse set of more or less residual claims.

The Committee is concerned that heterogeneity within liabilities resulting from the ED’s classification approach will impair financial analysis. We believe the ED should

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2 The ED (Appendix E) defines monetary value as “the gross amount of value measured in units of currency that must be conveyed to the holder of a financial instrument upon settlement of an obligation at its maturity absent a change in current market conditions.”
employ two perspectives that reflect important aspects of financial analysis in classifying financing instruments:

- a *solvency perspective* reflecting the presence or absence of contractually specified claims on assets, and
- a *valuation perspective* reflecting the presence or absence of an ownership relationship/residual claim.\(^3\)

The solvency and valuation perspectives yield four fundamentally distinct categories of financing instruments that we believe should be distinguished in some fashion on the balance sheet:

1) liabilities from both a solvency and valuation perspective, such as straight debt;
2) liabilities from a solvency perspective and equity from a valuation perspective, such as the obligation to transfer cash equal to the fair value of a fixed number of equity shares;
3) equity from a solvency perspective and liabilities from a valuation perspective, such as the obligation to transfer a variable number of equity shares with a fixed fair value; and
4) equity from both a solvency and valuation perspective, such as outstanding common stock.

While the ED’s two-step approach incorporates both solvency and valuation perspectives, it does not clearly capture either perspective. We believe the first step in the ED’s two-step classification process is motivated by a solvency perspective. The second step invokes a valuation perspective in a subordinate and narrow way that makes it relatively difficult for a financing component to qualify as equity.\(^4\) Due to the primacy of the solvency perspective and the subordination and narrowness of the valuation perspective, liabilities under the ED include the three distinct types of financing instruments listed in Categories 1–3 above. In contrast, equities include only financial instruments in Category 4.

The Committee believes that the ED’s balance sheet classification will provide less information useful for assessing solvency because of the heterogeneity of liabilities. For example, mandatorily redeemable preferred stock (MRPS) is classified as a liability under the ED. However, Cheng et al. (2000) note that MRPS cannot force a delinquent firm into bankruptcy, and “financial theory suggests that a primary characteristic of debt is that creditors have the option to force a delinquent debtor into bankruptcy.” Thus, financial theory generally takes a solvency perspective on debt, but the ED does not clearly do so.

The Committee supports separate balance sheet classification of all four categories of financing instrument described above under one of two approaches. First, either the

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\(^3\) The Committee developed these ideas in its prior comment letter on this project (AAA Financial Accounting Standards Committee 1999). In that letter, the Committee stated that both solvency and valuation perspectives are important for classifying financing instruments for certain economic decisions, and that neither perspective dominates the other for all decisions.

\(^4\) Other aspects of the ED effectively broaden the valuation perspective in the second step. Specifically, the concept of monetary value allows stock options to be treated as equity even though they are not valued in exactly the same way as the underlying stock. In addition, there are potentially many types of equity shares that are not valued identically, such as common stock, preferred stock, minority interest, and tracking stock. An option on any of these types of equity shares would be classified as equity in the second step.
solvent or valuation perspective could be viewed as primary and the other perspective as secondary. Firms could be required to partition financing instruments into liabilities and equity based on the primary perspective and create subcategories of liabilities and equity based on the secondary perspective. Second, firms could create the four categories of financing instruments in the first approach but designate only the two categories of financing instruments for which the solvency and valuation perspectives align as liabilities or equity. The two categories for which the solvency and valuation perspectives differ would be designated as well-defined mezzanines. These alternatives are summarized in Table 1.

Hopkins' (1996) results, based on studying buy-side analysts in an experimental setting, lead us to prefer the second alternative. Analysts are asked to estimate stock price immediately after an offering of MRPS. The balance sheet classification of the MRPS as debt, equity, or mezzanine is manipulated between-subjects. As a benchmark, Hopkins (1996) first replicates prior experimental results on the valuation of straight debt vs. equity and finds that the classification affects the analysts' estimates of stock price. The estimated stock prices are significantly higher when the MRPS is classified as a liability than when it is classified as equity. When the MRPS is classified in the mezzanine, analysts' valuations of the common stock are lower than when the MRPS is classified as common equity. This result is somewhat unexpected; one would expect the common stock valuations with MRPS classified in the mezzanine to be between those when MRPS is classified as debt or equity.

