

Implementing FAS 133: From Theory to Practice

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It's one thing to understand the conceptual framework of the new hedge accounting standard; but it's quite another thing to try to apply it. The new rules will require firms to acquire or adapt their treasury systems to fully comply with the FAS 133 requirements. Most critically, derivative instruments must be recorded in financial statements at their fair market values; and beyond that, additional analytics are required for even the most basic accounting entrees.

The new rules, originally intended to become effective for fiscal years beginning after December 15, 1998, but now postponed for one year, require users of derivative instruments to classify the use of the derivatives under one of the following categories:

- 1) For speculative purposes.
- 2) To hedge the exposure associated with the price-fluctuations of an asset, liability, or firm commitment.
- 3) To hedge the exposure associated with an uncertain forecasted cash flow.
- 4) To hedge the exposure associated with the currency component of a net investment in a foreign operation.

Given one of these designations, the accounting treatment is prescribed.

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For speculative applications, derivative gains or losses must be marked-to-market and gains or losses will be realized in the current period's income.

For fair value hedges, the accounting for the derivative is the same as it is for speculative uses. However, the underlying exposures due to the risks being hedged must also be marked-to-market; and these results also flow through current income. Ideally, the hedge will produce gains or losses that will offset the losses or gains on the underlying exposure, such that there will be minimal impact to earnings.

For cash flow hedges, derivative gains or losses must be evaluated, with a determination made as to how much of the result is "effective" and how much is "ineffective." The ineffective component of the hedge must be realized in current income, while the effective portion is initially posted to "other comprehensive income" and later closed out to income in the same time frame in which the forecasted cash flows affect earnings. Importantly, the FASB only recognizes hedges as being ineffective for accounting purposes when the hedge effects exceed the effects of the underlying forecasted cash flows, measured on a cumulative basis.

For hedges of the currency exposure of a net investment in foreign operations, again, hedges must be marked-to-market. This time, the treatment maintains the

current provisions of the FASB Statement 52, which requires effective hedge results to be consolidated with translation adjustments in other comprehensive income. Differences between total hedge results and the translation adjustments being hedged will flow through earnings.

Conceptually, these rules may appear to be straightforward, but implementation requires careful attention to some critical subtleties. Complicating the effort for those trying to follow the standard is the fact that basic terms may be defined to mean something other than normal usage within the context of SFAS 133. For cash flow hedges, the critical issue is the determination of how to assess effectiveness. For fair value hedges, it is the question of what is meant by “fair value.” In order to comply with the requirements of SFAS 133, these definitions must be clearly understood; and this understanding must be incorporated in any FAS 133-compliant accounting system.

Effective Hedges

In common usage, a hedge is typically deemed to be effective if it satisfies its intended economic objectives. For example, forward contracts and futures contracts are known to be effective price-fixing mechanisms. Both can be used to “lock-in” the price of some associated underlying instrument, for some deferred value date. Moreover, if the terms of these contracts match those of the underlying risk or the “hedged item” (i.e., the notional amounts, timing, etc.), these tools will perfectly satisfy their intended objective. Similarly, if an option is

purchased to cover the risk of an adverse price move beyond the threshold of the option's strike price, again with the caveat that the critical terms match up, this option will perfectly satisfy its intended objective.

Given the deterministic nature of these "perfect hedges," one might expect that such hedges would be recognized as being entirely effective under FAS 133, such that no earnings effect would be recorded. This expectation, however, will not pan out. The problem is that the FASB defines effectiveness in a very precise way, and perfect economic hedges often generate "ineffective" results.

As a prerequisite to receiving favorable hedge accounting treatment under FAS 133, a hedge must be expected to be highly effective, and its effectiveness must be measured regularly. The accounting treatment only differentiates between the effective and ineffective results, however, in the case of a cash flow hedge. Put another way, for fair value hedges, *all* of the derivative's gain or loss is recorded in earnings -- whether those results are effective or ineffective. In contrast, for cash flow hedges, effective and ineffective results are treated differently: Only ineffective results go to earnings, while effective results go to other comprehensive income.

Under SFAS 133, effectiveness for cash flow hedges is measured by comparing the derivative's gain or loss with the change in the cash flows (or the present value of the cash flow changes) of the associated hedged item. It cannot be

assumed, however, that hedges that perform perfectly in an economic sense will generate a perfect offset. Rather, in the general case, at least some degree of income volatility should be expected.

