INTRODUCTION

The Joint Working Group of Standard Setters' (JWG 2000) Recommendations on Accounting for Financial Instruments and Similar Items (hereafter the Proposal) requires that all changes in the fair value of financial instruments be reported in the income statement, except those associated with certain foreign exchange transactions. The Proposal also requires that the interest and the gain or loss components of these changes in fair value be separately classified on the income statement, and it provides some guidance for calculating these components. Specifically, firms must record interest on a "current yield to maturity basis," with interest revenue (expense) on a financial asset (liability) being calculated as the current interest rate times the fair value of the instrument during the period. This approach differs from the current amortized cost accounting for interest. Assuming that the total changes in the fair value of financial instruments during the period are recognized in some fashion on the income statement, this difference in interest results in exactly the opposite difference in unrealized gains and losses.

This commentary summarizes the position of the Financial Accounting Standards Committee of the American Accounting Association (hereafter the Committee) on the Proposal's fair value interest approach.\(^1\) In particular, we compare the relative merits of the fair value and amortized cost approaches to interest. Our discussion assumes that the total changes in the fair value of financial instruments are recognized in some

\(^1\) These comments were originally included in the Committee’s comment letter on the JWG Proposal, and reflect the views of the individuals on the Committee and not those of the American Accounting Association.
fashion on the income statement each period, so that the only issue is the classification of the components of those changes in fair value.

The Committee is not aware of any empirical research that relates specifically to the relative desirability of the fair value and amortized cost approaches to measuring interest. However, empirical evidence supports the importance of reporting items separately with different sustainability and different certainty. By sustainability, we mean that an item persists over time, on average. A sustainable item could be uncertain, however, in that ex post its persistence may be higher or lower than expected. This evidence suggests that the preferred income statement reporting of the total periodic return to a financial instrument is to aggregate income components with similar sustainability and certainty.²

Conceptually, the periodic returns to financial instruments can be separated into three components with distinct sustainability or certainty. The first two components—amortized cost interest and the difference between fair value interest and amortized cost interest—sum to fair value interest. It is useful to distinguish these two components of fair value interest because amortized cost interest is both sustainable and certain, whereas the difference between fair value interest and amortized cost interest is sustainable but uncertain. The difference between fair value interest and amortized cost interest is sustainable because unexpected changes in interest rates and the resulting unexpected changes in fair values affect fair value interest calculations throughout the remaining lives of financial instruments. For example, an unexpected gain on a financial asset due to a decrease in interest rates in the current period reduces expected fair value interest revenue on the asset throughout its remaining life. The third component of the periodic returns to financial instruments is the unexpected change in their fair values during the period. Unexpected changes in the fair values of financial instruments are both unsustainable and uncertain.³

The amortized cost interest method separately reports the first component—amortized cost interest—but combines the second and third components—the difference between fair value interest and amortized cost interest and the unexpected gain or loss. The fair value interest approach combines the first and second components (fair value interest) and separately reports the third component. Either approach can be justified depending on whether one thinks it is more important to combine income statement items with similar certainty—the amortized cost interest approach—or with similar sustainability—the fair value interest approach. Alternatively, all three components could be reported separately on the income statement.

The following example demonstrates the differences between the reporting of fair value changes in financial instruments under the amortized cost and fair value approaches. We discuss the relative strengths and weaknesses of each of these approaches after the example.


³ Our conclusions about the sustainability and certainty of the various components of the periodic return depend to some extent on the assumption that interest rates are persistent or, equivalently, that changes in interest rates are mean zero. This assumption is consistent with empirical evidence.
EXAMPLE COMPARING AMORTIZED COST AND FAIR VALUE INTEREST APPROACHES

At the end of Year 0, the firm purchases a financial asset that pays $100 cash at the end of each of the next 3 years. There is no cash flow uncertainty, only interest rate uncertainty. The yield curve is flat and changes in the interest rate are mean zero and random. This assumption eliminates significant implementation issues related to sloping yield curves. Interest rate changes occur only at the end of each year. This assumption abstracts from the implementation issues discussed in the next section. Interest rates are 10 percent at the end of Year 0 and change to 12 percent at the end of Year 1, yielding an unexpected loss on the asset during that year. Interest rates remain at 12 percent in Year 2. This assumption makes the difference between fair value interest and amortized cost interest conditionally certain in Year 2, and allows us to illustrate the persistence of this difference using a finite-period example.