To probe this result, Hopkins (1996) examines how classification influences the way analysts make their valuations. When the MRPS is classified in the mezzanine, analysts are more likely to make statements about specific attributes of the MRPS, such as the dividend rate, to justify their valuations. However, when the MRPS is classified as either debt or equity, analysts are more likely to make statements related to its classification, for example, that MRPS classified as debt increases leverage. Hopkins' (1996) conclusion is that the analysts more carefully examined the attributes of the MRPS when it was classified in the mezzanine, but the analysts took certain attributes for granted when the MRPS was classified as either debt or equity. This last result reinforces the importance of clear balance sheet distinctions between financing components with distinct or ambiguous characteristics. The result also suggests that the alternative

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**TABLE 1**

**Two Alternative Classifications of Financing Instruments**

<table>
<thead>
<tr>
<th>Alternative 1</th>
<th>Alternative 2</th>
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</thead>
<tbody>
<tr>
<td><strong>Liabilities</strong></td>
<td><strong>Liabilities</strong></td>
</tr>
<tr>
<td>From both solvency and valuation perspectives</td>
<td>From both solvency and valuation perspectives</td>
</tr>
<tr>
<td>From primary perspective only</td>
<td><strong>Equity</strong></td>
</tr>
<tr>
<td><strong>Equity</strong></td>
<td>Equity from solvency perspective/</td>
</tr>
<tr>
<td>From both solvency and valuation perspectives</td>
<td>liabilities from valuation perspective</td>
</tr>
<tr>
<td>From primary perspective only</td>
<td>Liabilities from solvency perspective/</td>
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<tr>
<td></td>
<td>equity from valuation perspective</td>
</tr>
<tr>
<td><strong>Mezzanines</strong></td>
<td><strong>Equity</strong></td>
</tr>
<tr>
<td></td>
<td>From both solvency and valuation perspectives</td>
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</table>
with two well-defined mezzanines is preferable to the alternative with subdivisions of liabilities and equity.

Even with four categories of financing instruments, heterogeneity within each category remains. The solvency and valuation perspectives provide continuums for ranking financing components, not discrete definitions. Thus, the Committee favors appropriate sequencing of claims within categories to convey as much information as is possible about where specific financing components fall along these continuums. For example, consider an obligation to pay cash equal to the fair value of a fixed number of equity shares. Although this obligation is a liability under a solvency perspective, its effect on solvency is mitigated by the fact that the fair value of the equity shares decreases as the firm becomes less solvent, and it is equity under a valuation perspective. In most types of financial analysis, this financing instrument is treated as equity. We do not object to this instrument being classified as a liability under a solvency perspective and equity under a valuation perspective, but it should be reported below financing instruments with greater effects on solvency.

Disclosure is a natural solution for mitigating the problems associated with remaining heterogeneity. However, the Committee emphasizes that, when practical, disaggregation on the face of the balance sheet is superior to additional disclosure. The development of appropriate disclosures requires a well-articulated classification methodology based on explicitly stated perspectives as well as an analysis of other possible perspectives important for characterizing liabilities and equity. Only when one understands the information that is and is not discernible from the reported balance sheet amounts is it possible to construct disclosures that can provide incrementally relevant information. As an example, not all instruments that are classified as liabilities under the ED create income tax shields, although this is a common “characteristic” of debt. For this reason, supplemental disclosure of the firm’s tax-deductible servicing requirements is useful.

A final point about balance sheet classification is that the ED, like any classification standard, does not eliminate the possibility that firms will “manage” the classification of certain instruments. Engel et al. (1999) (hereafter EEM) study how important managers believe classification to be and find that firms pay a “premium” to achieve certain classification status. EEM examine a sample of 44 firms that issue trust preferred stock and use the proceeds to redeem debt. These firms neither gain nor lose any tax advantages in these transactions since interim-preferred dividend payments on the trust preferred stock and interest payments on the debt are both tax deductible. The firms are merely switching one instrument classified as debt on the balance sheet for another classified as equity. EEM estimate the “lower bound of what firms are willing to pay for the label associated with trust preferred stock as the direct issue costs and yield premium incurred.” Their estimate of the lower bound is $10mm (4.14–4.31% of issue size). They measure the upper bound as the forgone tax savings from retiring debt rather than retiring traditional preferred stock (on which the dividend payments are not deductible). Their estimate of the upper bound is $43mm (15.84–28.86% of issue size).

