



Fair Value Accounting:

Understanding the Issues Raised by the Credit Crunch

Prepared by Stephen G. Ryan
Professor of Accounting and Peat Marwick Faculty Fellow
Stern School of Business
New York University
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Executive Summary

Fair value accounting is a financial reporting approach in which companies are required or permitted to measure and report on an ongoing basis certain assets and liabilities (generally financial instruments) at estimates of the prices they would receive if they were to sell the assets or would pay if they were to be relieved of the liabilities. Under fair value accounting, companies report losses when the fair values of their assets decrease or liabilities increase. Those losses reduce companies' reported equity and may also reduce companies' reported net income.

Although fair values have played a role in U.S. generally accepted accounting principles (GAAP) for more than 50 years, accounting standards that require or permit fair value accounting have increased considerably in number and significance in recent years. In September 2006, the Financial Accounting Standards Board (FASB) issued an important and controversial new standard, Statement of Financial Accounting Standards No. 157, Fair Value Measurements (FAS 157), which provides significantly more comprehensive guidance to assist companies in estimating fair values. The practical applicability of this guidance has been tested by the extreme market conditions during the ongoing credit crunch.

In response to the credit crunch, some parties (generally financial institutions) have criticized fair value accounting, including FAS 157's measurement guidance. Those criticisms have included:

- Reported losses are misleading because they are temporary and will reverse as markets return to normal
- Fair values are difficult to estimate and thus are unreliable
- Reported losses have adversely affected market prices yielding further losses and increasing the overall risk of the financial system.

While those criticisms have some validity, they also are misplaced or overstated in important respects.

The more relevant question is whether fair value accounting provides more useful information to investors than alternative accounting approaches. The answer to that question is "yes."

Some of the key reasons why fair value accounting benefits investors include:

- It requires or permits companies to report amounts that are more accurate, timely, and comparable than the amounts that would be reported under existing alternative accounting approaches, even during extreme market conditions
- It requires or permits companies to report amounts that are updated on a regular and ongoing basis
- It limits companies' ability to manipulate their net income because gains and losses on assets and liabilities are reported in the period they occur, not when they are realized as the result of a transaction
- Gains and losses resulting from changes in fair value estimates indicate economic events that companies and investors may find worthy of additional disclosures.

Introduction

During the ongoing credit crunch,¹ the markets for subprime and some other asset and liability positions have been severely illiquid and disorderly in other respects. This has led various (possibly self-interested) parties to raise three main potential criticisms of fair value accounting. First, unrealized losses recognized under fair value accounting may reverse over time. Second, market illiquidity may render fair values difficult to measure and thus unreliable. Third, firms reporting unrealized losses under fair value accounting may yield adverse feedback effects that cause further deterioration of market prices and increase the overall risk of the financial system (“systemic risk”). While similar criticisms have been made periodically for as long as fair values have been used in GAAP (well over 50 years), the recent volume and political salience² of these criticisms is ironic given that in September 2006 the FASB issued FAS 157, *Fair Value Measurements*. This standard contains considerably more comprehensive fair value measurement guidance than previously existed. It almost seems that the credit crunch was sent to serve as FAS 157’s trial by fire.

This white paper explains these potential criticisms, indicating where they are correct and where they are misplaced or overstated. It also summarizes the divergent views of parties who believe that fair value accounting benefits investors and of those who believe it hurts investors. Believing in full disclosure, the author acknowledges that he is an advocate of fair value accounting, especially for financial institutions, but not a zealot with respect to fair value measurement issues such as those raised by the credit crunch. Like any other accounting system, fair value accounting has its limitations, both conceptual and practical. The relevant questions to ask are: Does fair value accounting provide more useful information to investors than the alternatives (generally some form of amortized cost accounting)? If so, can the FASB improve FAS 157’s guidance regarding fair value measurement to better cope with illiquid or otherwise disorderly markets? In the author’s view, the answer to each of these questions is “yes.”

Section II provides useful background information about fair value accounting, the limited alternative of amortized cost accounting, and the unsatisfying current mixed-attribute accounting model for financial instruments. This section abstracts from the difficult issues raised by the credit crunch, because investors cannot properly understand these issues and their relative importance without first understanding the more basic issues discussed in this section. Section III summarizes FAS 157’s fair value measurement guidance, indicating where that guidance does not address the issues raised by the credit crunch with sufficient specificity. Section IV discusses the aforementioned potential criticisms of fair value accounting during the credit crunch and provides the author’s views about these criticisms. Sections V and VI summarize the reasons why some parties believe that fair value accounting benefits investors while others believe it hurts investors.

Background Information

Abstracting from the Credit Crunch

A. Fair Value Accounting

The goal of fair value measurement is for firms to estimate as best as possible the prices at which the positions they currently hold would change hands in orderly transactions based on current information and conditions. To meet this goal, firms must fully incorporate current information about future cash flows and current risk-adjusted discount rates into their fair value measurements. As discussed in more detail in Section III, when market prices for the same or similar positions are available, FAS 157 generally requires firms to use these prices in estimating fair values. The rationale for this requirement is market prices should reflect all publicly available information about future cash flows, including investors' private information that is revealed through their trading, as well as current risk-adjusted discount rates. When fair values are estimated using unadjusted or adjusted market prices, they are referred to as mark-to-market values. If market prices for the same or similar positions are not available, then firms must estimate fair values using valuation models. FAS 157 generally requires these models to be applied using observable market inputs (such as interest rates and yield curves that are observable at commonly quoted intervals) when they are available and unobservable firm-supplied inputs (such as expected cash flows developed using the firm's own data) otherwise. When fair values are estimated using valuation models, they are referred to as mark-to-model values.