Exhibit 1 summarizes the facts in the example, reports interest calculations under the amortized cost and fair value approaches, and reports the unexpected change in the asset's fair value. These calculations adhere to the following T-account equations, with the bracketed letters referring to the designated rows in Exhibit 1:

- **amortized cost of asset:** prior year amortized cost value \[a\] + amortized cost interest revenue \[c\] – cash receipt at end of year = amortized cost value \[a\]; and
- **fair value of asset:** prior year fair value \[b\] + fair value interest revenue \[d\] + unexpected change in fair value of asset \[g\] – cash receipt at end of year = fair value \[b\].

As described above, the asset's periodic return can be decomposed into three components with distinct sustainability and certainty. These components are: item \[c\], amortized cost interest, item \[e\], the difference between fair value interest and amortized cost interest, and item \[g\], the unexpected change in fair value. Note that the sum of items \[c\] and \[e\] is, by definition, fair value interest (item \[d\]).

### EXHIBIT 1
Comparison of Amortized Cost and Fair Value Interest Approaches

<table>
<thead>
<tr>
<th>Year</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Facts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash receipts at end of year</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Interest rate at end of year</td>
<td>10%</td>
<td>12%</td>
<td>12%</td>
<td>—</td>
</tr>
<tr>
<td>[a] End of year amortized cost value</td>
<td>248.69</td>
<td>173.55</td>
<td>90.91</td>
<td>0</td>
</tr>
<tr>
<td>[b] End of year fair value</td>
<td>248.69</td>
<td>169.01</td>
<td>89.29</td>
<td>0</td>
</tr>
<tr>
<td><strong>Interest calculations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[c] Amortized cost interest revenue = prior year [a] \times 10%</td>
<td>0</td>
<td>24.87</td>
<td>17.36</td>
<td>9.09</td>
</tr>
<tr>
<td>[d] Fair value interest revenue = prior year [b] \times interest rate during year</td>
<td>0</td>
<td>24.87</td>
<td>20.28</td>
<td>10.71</td>
</tr>
<tr>
<td>[e] Difference = [d] - [c]</td>
<td>0</td>
<td>0</td>
<td>2.92</td>
<td>1.62</td>
</tr>
<tr>
<td><strong>Calculation of unexpected fair value change</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[f] Expected fair value at end of year based on interest rate at end of prior year (equals prior year [b] \times (1 + interest rate during year) – cash receipts at end of year)</td>
<td>173.55</td>
<td>89.29</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>[g] Unexpected change in fair value = [b] - [f]</td>
<td>(4.54)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
Exhibit 2 summarizes the income statement reporting for this example under the amortized cost and fair value interest approaches, as well as an approach that reports all three components of the asset's periodic return separately. The amortized cost interest approach yields interest revenue equal to \([c]\) and gains and losses equal to \([e] + [g]\). The fair value interest approach reports interest revenue equal to \([c] + [e]\) and gains and losses equal to \([g]\). The total income recognized in each period under either approach is \([c] + [e] + [g]\). The only difference between the two approaches is that the difference between fair value interest and amortized cost interest (item \([e]\)) is aggregated with amortized cost interest (item \([c]\)) in interest revenue under the fair value approach, while this difference is aggregated with the unexpected change in fair value (item \([g]\)) and reported in gains or losses under the amortized cost approach. Thus, the fair value interest approach segregates income statement items based on their sustainability while the amortized cost interest approach segregates items based on their certainty.

**The Committee’s Views on Fair Value Interest**

The justification for the fair value interest approach is that the two components of interest are similarly sustainable. Note that the first component of fair value interest—amortized cost interest (item \([c]\))—decreases over time as the asset is paid off at a rate of $100 per year. For example, from Year 2 to Year 3, amortized cost interest persists at a rate of 52.4 percent ($9.09/$17.36), which is less than 1. Total fair value interest is similarly persistent. From Year 2 to Year 3, fair value interest (item \([d]\)) persists at a rate of 52.8 percent ($10.71/$20.28). Recall that during Year 2, interest rates are assumed stable to demonstrate the similar sustainability of fair value and amortized cost interest. The change in the fair value of the instrument during Year 1, when rates change from 10 percent to 12 percent, carries forward in the calculation of fair value interest for Years 2 and 3.