By contrast, Givoly and Palmon (1981) find no evidence of “classification” management in order to manipulate earnings per share. They study the classification of 683 convertible debt issues as common stock equivalents (CSEs) between 1951 and 1975 (APB Opinion No. 15, Earnings Per Share, was issued in 1969). Because this classification is made only once, management is highly motivated to obtain the classification preferred for EPS purposes. Although the cost to tweak the terms of the debt just enough
to achieve a preferred classification is low, the authors find no direct evidence that firms manipulated either the terms of securities (cash yield) or issue timing, both of which could affect classification of the securities as a CSE.

Although some classification management is inevitable, the Committee believes that classifying financing instruments into distinct, economically meaningful categories such as the four categories described above mitigates this problem. We also believe that the probability-based approach to the valuation of the components of inseparable compound financing instruments discussed in Issue 4 below helps mitigate this problem.

**Issue 2. Articulation of the Balance Sheet and Income Statement**

As discussed previously, the ED's classification of liabilities and equity on the balance sheet primarily reflects a solvency perspective. The income statement, however, measures periodic flows available for residual claimants. Thus, the Committee believes that income measurement should reflect primarily, and perhaps even solely, a valuation perspective. However, using two different perspectives for balance sheet and income statement classification seems illogical and can taint the usefulness of common valuation analysis measures, such as return on equity.

The Committee favors presenting four categories of financing costs on the income statement that link directly to the Committee's four proposed categories of financing instruments on the balance sheet. Such links will enable financial analysts and others to determine consistent balance sheet and income numbers from whatever perspective is most useful for the analysis at hand.

**Issue 3. Focus on Contractual Provisions rather than Economic Substance**

The Committee believes that the classification methodology in the ED places too much weight on the contractual provisions of financing instruments compared to their economic substance. For example, MRPS is treated entirely as a liability regardless of the nature and economic importance of the mandatory redemption provision. The Committee believes that MRPS redeemable in one year is primarily a liability, whereas MRPS redeemable in 100 years is primarily equity. Risky debt is another example of a financing instrument whose contractual provisions result in its classification as a liability. However, risky debt can be viewed as a hybrid or inseparable compound instrument that contains an implicit written put option on the firm. At some point as its risk increases, the Committee would change the classification of risky debt from a liability under both a solvency and valuation perspective to a liability under a solvency perspective and equity under a valuation perspective.

One implication of the ED's reliance on contractual provisions is that the classification of hybrid financing instruments is very different from and inconsistent with that of inseparable compound instruments. Consider as an example common stock that contains a provision that the holder may require that the entity repurchase the stock at any time after one year—*puttable common stock* as defined in Paragraph 59 of the ED. Under the ED, this compound instrument is broken into two components: common stock (equity) and a put option (liability). Since a portion of puttable common stock is treated as equity, it is treated less like a liability than is the 100-year MRPS in the prior example, even though the puttable common stock reduces the solvency of the firm to a far greater extent.

Research on whether investors perceive hybrid financing instruments as liabilities or equity supports the Committee's view that the ED relies too heavily on contractual provisions. Linsmeier et al. (2000) measure the association between common shareholder
valuations of a firm and the valuations derived from a residual income model estimated using inputs based on alternative definitions that include or exclude certain hybrid/compound instruments. They find no difference between models that treat convertible preferred stock as debt and those that treat it as equity, on average. However, the convertible preferred stock of firms more near default is priced more like equity while the convertible preferred stock of other firms is priced more like debt. They conclude that the association between various hybrid/compound instruments and common shareholder valuations depends on firm characteristics, suggesting that a simple classification based on contractual provisions can produce classifications that do not match economic intuition.

Cheng et al. (2000) examine how stock prices and systematic risk are associated with minority interests in consolidated subsidiaries and redeemable and nonredeemable preferred stock for the period 1993–1997. Redeemable preferred securities are viewed as neither debt nor equity. Nonredeemable preferred stock is debt-like, especially for larger, and presumably more financially healthy, firms. Minority interest is equity-like. The fact that the pricing results vary with firm size, performance, and bond ratings is another indication that, for hybrid instruments, a single classification based on contractual provisions will be misleading, especially when it is done only at the issue date.