Under fair value accounting, firms report the fair values of the positions they currently hold on their balance sheets. When fair value accounting is applied fully, firms also report the periodic changes in the fair value of the positions they currently hold, referred to as unrealized gains and losses, on their income statements. Unrealized gains and losses result from the arrival of new information about future cash flows and from changes in risk-adjusted discount rates during periods. As discussed in more detail in Section II.C, current GAAP requires fair value accounting to be applied in an incomplete fashion for some positions, with unrealized gains and losses being recorded in accumulated other comprehensive income, a component of owners' equity, not in net income.³

The main issue with fair value accounting is whether firms can and do estimate fair values accurately and without discretion. When identical positions trade in liquid markets that provide unadjusted mark-to-market values, fair value generally is the most accurate and least discretionary possible measurement attribute, although even liquid markets get values wrong on occasion. Fair values typically are less accurate and more discretionary when they are either adjusted mark-to-market values or mark-to-model values. In adjusting mark-to-market values, firms may have to make adjustments for market illiquidity or for the dissimilarity of the position being fair valued from the position for which the market price is observed. These adjustments can be large and judgmental in some circumstances. In estimating mark-to-model values, firms typically have choices about which valuation models to use and about which inputs to use in applying the chosen models. All valuation models are limited, and different models capture the value-relevant aspects of positions differently. Firms often must apply valuation models using inputs derived from historical data that predict future cash flows or correspond to risk-adjusted discount rates imperfectly. The periods firms choose to analyze historical data to determine these inputs can have very significant effects on their mark-to-model values.

This issue with fair value accounting is mitigated in practice in two significant ways. First, FAS 157 and the accounting standards governing certain specific positions (e.g., FAS 140, *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities*, which governs retained interests from securitizations) require firms to disclose qualitative information about how they estimate fair values as well as quantitative information about their valuation inputs, the sensitivities of their reported fair values to those inputs, and unrealized gains and losses and other changes in the fair value of their positions. These disclosures allow investors to assess the reliability of reported fair values and to adjust or ignore them as desired. Over time, the FASB can and surely will improve these disclosures and expand them to more positions. Second, most fair value accounting standards require fair values to be re-estimated each quarter, and so past valuation errors can and should be corrected on an ongoing and timely basis.

In principle, fair value accounting should be the best possible measurement attribute for inducing firms' managements to make voluntary disclosures and for making investors aware of the critical questions to ask managements. When firms report unrealized gains and losses, their managements are motivated to explain in the Management Discussion and Analysis sections of financial reports and elsewhere what went right or wrong during the period and the nature of any fair value measurement issues. If a firm's management does not adequately explain their unrealized gains and losses, then investors at least are aware that value-relevant events occurred during the period and can prod management to explain further. Until recently, however, managements have made relatively few voluntary disclosures regarding their fair values. Fortunately, this appears to be changing as a result of the credit crunch and other factors, as illustrated by the Senior Supervisors Group's (2008) survey of recent leading-practice disclosures.

B. The Limited Alternative of Amortized Cost Accounting

The alternative to fair value accounting generally is some form of amortized cost (often referred to over-broadly as "accrual") accounting. In its pure form, amortized cost accounting uses *historical* information about future cash flows and risk-adjusted discount rates from the inception of positions to account for them throughout their lives on firms' balance sheets and income statements. Unlike under fair value accounting, unrealized gains and losses are ignored until they are realized through the disposal, or impairment in value, of positions or the passage of time. When firms dispose of positions, they record the *cumulative* unrealized gains and losses that have developed since the inception or prior impairment of positions on their income statements.

Amortized cost accounting raises three main issues, all of which arise from its use of untimely historical information about future cash flows and risk-adjusted discount rates.

1. Income typically is persistent for as long as firms hold positions, but becomes transitory when positions mature or are disposed of and firms replace them with new positions at current market terms. This can lull investors into believing that income is more persistent than it really is.
2. Positions incepted at different times are accounted for using different historical information and discount rates, yielding inconsistent and untimely accounting for the constituent elements of firms' portfolios. This obscures the net value and risks of firms' portfolios.
3. Firms can manage their income through the selective realization of cumulative unrealized gains and losses on positions, an activity referred to as gains trading.

Issues 2 and 3 are particularly significant for financial institutions. These institutions typically hold portfolios of many positions chosen to have largely but not completely offsetting risks, so that the aggregate risks of the institutions' portfolios are within their risk management guidelines but still allow them to earn above riskless rates of return. Amortized cost accounting effectively treats financial institutions' positions as if they have no unexpected changes in value until institutions realize gains and losses on their positions. Financial institutions can easily engage in gains trading, because their positions are often quite liquid, and because one side of each of their many offsetting positions typically will have a cumulative unrealized gain while the other side will have a cumulative unrealized loss. Financial institutions can selectively dispose of the side of their offsetting positions with cumulative unrealized gains (losses), thereby raising (lowering) their net income. Because these institutions hold many offsetting positions, such gains trading can go on for many periods, possibly in the same direction.