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**EXHIBIT 2**

**Alternative Approaches to Displaying Components of Fair Value Income**

<table>
<thead>
<tr>
<th>Interest Revenue</th>
<th>Amortized Cost Interest Approach</th>
<th>Fair Value Interest Approach</th>
<th>Separate Reporting of Three Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amortized cost interest</td>
<td>([c])</td>
<td>([c])</td>
<td></td>
</tr>
<tr>
<td>Fair value interest</td>
<td>([d] = [c] + [e])</td>
<td></td>
<td>([e])</td>
</tr>
<tr>
<td>Difference of fair value interest and amortized cost interest</td>
<td>([e] + [g])</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Gains and Losses**

<table>
<thead>
<tr>
<th>Unexpected change in fair value + difference of fair value interest and amortized cost interest</th>
<th>([e] + [g])</th>
<th>([e] + [g])</th>
<th>([g])</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unexpected change in fair value</td>
<td>([g])</td>
<td>([g])</td>
<td></td>
</tr>
<tr>
<td>Total Income</td>
<td>([c] + [e] + [g])</td>
<td>([c] + [e] + [g])</td>
<td>([c] + [e] + [g])</td>
</tr>
</tbody>
</table>

The letters in the cells of the table refer to rows in Exhibit 1.
The justification for the amortized cost approach, which reports only amortized cost interest separately and sums the difference between fair value interest and amortized cost interest (item [e]) with the unexpected change in fair value (item [g]), is that the latter two items are uncertain. Both depend on the uncertain realization of interest rates.

The Committee is not unanimous regarding the relative merits of the amortized cost interest and fair value interest approaches. Some members prefer the amortized cost approach, because amortized cost interest is completely certain at the origination of the financial instrument, and it is segregated from the uncertain components of the instrument's periodic return. Another advantage of amortized cost is that interest recorded over the life of the instrument equals interest received or paid in cash either as coupon payments or as origination premium or discount. This cash flow information is not otherwise available in the financial statements. The drawback of the amortized cost approach is that gains and losses include a component with no persistence—the unexpected change in fair value—and a persistent component—the difference between fair value and amortized cost interest. Moreover, the persistent component is negatively correlated with the nonpersistent components from prior years; in the example above, the sum of item [e] in Years 2 and 3 equals minus item [g] in Year 1.

Some members of the Committee prefer fair value interest because interest revenue or expense includes all persistent income components—amortized cost interest and the difference between fair value interest and amortized cost interest—and the nonpersistent component of the periodic return is reported separately as a gain or loss. Another advantage of the fair value interest approach is that interest revenue and expense are better matched when the ages of the firm's interest-earning assets and interest-bearing liabilities differ, improving comparability of the returns from these assets and liabilities. A drawback of this approach is that fair value interest includes both a completely predictable amortized cost interest component and an uncertain component, the difference between fair value and amortized cost interest. In addition, information about total interest-related cash flows is lost.

The Committee views reporting under a fair value interest approach with disclosure of amortized cost interest and financial instrument balances as a reasonable compromise. This approach recognizes the critical importance of distinguishing items with different persistence on the income statement for firm valuation, and also provides the relevant cash flow information that is lost under the fair value interest approach. To be maximally informative, the supplemental disclosures must include the amortized cost balances of the instruments. Such disclosures are not required in the JWG Proposal. Another acceptable, but somewhat cumbersome, alternative is to report all three components of a financial instrument's periodic return ([c], [e], and [g]) separately on the income statement, all illustrated in the rightmost column of Exhibit 2.

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4 Although interest paid in cash is a required disclosure under SFAS No. 95, interest "paid" in the form of an origination premium or discount is not directly observable in the Statement of Cash Flows.