Kimmel and Warfield (1995) conduct a similar analysis for outstanding redeemable preferred stock for the sample period 1979–1989. A positive relation between redeemable preferred stock and systematic risk after controlling for operating risk is expected if the redeemable preferred stock is debt-like. A negative relation is expected if the redeemable preferred stock is viewed as common stock. The observed relation is negative, or zero when controlling for industry and year. When there are no conversion features or voting rights, the coefficient on redeemable preferred stock is zero, whereas it should be positive if the hybrid instrument is debt-like. The results suggest that this particular hybrid instrument, which would be classified as a liability under the ED, is viewed as equity from a valuation perspective.

In summary, the ED's focus on contractual provisions results in unnecessary and poorly described heterogeneity of financing instruments within liabilities and equity. The Committee recognizes that it is more difficult to implement a standard based on economic substance than one based on contractual provisions. However, we believe that such an approach is necessary, especially for hybrid and inseparable compound financing instruments, if the ED is to be descriptive and robust to future permutations in financing instruments. Economic rights surely will be divided in many different and hard-to-imagine ways over time. A standard locked into specific contractual definitions of liabilities and equity is likely to be less flexible than a standard that employs conceptual definitions to capture the economic substance of financing instruments.


The Committee supports the ED's approach of breaking compound financing instruments into components that are classified separately. However, compound financing instruments, especially when inseparable, raise three measurement issues that we address below:

1) Component valuations can be unreliable, especially when the financing instrument includes two or more options that interact. The Committee believes the ED should contain more detailed implementation guidance.

2) For inseparable compound financing instruments, the ED employs a components approach that classifies the instrument in part as a liability and in part as equity, even though ultimately the instrument will be settled either as a
liability or equity but not both. The ED initially allocates the total value of the instrument to its components using the relative-fair-value method, where option components are valued at their incremental value above the value of the host instrument. The Committee believes that this method causes liabilities and equities to be initially mismeasured. We propose an approach that incorporates the probabilities that the instrument pays off as a liability or as equity to address this problem.

3) For inseparable compound financing instruments, both the probability that the instruments will pay off in a given form and its other valuation parameters change over time, causing the relative values of components to change, often in a negatively correlated fashion. The ED should require periodic revaluation of these components.

1. The Reliability of Compound Instrument Valuations

Valuation is a complex task for many financial instruments, but it can be especially difficult for components of compound instruments. In theory, reliable and well-defined models are available to measure fair values of many commonly used financing instruments and components. An important issue, however, is whether these models work in practice. Reliable estimation of fair values using existing models requires that the model inputs be reliably measurable, but determining some of these inputs involves discretion. In particular, measurement error is likely to be greater for new or thinly/nontraded instruments than for established instruments in developed markets.

The most applicable research study for assessing implementation issues associated with measurement of fair values of compound instruments is Barth et al. (1998) (hereafter BLR). BLR’s goal is to assess the relevance and reliability of fair value accounting for debt. Because most debt issues are not publicly traded, many instruments will be valued, and classification will be determined, based on estimates from valuation models. To assess reliability, BLR price-traded convertible bonds with a binomial pricing model that could be used for nontraded instruments. They compare the pricing estimates from the model to actual bond market prices and conclude that estimated prices lack reliability.

To explain the lack of reliability, Barth et al. (2000) highlight two specific measurement difficulties associated with estimating the binomial pricing model in BLR. First, the model requires estimating various inputs including (1) dividends, (2) the probabilities of up and down stock price movements (“u” and “d”), (3) a term structure of risk-free interest rates, and (4) historical equity volatility. Second, pricing models generally ignore the effects of multiple debt issues within a firm, although the BLR model considers the fair value of multiple issues jointly. The ED does not address how firms should consider the correlation between valuations of multiple issues when theoretical models are used to determine fair value.

Barth et al. (2000) also provide a mathematical example that illustrates how the presence of multiple interacting options poses a significant issue for measuring the initial fair value of the components of inseparable compound financial instruments. They conclude that the calculation of separate values for interrelated components is inherently arbitrary. We discuss this issue intuitively using callable convertible debt as an example.