In practice, financial report disclosures mitigate these issues with amortized cost accounting in very limited ways. For example, regarding issues 1 and 2, SEC Industry Guide 3 requires banks to disclose detailed breakdowns of their amortized cost interest revenue and expense by type of interest-earning asset and interest-paying liability. Through careful analysis of these disclosures, investors can attempt to disentangle the persistent and transitory components of amortized cost interest and to undo the inconsistent calculation of interest for different positions. This analysis can be difficult to conduct, however, because it requires investors to estimate from other information sources the average lives of banks' different types of assets and liabilities and thus when these positions likely were incepted and will mature (assuming banks do not dispose of them before maturity). Moreover, these disclosures are not required for non-banks. Regarding issue 3, all firms must disclose their realized and unrealized gains and losses on available-for-sale securities under FAS 115, *Accounting for Certain Investments in Debt and Equity Securities*, which clearly reveals gains trading for these securities. However, such disclosures are not required for most other financial assets and liabilities for which gains trading is feasible, although they could be.

Traditional bankers and other advocates of amortized cost accounting often argue that unrealized gains and losses on fixed-rate or imperfectly floating-rate positions that arise due to changes in risk-adjusted discount rates (i.e., both riskless rates and credit risk premia) are irrelevant when firms intend to hold positions to maturity, because firms will eventually receive or pay the promised cash flows on the positions. Absent issues regarding the measurement of unrealized gains and losses, this argument is clearly incorrect. Changes in risk-adjusted discount rates yield economic gains and losses to the current holders of the positions compared to the alternative of acquiring identical positions at current rates. For example, when risk-adjusted discount rates rise old assets yielding interest at lower historical rates are worth less than identical new assets yielding higher current rates. These old and new assets do not have the same values and should not be accounted for as if they do. This is true regardless of whether the firms currently holding the old assets intend to dispose of them before maturity or not.

The incorrectness of this argument is most obvious at the portfolio level, which is the right level to analyze most financial institutions. For example, if interest rates rise, then traditional banks' old assets yielding lower historical rates may have to be financed with new liabilities yielding higher current rates.

Amortized cost accounting usually is not applied in a pure fashion. Assets accounted for at amortized cost typically are subject to impairment write-downs. These write-downs can adjust the asset balance to fair value or to another measurement attribute (typically one that results in an asset balance above fair value). Depending on how impairment write-downs are measured, some or all of the fair value measurement issues discussed in Section II.A also apply to these write-downs. Moreover, additional issues arise for impairment write-downs that are recorded only if judgmental criteria are met, such as the requirement in FAS 115 and some other standards to record impairment write-downs only if the impairments are “other than temporary.” Similarly, certain economic liabilities accounted for at amortized cost (e.g., most loan commitments) are subject to judgmental accruals of probable and reasonably estimable losses under FAS 5, *Accounting for Contingencies*.

C. The Unsatisfying Mixed-Attribute Accounting Model for Financial Instruments

GAAP requires various measurement attributes to be used in accounting for financial instruments. This is referred to as the “mixed attribute” accounting model.

1. Most traditional financial instruments (e.g., banks’ loans held for investment, deposits, and debt) are reported at amortized cost.
 - a. As just discussed, financial assets typically are subject to (other-than-temporary) impairment write-downs. Economic financial liabilities may be subject to accrual of probable and reasonably estimable losses.
2. A few financial instruments — including trading securities under FAS 115, nonhedge and fair value hedge derivatives and fair value hedged items under FAS 133, *Accounting for Derivative Instruments and Hedging Activities*, and instruments for which the fair value option is chosen under FAS 159, *The Fair Value Option for Financial Assets and Financial Liabilities* — are reported at fair value on the balance sheet with unrealized gains and losses included in net income each period.
3. Two distinct hybrids of amortized cost and fair value accounting are required for other financial instruments.
 - a. Available-for-sale securities under FAS 115 and cash flow hedge derivatives under FAS 133 are recorded at fair value on the balance sheet but unrealized gains and losses are recorded as they occur in accumulated other comprehensive income, a component of owners’ equity, not in net income.
 - b. Loans held-for-sale are recorded at lower of cost or fair value under FAS 65, *Accounting for Certain Mortgage Banking Activities* (mortgages) and SOP 01-6, *Accounting by Certain Entities (Including Entities with Trade Receivables) that Lend or Finance the Activities of Others* (other loans).

The mixed attribute model often allows firms to choose the measurement attribute they desire for a position through how they classify the position. For example, under FAS 115 a firm may choose to classify a security as any one of trading, available for sale, or held to maturity, and thereby obtain one of three different accounting treatments. Relatedly, the SEC (2005) states “the mixed-attribute model has prompted a significant amount of accounting-motivated transaction structures.”

Similar to (and in some respects worse than) amortized cost accounting, the mixed attribute model poorly describes the net value and risks of financial institutions' portfolios of financial instruments. In particular, this model can make effective risk management by these institutions appear to be speculation, and vice-versa. For example, consider a bank that acquires fixed-rate securities that it classifies as trading and that finances those securities with fixed-rate debt with the same duration and other risk characteristics, so that the bank has no interest rate risk. If interest rates rise, then the bank's trading assets will experience an unrealized loss that is recorded in net income, while its debt will experience an unrealized gain that is not immediately recognized for any accounting purpose. Hence, this bank will appear to have been speculating on interest rate movements. Conversely, consider a bank that acquires floating-rate securities and finances those securities with the same fixed-rate debt as before, so that the bank is speculating that interest rates will rise. If interest rates do rise, then the unrealized gain on the bank's debt will not be immediately recognized for any accounting purpose and so the bank will appear to be immune to interest rate risk.