5 Amortized cost balances and amortized cost interest are also often important for non-valuation purposes, such as assessing managerial stewardship by evaluating management's ability to time investment and financing transactions.
The Need for Guidance Regarding the Calculation of Fair Value Interest

The Committee is concerned that the Proposal does not provide sufficient guidance for calculating interest under the fair value interest approach. Paragraph 386 of the Proposal states that “a precise determination of interest on a fair value basis would require continuous re-calculation. For practical reasons, an enterprise may choose to accrue fair value interest on a quarterly basis by groups of similar interest-bearing financial instruments where rates have not undergone significant change in the quarter. This accrual could be based on multiplying the appropriate interest rate for each group [of similar financial instruments] at the beginning of the quarter by its average fair value during the quarter.” Paragraph 388 states that when “interest rates have undergone significant change during a quarterly period...the above calculations may need to be refined.” However, there is no discussion of how one might make such a refinement. As illustrated in the example below, the Proposal’s lack of sufficient guidance can lead to various interpretations about the appropriate calculation of interest under the fair value approach. The Committee believes that more specific implementation guidance is necessary to achieve reporting consistency across entities.6

EXAMPLE OF ALTERNATIVE FAIR VALUE INTEREST CALCULATIONS

The example also demonstrates that a comparison of fair value interest to average financial instrument fair values does not always yield interpretable effective interest rates. Accordingly, disclosure of average interest rates and/or average fair values could be useful. A complete set of such disclosures would yield the analysis of net interest income disclosures required for U.S. banks. The example is based on a simple straight coupon debt instrument with the following characteristics:

- Issue date = 1/1/01;
- Face value (“FV”) = $100;
- Coupon = 10%, paid semi-annually (payment, “PMT”, = $5 at the end of each six-month period);
- Maturity = 10 years (20 semi-annual periods or “N”); and
- Discount rate (semi-annual) = 20% (so the periodic interest rate, “I”, = 10).

We provide a detailed calculation of the present value of this bond at the issue date to clarify the notation we use throughout this discussion. At issue date, the present value (PV) of this bond is $57.43, the sum of the present values of the face value (FV) and a semi-annual annuity of $5 (PMT) over 20 semi-annual periods (N) at a semi-annual discount rate of 10 percent (I). Our notation for the calculation of the present value is PV(FV = 100, PMT = 5, N = 20, I = 10).

Assume that at the end of the first six-month period, the value of the bond increases to $71.19, reflecting an effective annual rate of 16 percent. Thus, the fair value of the bond increases by $13.76 during the six-month period.

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6 We originally thought it might be useful for the JWG to investigate the accounting for interest by mutual funds that have long used a fair value accounting model. We found, however, that the AICPA (2000) industry guide, Audits of Investment Companies, contains no guidance regarding the calculation of interest. The guide states that the total periodic returns to financial instruments are relevant to the fund’s net asset value and results of operations, suggesting that mutual fund investors do not care about distinguishing the components of the total returns to financial instruments.
The following scenarios based on this example illustrate various reasonable interpretations of acceptable calculations of fair value interest expense under paragraphs 386 and 388 of the Proposal. In the first scenario, interest rates change ratably over the period. In the second scenario, interest rates change at the end of the period, and in the third scenario, interest rates change at the beginning of the period. The averaging suggested in paragraph 386 is natural and acceptable in scenario 1, while scenarios 2 and 3 highlight the need for additional guidance when averaging is not appropriate.

1) **The effective rate decreases from 20 percent to 16 percent ratably during the period.**

   Average fair value = \((57.43 + 71.19)/2 = 64.31\).

   Interest expense = average fair value × average rate
   = \(64.31 × \left(\frac{[(20\% + 16\%)/2] × 6/12}{6/12}\right) = 5.79\).

   In this simple case, interest expense divided by the average book value of debt is, by construction, 9 percent for the six-month period, which represents the firm’s average cost of borrowing during the period. The $13.76 change in the fair value of the bond and the coupon payment of $5 are allocated between $5.79 interest expense and a $12.97 loss.

   Note that while the loss appears to be a “plug” above, it could also be calculated directly. Had the interest rate not changed, the value of the bond would have been $58.18 (\(PV(FV = 100, PMT = 5, N = 19, I = 10)\)). Instead, the value of the bond is $71.19, and a direct calculation of the gain yields $13.01. This amount is approximately equal to the $12.97 “plug” calculated above, with the difference attributable to the simple averaging used in the calculations.

2) **The effective rate decreases from 20 percent to 16 percent at the end of the period.**

   Interest expense = beginning fair value × beginning rate
   = \(57.43 × \left(\frac{20\%}{2}\right) = 5.74\).