Compared to the conversion option in convertible debt, the conversion option in callable convertible debt is decreased in value by the presence of the call option, since the exercise of the call option may cause conversion at times that the debt holder would
not otherwise convert the bonds. Equivalently, compared to the call option in callable debt, the call option in callable convertible debt is increased in value by the presence of the conversion option, since the call option may be exercised to reduce the value of the conversion option. Because of this interaction between the call and conversion options in callable convertible debt, there is a joint value to the two options reflected in the instrument's issue price that cannot logically be ascribed to either option alone. Under the ED, this difference is allocated to the components based on their relative fair values. Barth et al. (2000) emphasize that this approach assumes implicitly that the source of the difference between the sum of the component values and the value of the instrument is random estimation error, when in fact the difference is due specifically to interdependencies among only the call and conversion option components of the instrument.

Barth et al. (2000) also explain how the interrelated component issue can be mitigated through disclosure. Specifically, Barth et al. (2000, Table 1) illustrate four disclosure possibilities and highlights how the interdependencies among the instrument's components are transparent in two and obfuscated in two. The Committee agrees that the thorny issue of interactions among options will most likely have to be addressed through supplemental disclosure.

In summary, the Committee believes that the ED requires substantially expanded implementation guidance in order to insure that estimates of component valuations are reliable and consistent.

2. The Relative-Fair-Value Method for Valuing Components

Under the ED, the liability and equity components of compound financing instruments are measured at issuance using the relative-fair-value method described above. The Committee supports this approach for separable compound financing instruments. The Committee does not believe this approach is appropriate for inseparable compound financing instruments, however, because the valuation models used to estimate the values of the components of inseparable financing instruments generally do not measure the value of the instrument when it pays off as equity distinct from its value when it pays off as debt. For example, in the case of convertible debt, option-pricing models compute the incremental value of the instrument that results from having the option to receive a fixed payoff or equity, whichever is higher. It is this option value that would be recorded as equity under the relative-fair-value method. In our view, this incremental value does not correspond to the accounting construct "equity" in any meaningful sense. In general, the purpose of valuation models used to compute the incremental values of the components of inseparable financing instruments is not the same as the purpose of financial statements, which is to identify the liability and equity components separately, consistent with the accounting definitions of these terms.

Thus, the Committee believes that the measurement of the components of an inseparable compound financing instrument should incorporate, both at issuance and subsequent to, the current conditional probabilities that the instrument pays off as a liability or as equity (hereafter, the payoff probabilities). For example, consider convertible debt that will be converted with 100 percent probability one year after issuance—the first allowed conversion date—perhaps because the conversion option starts deep in the money. At issuance, the liability component of this instrument would be ascribed

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5 There might be accounting, tax, control, or other reasons why such an instrument would be issued instead of equity.
some possibly substantial value under the ED, even though interest payments will be made only for one year.

In contrast, we would classify this instrument either entirely or primarily as equity using one of two approaches. The first approach is simple but basically inconsistent with a components approach. In this approach, a financing instrument is classified entirely as a liability or as equity if the probability that it pays off as such exceeds some threshold. In the example above, the convertible debt would be classified entirely as equity. The second approach is consistent with a components approach, though not the same components approach as in the ED. In this approach, the probability that the financing instrument pays off as a liability or as equity is estimated and the values of the liability and equity components are recorded at the probability-weighted discounted values of the future payments as a liability and as equity, respectively. In the example above, the liability component of the convertible debt equals the discounted value of the one interest payment and the equity component equals the discounted value of the equity share to be received upon conversion. The equity component of the convertible debt is not treated as an option now with certainty, but rather as equity in the future with some probability.

We provide a numerical example to illustrate the ED's components approach and our probability-based approach to estimating the value of the liability and equity components of inseparable compound financing instruments. The example is based on the pricing of a convertible bond that has a face value of $60 and promises to pay $64 at date 1. If the bond is converted at date 1, then the bondholders receive half the equity of the firm. If the bond is not converted, then the bondholders receive the minimum of $64 or the value of the firm in the case of default.

Assume that in pricing the bond at date 0, investors make the following assumptions. The firm's net operating assets (hereafter, the firm) have a value at date t = 0 of $100. The value of the firm rises by a proportion \( u = 50\% \) to $150 with a probability \( q = 60\% \) and falls by a proportion \( d = 50\% \) to $50 with a probability \( 1 - q = 40\% \). Thus, at date 1, if the bond is converted, then the bondholders receive $75 in the up state and $25 in the down state, which equals half the equity of the firm. If the bond is not converted, then the bondholders receive $64 in the up state or $50 in the down state. The down state outcome is the value of the firm in default. Bondholders will convert in the up state and receive $75, but will not convert in the down state and will receive $50. Further assume that the firm's weighted average cost of capital \( r_w \) is 10 percent, and the risk-free rate \( r_f \) is 5 percent. Note that the firm's current value equals the expected discounted firm value at the weighted average cost of capital; 100 = \((.6 \times 150) + (.4 \times 50))/1.1\).