Because of these severe limitations, in the author's view consistent fair value accounting for all of financial institutions' financial instruments is clearly preferable to either the current mixed-attribute accounting model or to a pure amortized cost model.⁴ Because amortized costs are useful as a check on fair values and for specific types of investment and other decisions, however, the FASB should require firms to disclose the amortized costs of financial instruments. Fair value accounting with amortized cost disclosures would be essentially the reverse of the current mixed-attribute accounting model with disclosures of the fair values under FAS 107, *Disclosures about Fair Value of Financial Instruments*.

FAS 157

FAS 157 contains essentially all of the current GAAP guidance regarding how to measure fair values. FAS 157 does not require fair value accounting for any position; its guidance is relevant only when other accounting standards require or permit positions to be accounted for at fair value. While FAS 157 became effective for fiscal years beginning after November 15, 2007, most large financial institutions early adopted the standard in the first quarter of 2007, and so it has been applicable for these institutions during the entirety of the credit crunch. Not surprisingly, these institutions have reported a large portion of the losses resulting from the credit crunch.

This section describes the critical aspects of FAS 157's definition of fair value and hierarchy of fair value measurement inputs. It also indicates where this guidance does not deal with the issues raised by the credit crunch with sufficient specificity.

A. Definition of Fair Value

FAS 157 defines fair value as “the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.” This definition of fair value reflects an ideal “exit value” notion in which firms exit the positions they currently hold through orderly transactions with market participants at the measurement date, not through fire sales.

“At the measurement date” means that fair value should reflect the conditions that exist at the balance sheet date. For example, if markets are illiquid and credit risk premia are at unusually high levels at that date, then fair values should reflect those conditions. In particular, firms should not incorporate their expectations of market liquidity and credit risk premia returning to normal over some horizon, regardless of what historical experience, statistical models, or expert opinion indicates.

An “orderly transaction” is one that is unforced and unhurried. The firm is expected to conduct usual and customary marketing activities to identify potential purchasers of assets and assumers of liabilities, and these parties are expected to conduct usual and customary due diligence. During the credit crunch, these activities could take considerable amounts of time because of the few and noisy signals about the values of positions being generated by market transactions and because of parties' natural skepticism regarding those values. As a result, a temporal slippage arises between the “at the measurement date” and “orderly transaction” aspects of FAS 157's fair value definition that raises practical problems for preparers of financial reports. This slippage is discussed in more detail in Section III.B.

“Market participants” are knowledgeable, unrelated, and willing and able to transact. Knowledgeable parties are not just generally sophisticated and aware of market conditions; they have conducted the aforementioned due diligence and ascertained as best as possible the fair values of the positions under consideration. FAS 157 presumes that, after conducting these activities, either market participants are as knowledgeable as the firms currently holding the positions or they can price any remaining information asymmetry. The standard does not contemplate the idea that information asymmetry between the current holders of positions and potential purchasers or assumers of positions is so severe that markets break down altogether, as appears to have effectively occurred for some positions during the credit crunch.

B. Hierarchy of Fair Value Measurement Inputs

FAS 157 creates a hierarchy of inputs into fair value measurements, from most to least reliable. Level 1 inputs are unadjusted quoted market prices in active markets for identical items. With a few narrow exceptions, FAS 157 explicitly requires firms to measure fair values using level 1 inputs whenever they are available.

Level 2 inputs are other directly or indirectly observable market data. There are two broad subclasses of these inputs. The first and generally preferable subclass is quoted market prices in active markets for similar items or in inactive markets for identical items. These inputs yield adjusted mark-to-market measurements that are less than ideal but usually still pretty reliable, depending on the nature and magnitude of the required valuation adjustments. The second subclass is other observable market inputs such as yield curves, exchange rates, empirical correlations, et cetera. These inputs yield mark-to-model measurements that are disciplined by market information, but that can only be as reliable as the models and inputs employed. In the author's view, this second subclass usually has less in common with the first subclass than with better quality level 3 measurements described below.

Level 3 inputs are unobservable, firm-supplied estimates, such as forecasts of home price depreciation and the resulting credit loss severity on mortgage-related positions. These inputs should reflect the assumptions that market participants would use, but they yield mark-to-model valuations that are largely undisciplined by market information. Due to the declining price transparency during the credit crunch, many subprime positions that firms previously fair valued using level 2 inputs inevitably had to be fair valued using level 3 inputs.

As discussed in more detail in Section IV.B, while level 2 inputs generally are preferred to level 3 inputs, FAS 157 does not necessarily require firms to use level 2 inputs over level 3 inputs. Firms should use "the assumptions that market participants would use in pricing the asset or liability." When markets are illiquid, firms can make the argument that available level 2 inputs are of such low quality that market participants would use level 3 inputs instead.

If a fair value measurement includes even one significant level 3 input, then it is viewed as a level 3 measurement. FAS 157 sensibly requires considerably expanded disclosures for level 3 fair value measurements.