   The balance sheet reports beginning and ending debt balances of $57.43 and $71.19, respectively, for an average balance of $64.31. Interest expense is $5.74 for an “effective interest rate” of 8.93 percent semi-annually or 17.86 percent annually, considerably lower than the interest rate of 20 percent that applied during the entire period, because the ending fair value is used in the calculation of the average balance. The loss is ($5 + $13.76) – $5.74 = $13.02, which as noted above can be derived by subtracting the $58.18 expected fair value of the debt had the interest rate not changed from the ending fair value of $71.19.

3) **The effective rate decreases from 20 percent to 16 percent at the beginning of the period.**

   There are various alternatives for refining the interest calculation in this case that we believe are acceptable under paragraph 388. We present two alternatives, the second of which is clearly preferable in our view.

   **Alternative 1:**
   Interest expense = beginning fair value × ending rate
   = \(57.43 × \left(\frac{16\%}{2}\right) = 4.59\).

   In this case, interest expense is $4.59 and the “effective rate” is 7.14 percent semi-annually or 14.28 percent annually. These rates are below the firm’s cost of debt both historically and going forward, because interest expense is artificially low due to the inconsistency of using the (low) beginning fair value and (low) ending rate. However, the Committee believes that the above calculation represents an acceptable refinement given the current guidance in the Proposal.
Alternative 2:
Interest expense = “appropriate” fair value × ending rate

We define the appropriate fair value for the entire period as the fair value of a 10-year bond discounted at 16 percent. Thus, fair value is:

\[ = \text{PV(FV = 100, PMT = 5, N = 20, I = 8)} = 70.55 \]

and interest expense is:

\[ = 70.55 \times 0.08 = 5.64. \]

The balance sheet reports $57.43 and $71.19 for an average debt balance of 64.31. Interest expense is $5.64 for an “effective rate” of 8.77 percent (semi-annual) or 17.54 percent annual rate, which is higher than the rate that applied during the period because the beginning fair value is used in the calculation of the average balance. The loss can be determined as a plug of $13.12. One could argue, based on the Proposal’s limited implementation guidance, that the loss should be $13.02, leaving the additional $0.10 undefined.

The calculations in this example are reported in Exhibit 3. In summary, when the interest rate changes ratably during the period, it is natural and nonproblematic to use the average rate and fair value to calculate fair value interest. When the rate changes at the end of the period, it is then natural to use the beginning rate and fair value to calculate interest, though this yields an effective rate that differs substantially from the true rate, because the ending fair value is used in calculating the average fair value. When the rate changes at the beginning of the period, it is then critical whether the actual beginning rate and balance or the appropriately revised beginning rate and balance are used to calculate interest. While it is preferable to use the revised rate and balance, again the effective interest rate deviates from the true rate because the actual beginning fair value is used in calculating the average fair value. This example illustrates that if approaches other than continuous recalculation of rates and balances are to be allowed under the Proposal, then more guidance is required if comparability across firms is to be maintained.

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**EXHIBIT 3**
Summary of Alternative Approaches to Calculating Fair Value Interest

<table>
<thead>
<tr>
<th>Timing of Interest Rate Change</th>
<th>Ratably</th>
<th>At End of Period</th>
<th>At Beginning of Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assumed approach to calculating interest</td>
<td>Average rate and fair value</td>
<td>Beginning-of-period rate and fair value</td>
<td>Beginning-of-period fair value and revised beginning-of-period rate</td>
</tr>
<tr>
<td>Interest expense</td>
<td>5.79</td>
<td>5.74</td>
<td>4.59</td>
</tr>
<tr>
<td>Effective rate</td>
<td>9%</td>
<td>8.93%</td>
<td>7.14%</td>
</tr>
<tr>
<td>Actual rate</td>
<td>9%</td>
<td>8%</td>
<td>10%</td>
</tr>
</tbody>
</table>
CONCLUSION

The Committee compliments the JWG for addressing the complex issues related to fair value accounting for financial instruments. There are substantial measurement issues associated with fair value accounting for financial instruments related to the balance sheet recognition of these items. This commentary illustrates the equally complex measurement issues associated with recognizing changes in fair value in the income statement.

REFERENCES