Investors price the bond using the binomial option-pricing model, which requires "risk-neutral probabilities" of up and down movements. These probabilities are not the same as the probabilities of an up movement \( q = 60\% \) and a down movement \( 1 - q = 40\% \) defined above, but they are a function of \( q \). The risk-neutral probabilities are \( p = (1 + r_f - d)/(u - d) = (1.05 -0.5)/(1.5 - 0.5) = 55\% \), and \( 1 - p = 45\% \).

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6 Credit Suisse First Boston Corporation (2001) also uses convertible debt to illustrate potential concerns about balance sheet classifications under the ED. Their example illustrates how accounting for convertible debt and puttable common stock, two economically similar financing instruments, differs under the ED. A probability-based approach, like the one the Committee advocates, would reduce the differences between the balance sheet representations of these two similar financing instruments.

7 Readers are referred to Hull (2000, Chapter 9) or Barth et al. (2000) for intuitive discussions of the binomial option-pricing model and the role of risk-neutral probabilities.

8 Less weight is placed on the up state(s) effectively when the weighted average cost of capital exceeds the risk-free rate.
Applying the binomial option-pricing model at date 0, the value of the convertible bond is the sum of payoffs in the up and down states multiplied by the respective risk-neutral probability of being in that state, discounted at the risk-free rate. Thus, the price of the bond is $60.71 = [(0.55 \times 75) + (0.45 \times 50)]/1.05$. This value can be compared to the value of a straight bond without the conversion option to determine the value of the conversion option. A straight bond will pay $64 in the up state and $50 in the down state. Thus, the value of the straight bond is $54.95 = [(0.55 \times 64) + (0.45 \times 50)]/1.05$, implying a value for the conversion option of $5.76 = (60.71 - 54.95)$.

Under the approach in the ED, the convertible debt proceeds of $60.71 are classified as $54.95 of liabilities and $5.76 of equity. This relatively large allocation of value to the liability component occurs despite the fact that the debt effectively always pays off as equity in this stylized example; in the up state the bondholders convert the debt to equity and in the down state the bondholders receive the firm. Note that the proceeds are known at the issue date and the value of the bond as straight debt is relatively simple to compute. In this example of applying the relative fair value method to convertible debt, a firm can determine the valuations of the equity and liability components without knowing the pricing assumptions investors used to price the bond.

In contrast, our probability-based components approach estimates the value of the equity component as the probability-weighted discounted value of its payoff as equity and the value of the liability component as the probability-weighted discounted value of its payoff as a liability. Under this approach, the value of the equity component of the convertible debt is $39.28 = (0.55 \times 75)/1.05$, and the value of the liability component treating the bondholders’ receipt of the firm as a debt claim is $21.43 = (0.45 \times 50)/1.05$, again a total of $60.71$.

A limitation of the probability-based components approach is that it is computationally complex relative to the ED approach. The value of the equity component is not simply the value of the conversion option. Firms have to infer risk-neutral probabilities from the estimated conversion option value, the estimated market value of the firm’s assets, the known strike price, and the known risk-free rate. This approach requires a number of estimates over which managers have significant discretion. Although this probability-based components approach involves more estimation and discretion than the approach in the ED, the benefit is an allocation to equity that more accurately reflects the likelihood that the instrument pays off as equity.

Empirical evidence suggests that the components approach for inseparable compound financing instruments developed in the ED is inconsistent with how firms and investors view compound instruments. For example, Lewis et al. (1999) address how firms view convertible debt. They conclude that some firms use convertible debt as a substitute for straight debt.Convertible debt allows the firm to retain the benefits of straight debt financing, such as interest tax shields. However, like common equity,