Potential Criticisms of Fair Value Accounting During the Credit Crunch

This section discusses the three potential criticisms of fair value accounting during the credit crunch previously mentioned in Section I. It also indicates the guidance in FAS 157 that is most relevant to these criticisms and provides some factual observations as well as the author's views about these criticisms and guidance.

A. Unrealized Gains and Losses Reverse⁵

This section discusses two distinct reasons why unrealized gains and losses may reverse with greater than 50% probability. First, the market prices of positions may be bubble prices that deviate from fundamental values. Second, these market prices may not correspond to the future cash flows most likely to be received or paid because the distribution of future cash flows is skewed. For example, the distribution of future cash flows on an asset may include some very low probability but very high loss severity future outcomes that reduce the fair value of the asset.

1. Bubble Prices

The financial economics literature now contains considerable theory and empirical evidence that markets sometimes exhibit "bubble prices" that either are inflated by market optimism and excess liquidity or are depressed by market pessimism and illiquidity compared to fundamental values. Bubble prices can result from rational short-horizon decisions by investors in dynamically efficient markets, not just from investor irrationality or market imperfections.⁶ Whether bubble prices have existed for specific types of positions during the credit crunch is debatable, but it certainly is possible.⁷

In FAS 157's hierarchy of fair value measurement inputs, market prices for the same or similar positions are the preferred type of input. If the market prices of positions currently are depressed below their fundamental values as a result of the credit crunch, then firms' unrealized losses on positions would be expected to reverse in part or whole in future periods. Concerned with this possibility, some parties have argued that it would be preferable to allow or even require firms to report amortized costs or level 3 mark-to-model fair values for positions rather than level 2 adjusted mark-to-market fair values that yield larger unrealized losses.⁸

If level 1 inputs are available, then with a few narrow exceptions FAS 157 requires firms to measure fair values at these active market prices for identical positions without any adjustments for bubble pricing. However, if only level 2 inputs are available and firms can demonstrate that these inputs reflect forced sales, then FAS 157 (implicitly) allows firms to make the argument that level 3 mark-to-model based fair values are more faithful to FAS 157's fair value definition.

The author agrees with the FASB's decision in FAS 157 that the possible existence of bubble prices in liquid markets should not affect the measurement of fair value. It is very difficult to know when bubble prices exist and, if so, when the bubbles will burst. Different firms would undoubtedly have very different views about these matters, and they likely would act in inconsistent and perhaps discretionary fashions. To be useful, accounting standards must impose a reasonably high degree of consistency in application.

It should also be noted that amortized costs reflect any bubble prices that existed when positions were incepted. In this regard, the amortized costs of subprime-mortgage-related positions incepted during the euphoria preceding the subprime crisis are far more likely to reflect bubble prices than are the current fair values of those positions.

2. Skewed Distributions of Future Cash Flows

Fair values should reflect the expected future cash flows based on current information as well as current risk-adjusted discount rates for positions. When a position is more likely to experience very unfavorable future cash flows than very favorable future cash flows, or vice-versa — statistically speaking, when it exhibits a skewed distribution of future cash flows — then the expected future cash flows differ from the most likely future cash flows. This implies that over time the fair value of the position will be revised in the direction of the most likely future cash flows with greater than 50% probability, possibly considerably greater. While some parties appear to equate this phenomenon with expected reversals of unrealized gains and losses such as result from bubble prices, it is not the same thing. When distributions of future cash flows are skewed, fair values will tend to be revised by relatively small amounts when they are revised in the direction of the most likely future cash flows but by relatively large amounts when they are revised in the opposite direction. Taking into account the sizes and probabilities of the possible future cash flows, the unexpected change in fair value will be zero on average.

Financial instruments that are options or that contain embedded options exhibit skewed distributions of future cash flows. Many financial instruments have embedded options, and in many cases the credit crunch has accentuated the importance of these embedded options. Super senior CDOs, which have experienced large unrealized losses during the credit crunch, are a good example. At inception, super senior CDOs are structured to be near credit riskless instruments that return their par value with accrued interest in almost all circumstances. Super senior CDOs essentially are riskless debt instruments with embedded written put options on some underlying set of assets. Super senior CDOs return their par value with accrued interest as long as the underlying assets perform above some relatively low threshold (reflecting the riskless debt instruments), but they pay increasingly less than this amount the more the underlying assets perform below that threshold (reflecting the embedded written put options). As a result of the embedded written put options, the fair values of super senior CDOs typically are slightly less than the values implied by the most likely cash flows. During the credit crunch, the underlying assets (often subprime mortgage-backed securities) performed very poorly, increasing the importance of the embedded put option and decreasing the fair value of super senior CDOs further below the value implied by the most likely outcome, which for some super seniors may still be to return the par value with accrued interest.

To illustrate this subtle statistical point, assume that the cash flows for a super senior CDO are driven by home price depreciation, and that the distribution of percentage losses is modestly skewed with relatively small probability of large losses, as indicated in the following table.

Home Price Depreciation	Probability Occurs	Estimated Loss on (Value Of) Super Senior CDO as a Percentage of Par Value
<10%	20%	0% (100%)
15%	40%	5% (95%)
20%	25%	20% (80%)
25%	10%	40% (60%)
30%	5%	80% (20%)

In this example, the most likely percentage loss on the super senior is 5%, which occurs 40% of the time. The expected percentage loss is a considerably larger 15% = $(40\% \times 5\%) + (25\% \times 20\%) + (10\% \times 40\%) + (5\% \times 80\%)$, because it reflects the relatively small probabilities of large losses. The fair value of the super senior is reduced by the expected percentage loss and so is 85% of face value. Over time, this fair value will be revised upward with 60% probability, to either 95% of face value (with 40% probability) or 100% of face value (with 20% probability). The fair value will be revised downward with only 40% probability, to 80% of face value (with 25% probability) or 60% of face value (with 10% probability) or 20% of face value (with 5% probability). The expected change in fair value is zero, however, because the lower probability but larger possible fair value losses are exactly offset by the higher probability but smaller possible fair value gains. The difference between the most likely and expected change in fair value would be larger if the distribution of cash flows was more skewed.

In the author's view, it is more informative to investors for accounting to be right on average and to incorporate the probability and significance of all possible future cash flows, as fair value accounting does, than for it to be right most of the time but to ignore relatively low probability but highly unfavorable or favorable future cash flows. Relatedly, by updating the distribution of future cash flows each period, fair value accounting provides investors with timelier information about changes in the probabilities of large unfavorable or favorable future cash flows. Such updating is particularly important in periods of high and rapidly evolving uncertainty and information asymmetry, such as the credit crunch.

B. Market Illiquidity

Together, the “orderly transaction” and “at the measurement date” elements of FAS 157’s fair value definition reflect the semantics behind the “fair” in “fair value.” Fair values are not necessarily the currently realizable values of positions; they are hypothetical values that reflect fair transaction prices even if current conditions do not support such transactions.

When markets are severely illiquid, as they have been during the credit crunch, this notion yields significant practical difficulties for preparers of firms’ financial statements. Preparers must imagine hypothetical orderly exit transactions even though actual orderly transactions might not occur until quite distant future dates. Preparers will often want to solicit actual market participants for bids to help determine the fair values of positions, but they cannot do so when the time required exceeds that between the balance sheet and financial report filing dates. Moreover, any bids that market participants might provide would reflect market conditions at the expected transaction date, not the balance sheet date.

When level 2 inputs are driven by forced sales in illiquid markets, FAS 157 (implicitly) allows firms to use level 3 model-based fair values. For firms to be able to do this, however, their auditors and the SEC generally require them to provide convincing evidence that market prices or other market information are driven by forced sales in illiquid markets. It may be difficult for firms to do this, and if they cannot firms can expect to be required to use level 2 fair values that likely will yield larger unrealized losses.

In the author’s view, the FASB can and should provide additional guidance to help firms, their auditors, and the SEC individually understand and collectively agree what constitutes convincing evidence that level 2 inputs are driven by forced sales in illiquid markets. The FASB could do this by developing indicators of market illiquidity, including sufficiently large bid-ask spreads or sufficiently low trading volumes or depths. These variables could be measured either in absolute terms or relative to normal levels for the markets involved. When firms are able to show that such indicators are present, the FASB should explicitly allow firms to report level 3 model-based fair values rather than level 2 valuations as long as they can support their level 3 model-based fair values as appropriate in theory and with adequate statistical evidence. Requiring firms to compile indicators of market illiquidity and to provide support for level 3 mark-to-model valuations provides important discipline on the accounting process and cannot be avoided.

Relatedly, the author also believes that the FASB should require firms to disclose their significant level 3 inputs and the sensitivities of the fair values to these inputs for all of their material level 3 model-based fair values. If such disclosures were required, then level 3 model-based fair values likely would be informationally richer than poor quality level 2 fair values.

C. Adverse Feedback Effects and Systemic Risk

By recognizing unrealized gains and losses, fair value accounting moves the recognition of income and loss forward in time compared to amortized cost accounting. In addition, as discussed in Section IV.A.1 unrealized gains and losses may be overstated and thus subsequently reverse if bubble prices exist. If firms make economically suboptimal decisions or investors overreact because of reported unrealized gains and losses, then fair value accounting may yield adverse feedback effects that would not occur if amortized cost accounting were used instead. For example, some parties have argued that financial institutions' write-downs of subprime and other assets have caused further reductions of the market values of those assets and possibly even systemic risk. These parties argue that financial institutions' reporting unrealized losses has caused them to sell the affected assets to raise capital, to remove the taint from their balance sheets, or to comply with internal or regulatory investment policies.⁹ These parties also argue that financial institutions' issuance of equity securities to raise capital have crowded out direct investment in the affected assets.

In the author's view, it is possible that fair value accounting-related feedback effects have contributed slightly to market illiquidity, although he is unaware of any convincing empirical evidence that this has been the case. However, it is absolutely clear that the subprime crisis that gave rise to the credit crunch was primarily caused by firms, investors, and households making bad operating, investing, and financing decisions, managing risks poorly, and in some instances committing fraud, not by accounting. The severity and persistence of market illiquidity during the credit crunch and any observed adverse feedback effects are much more plausibly explained by financial institutions' considerable risk overhang¹⁰ of subprime and other positions and their need to raise economic capital, as well as by the continuing high uncertainty and information asymmetry regarding those positions. Financial institutions actually selling affected assets and issuing capital almost certainly has mitigated the overall severity of the credit crunch by allowing these institutions to continue to make loans. Because of its timeliness and informational richness, fair value accounting and associated mandatory and voluntary disclosures should reduce uncertainty and information asymmetry faster over time than amortized cost accounting would, thereby mitigating the duration of the credit crunch.