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9 An alternative calculation of the equity and liability values under a probability-based approach uses the "true" probabilities of up and down movements ($q = 0.6$ and $1 - q = 0.4$, respectively) and a risk-adjusted cost of capital. When we apply this approach to this example, the equity value is $42.03$. In general, the magnitude of the difference in estimates from the two versions of the probability-based approach is a function of factors such as the volatility of firm value and the magnitude of the risk-adjusted cost of capital relative to the risk-free rate. The Committee believes that the probability-based components approach using risk-neutral probabilities and the risk-free rate presented in the text is computationally less complex and involves less discretion than a probability-based approach based on true probabilities. However, it still results in valuations for liabilities and equity that are more consistent with accounting definitions of liabilities and equity than does the approach in the ED.
convertible debt also mitigates costs of straight debt financing, such as agency costs associated with a firm’s incentives to transfer wealth from creditors to shareholders by substituting high-risk for low-risk projects. They also conclude that other convertible debt issuers appear to be using convertible debt as a substitute for common equity. When the firm and potential investors have unequal access to information (information asymmetry), issuing convertible debt instead of straight common equity mitigates the “adverse selection” costs created by the information asymmetry.

Several papers cited by Lewis et al. (1999) measure investors’ perceptions of convertible debt by examining stock market responses to announcements of convertible debt offerings. In general, there is a negative stock market reaction to convertible debt offerings. Lewis et al. (1999) report that the average announcement date return is between that of announcement date returns for straight debt and equity offerings. Patel et al. (1993) find that, on average, the market views convertible debt and equity as substitutes.

This research indicates that both firms and investors view convertible debt primarily as equity in certain circumstances, although the majority of this instrument’s value is usually classified as a liability under the ED. Whether convertible debt is in economic substance primarily liabilities or equity depends on firm-specific characteristics that can change through time and that presumably are related to the payoff probabilities. The Committee believes that our proposed approach that incorporates the payoff probabilities and recognizes the economic substance of an instrument rather than its contractual provisions is more consistent with the results of this research.10

3. Measurement Subsequent to the Issue Date

The liability and equity components of inseparable compound financing instruments are not revalued after issuance under the ED as the payoff probabilities change. Thus, the liability and equity components become increasingly misvalued as the probability of either form of payoff approaches 100 percent. Moreover, the valuation errors on the components are likely to be negatively correlated, although the exact nature of this correlation depends on the ongoing accounting for liabilities and equity. Assume, for example, that liabilities are measured at amortized cost and equity is accounted for as a residual claim, as currently done under U.S. GAAP. Under this assumption, if the probability that the inseparable compound financing instrument pays off as equity rises (falls) after issuance, then the equity component will be undervalued (overvalued) and the liability component will be overvalued (undervalued). Alternatively, assume that fair value accounting is adopted for liabilities but not for equity, as proposed in the FASB’s December 1999 Preliminary Views on fair valuing financial instruments. Under this assumption, we presume that the ongoing valuation of the liability component will reflect changes in the probability of conversion, while the value of the equity component will not.

Even if the FASB rejects our probability-based components approach in favor of the approach in the ED, we still strongly recommend that the FASB consider the subsequent revaluation of the components of inseparable compound financing instruments after

10 There are a few caveats to the studies on firms’ and investors’ views of compound/hybrid financial instruments. First, with the exception of Lewis et al. (1999), the studies do not control for self-selection issues related to a firm’s choice of a particular instrument. Second, the papers generally focus on perceptions of stock market participants who are not the only users of financial statements. Third, the papers do not address the classification issue per se. That is, they do not (and cannot) address the question of whether classification of hybrid/compound instruments as liabilities rather than equity (or vice versa) would have affected the valuation. The papers only assess whether investors value a particular hybrid or compound instrument as debt or equity, regardless of where the instrument is classified.
the issue date.¹¹ Research evidence supports the Committee's view that valuation at the issue date alone, especially for inseparable compound financing instruments, is problematic. Kang and Lee (1996) provide evidence that publicly traded convertible debt issues are underpriced at the issue date. Various types of risk inherent in the new issues are useful in explaining cross-sectional variation in the underpricing, although it is invariant to zero vs. nonzero coupon payments, maturity, issue size, and bond ratings. Thus, even for an instrument that is commonly issued, for which liquid markets exist, and for which well-established valuation models are available, prices at the date of issue do not reflect "fair" value. Given that fair value measures may be unreliable, the Committee believes that liability and equity classification should not rest solely on valuations at the issue date.

¹¹ The Committee recognizes that the revaluation of equity components of financing instruments is not consistent with the treatment of equity claims under current U.S. GAAP. If the equity components of inseparable compound financing instruments are to be revalued, then the FASB must decide whether and how to record this revaluation on the income statement.

REFERENCES