Moreover, even amortized cost accounting is subject to impairment write-downs of assets under various accounting standards and accrual of loss contingencies under FAS 5. Hence, any accounting-related feedback effects likely would have been similar in the absence of FAS 157 and other fair value accounting standards.

Summary of Reasons Why Some Believe that Fair Value Accounting Benefits Investors

In the author's observation, the FASB and IASB, most trading-oriented financial institutions, most investor associations,¹¹ and most accounting academics¹² believe that overall fair value accounting benefits investors compared to accounting based on alternative measurement attributes, including amortized cost accounting. This section summarizes the benefits of fair value accounting and indicates the prior section of the paper in which these benefits are discussed.

1. Even if markets exhibit bubble prices, fair values are more accurate, timely, and comparable across different firms and positions than are alternative measurement attributes, as discussed in Section II.
 - a. Fair values reflect current information about future cash flows and current risk-adjusted discount rates, as discussed in Section II.A.
 - i. In contrast, amortized costs can differ dramatically from fundamental values and be very untimely for long-lived positions, as discussed in Section II.B.
 - ii. Amortized costs reflect any bubble prices that existed when positions were incepted. In particular, the amortized costs of subprime-mortgage-related positions incepted during the euphoria preceding the subprime crisis are far more likely to reflect bubble prices than are the current fair values of those positions.
 - b. Fair value accounting self-corrects over time in a timely fashion, as discussed in Section II.A.
 - i. This self-correcting quality is particularly important in periods of high and rapidly evolving uncertainty and information asymmetry, such as the credit crunch.
 - ii. In contrast, amortized cost accounting does not self-correct until gains and losses are realized, as discussed in Section II.B.
 - c. The comparability of the fair values of different positions is particularly important in assessing the net value and risks of financial institutions' portfolios of financial instruments, as discussed in Section II.C.
 - i. In contrast, amortized costs are inconsistently untimely across positions incepted at different times, as discussed in Section II.B.
2. As discussed in Section III, while the credit crunch raises issues for fair value measurements, under FAS 157 fair values need not reflect fire sale values. When level 2 inputs are driven by fire sales, firms can make the argument that level 3 model-based fair values are allowed under FAS 157. Requiring firms to make this argument provides important discipline on the accounting process.
 - a. One should not confuse the need for the FASB to provide additional guidance regarding how to measure fair values in illiquid markets with amortized cost accounting being preferable to fair value accounting. As discussed in Section II.B, amortized cost accounting has severe limitations even in liquid markets. These limitations become more significant in illiquid markets, because it is then that investors most need to be able to assess firms' value and risks accurately and that firms' incentives to manage their owners' equity and net income through gains trading are highest.

- 3.** Fair value accounting does not allow firms to manage their income through gains trading, because gains and losses are recognized when they occur, not when they are realized.

 - a.** In contrast, amortized cost accounting allows gains trading, especially by financial institutions, as discussed in Section II.B.
- 4.** As discussed in Section IV.A.2, when the distributions of future cash flows are skewed, it is more informative to investors to be right on average and to incorporate the probability and significance of all possible future cash flows, as fair value accounting does, than to be right most of the time but ignore relatively low probability but highly favorable or unfavorable future cash flows. It is also important to update the distribution of future cash flows for new information on a timely basis, as fair value accounting does.
- 5.** Fair value accounting is the best platform for mandatory and voluntary disclosure and for investors to be aware of what questions to ask management, as discussed in Section II.A.

 - a.** GAAP already mandates some useful disclosures, which the FASB can and surely will improve and extend to more positions over time.
 - b.** When firms report unrealized gains and losses under fair value accounting, their managements are motivated to explain what went right or wrong during the period and the nature of any fair value measurement issues.

 - i.** Firms have begun to make useful fair value-related voluntary disclosures, and leading-practices are developing.
 - c.** If managements do not provide adequate explanations, then investors at least are aware that something value-relevant happened during the period and can prod managements to explain further.
 - d.** In contrast, amortized cost accounting ignores unrealized gains and losses until they are realized, as discussed in Section II.B. Hence, firms typically are not required or motivated to explain economic gains and losses prior to realization. Investors may not even be aware when valuation relevant events occur during periods.

Summary of Reasons Why Some Believe that Fair Value Accounting Hurts Investors

In the author's observation, virtually all traditional banks¹³ and other traditional financial institutions, most bank regulators (although this is changing with Basel II and other recent regulatory decisions),¹⁴ and some investors and accounting academics¹⁵ believe that fair value accounting hurts investors compared to accounting based on amortized cost or other measurement attributes, at least in some circumstances. This section catalogs the potential harms of fair value accounting and indicates the prior sections of the paper in which these potential harms are discussed. Some additional discussion of the author's views is provided regarding points not addressed in prior sections of the paper.

1. When markets are illiquid, fair value is a poorly defined notion involving hypothetical transaction prices that cannot be measured reliably, regardless of how much measurement guidance the FASB provides.
 - a. In the author's view, while this point contains considerable truth as discussed in Section IV.B, it is not really a criticism of fair value accounting per se. There are many contexts in accounting where measurements are difficult to make, such as noncash exchanges and bundled sales of goods that are never sold separately as well as impairment write-downs of illiquid real and intangible assets that are otherwise accounted for at amortized cost. In these contexts, accounting measurements often involve hypothetical transactions. Hence, this point essentially boils down to the true statement that some difficult measurement settings necessarily involve hypothetical transactions. In fact, one could argue that fair value accounting for financial instruments is unusual for the opposite reason that the fair values of these instruments often can be based on actual current market transactions, not hypothetical transactions.
2. When fair values are provided by sources other than liquid markets, they are unverifiable and allow firms to engage in discretionary income management and other accounting behaviors.
 - a. The comparative advantage of accounting is to provide verifiable and auditable information.
 - b. In the author's view, while this point also contains considerable truth as discussed in Section II.A, it ignores the mitigation of the limitations of fair value accounting through disclosure as well as the severe limitations of amortized cost accounting discussed in Section II.B. It also ignores the fact that many amortized cost accounting estimates (e.g., goodwill impairments) are difficult to verify and audit.
3. By recognizing unrealized gains and losses, fair value accounting creates volatility in firms' owners' equity (including financial institutions' regulatory capital) and net income that need not correspond to the cash flows that will ultimately be realized.
 - a. If firms are willing and able to hold positions to maturity, unrealized gains and losses resulting from changes in riskless rates and credit risk premia are meaningless because the firms will ultimately receive or pay the promised cash flows.
 - i. In the author's view, this point is clearly incorrect, as discussed in Section II.B.

Notes

- ¹ Ryan (2008) provides a detailed description of the causes and evolution of the subprime crisis, which began in February 2007, and the credit crunch it engendered, which began in July 2007.
- ² For example, U.S. Representative Barney Frank, the chairman of the United States House of Representatives' Financial Services Committee, has asked for fair value accounting rules to be reconsidered.
- ³ More subtly, under current GAAP and accounting practices, interest revenue and expense generally are calculated on an amortized cost basis even when fair value accounting is used. As discussed in Ryan (2007, Chapter 6), this has the unfortunate effect of making unrealized gains and losses appear to reverse each period by the difference between fair value interest and amortized cost interest (i.e., the error in the measurement of interest). The FASB can and should remedy this problem by requiring interest to be calculated on a fair value basis.
- ⁴ Whether fair value accounting is desirable for non-financial (e.g., manufacturing and retailing) firms that primarily hold tangible and intangible assets with very different risk characteristics than their primarily financial liabilities is a more complicated question that is beyond the scope of this white paper. Nissim and Penman (2008) argue that amortized cost accounting has a transaction/outcome-oriented focus that better reveals how these firms deliver on their business plans and thereby earn income over time.
- ⁵ This section does not discuss apparent reversals of unrealized gains and losses that result from interest being calculated on an amortized cost basis even when fair value accounting is used. See footnote ³.
- ⁶ Barlevy (2007) is a very readable discussion of asset price bubbles and the related financial economics literature.
- ⁷ In the author's view, there is little or no reason to believe that relatively junior subprime positions have exhibited bubble pricing during the credit crunch. For example, Markit's indices for relatively junior subprime MBS positions generally have declined toward zero with no significant reversals over time, even after market liquidity improved somewhat beginning in March 2008. Moreover, the Bank of England (2008, pp. 7 and 18-20) finds these indices to be fairly close to the model-based values given reasonable loss scenarios. In contrast, there is at least some reason to believe that relatively senior subprime positions may have exhibited bubble pricing during this period. For example, Markit's indices for these positions exhibited sizeable reversals of prior losses during November-December 2007 and again in March-May 2008, although both these reversals can be explained by interventions by policymakers (the first by the Treasury Department's rescue plan for SIVs and the second by various aggressive actions taken by the Federal Reserve in March 2008). Moreover, the Bank of England concludes that these indices are considerably below modeled values even in extremely adverse loss scenarios. This could be explained by the fact the credit derivatives on which Markit's indices are based are themselves subject to illiquidity and counterparty risk.
- ⁸ See Johnson (2008a,b) and Rummell (2008) for discussion of parties holding such views.

- ⁹ For example, the International Monetary Fund (2008) states that “[a]ccounting standard setters will increasingly need to take into account the financial stability implications of their accounting practices and guidance” (p. xiv). Also, while “fair value accounting gives the most comprehensive picture of a firm’s financial health...investment decision rules based on fair value accounting outcomes could lead to self-fulfilling forced sales and falling prices when valuations fell below important thresholds (either self-imposed by financial institutions or by regulation)” (p. 127).
- ¹⁰ Gron and Winton (2001) show that financial institutions’ risk overhang (i.e., risk remaining from past business decisions that cannot be eliminated due to market illiquidity) can cause them to reduce or eliminate their trading activity in positions whose risks are correlated with their risk overhang.
- ¹¹ See Center for Financial Market Integrity (2005).
- ¹² See American Accounting Association Financial Accounting Standards Committee (2000).
- ¹³ See the American Banking Associations website (policy positions index, fair value accounting).
- ¹⁴ See Bies (2008).
- ¹⁵ See Nissim and Penman (2008).

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888 17th Street, NW ■ Suite 500

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