The issue may be most severe in the case where purchased options serve as a traditional, insurance-type hedges. In such cases, hedge effectiveness is typically assessed by comparing changes in the intrinsic value¹ of the option to the fair value or cash flow changes in the hedged item. That is, time value² changes generally will be excluded from the effectiveness consideration, because the intrinsic value changes, specifically, provide the intended offset. Given this election to exclude the time value from the effectiveness consideration, SFAS 133 requires time value effects to be realized in current earnings. Long option hedges will thus inevitably contribute to income volatility and therefore will have the *appearance* of being ineffective.³ This consideration will likely be particularly problematic for users of interest rate caps and floors, where individual instruments actually are a composite of multiple options, such that the magnitudes of these effects may more likely appear to be material.

Fair value

In the context of SFAS 133, the term “fair value” is defined to be the market price of the instrument in question; and as a consequence, a market quotation is the

¹ Intrinsic value is the amount that can be extracted by exercising the option and then liquidating the resulting position in the underlying market, with the caveat that this amount must be beneficial or positive.

² Time value is the difference between the full price of an option and its intrinsic value.

³ This conclusion holds for fair value hedges, as well.

preferred measure. The FASB recognizes, however, that many markets may not have liquid or transparent pricing, and as a consequence those who prepare financial statements are expected to make use of valuation models to estimate fair values.

The precise measure of model-generated fair value will likely differ from case to case. These differences arise because no single model is universally accepted, and because model users may assume somewhat different values for the variables that serve as inputs to the model. These discrepancies, aside, in the general case, the fair value of a derivative should be expected to reflect the present value of all of its expected future cash flows. Just the choice of the appropriate discounting factor will contribute to valuation variations.

Beyond fair value, per se, SFAS 133 makes specific reference to *fair value changes*. Those uninitiated to the ways of SFAS 133 might reasonably expect this change to be calculated as the difference between the present value of the instrument in question at, say, the end of the accounting period, versus the present value at the start of the accounting period. But, in fact, this difference is *not* what the FASB has in mind. The FASB defines the change in the fair value for a hedged asset or liability to exclude changes in the present value that would be due to other factors than the specific risk being hedged.

To illustrate the issue, consider the case of a fair value hedge, where an interest rate swap is used to swap a fixed rate loan into floating. In assessing the effectiveness of this hedge, the derivative's result should be compared to the change in the fair value of the loan. Both the hedge and the hedged item deserve further scrutiny.

With respect to the swap, the total gains or losses would be comprised of the change in the present value of the swap over the period, plus (minus) net cash inflows (outflows) during the period. This value is the amount that would be gained or lost, if the swap were initially traded at time t-1 and liquidated at t.

Mathematically,

$$P\&L(t) = PV(t) - PV(t - 1) + CF(t)$$

Where	P&L(t)	=	Total profit/loss during period t
	PV(t)	=	Present value at the end of the period t
	CF(t)	=	Cash inflows less outflows during period t

Note that a positive value should be assigned to the present value of an asset, while a negative value would be assigned to the present value of a liability.⁴

On the debt side, the economic profit (loss) is determined analogously; however, the relevant basis adjustment (B) would subtract from this gain or loss any

⁴ It is particularly important that a system appropriately captures all components of the derivative's results and that accruals are not double counted.

change in the present value that would have occurred, independent of a change in interest rates⁵. That is,

$$\begin{aligned} B &= PV(t) - PV(t - 1) + CF(t) - [PV^*(t) - PV(t - 1) + CF(t)] \\ &= PV(t) - PV^*(t) \end{aligned}$$

where $PV^*(t)$ is the present value taken at the end of period t , but assuming no change in interest rates.

Unfortunately, at the time of this writing, the guidance from the FASB as to how to calculate $PV^*(t)$ has yet to be issued. Three possibilities might reasonably be considered:

1. Calculate $PV^*(t)$ using the yield-to-maturity of the instrument at the start of the accounting period
2. Freeze the entire discount rate curve at the start of the accounting period, and discount each prospective cash flow by the initial discount rate appropriate for the time horizon at the end of the accounting period.
3. Generate forward rates from the original discount rate curve for each prospective cash flow at the end of the accounting period; and use these forward rates to discount those cash flows.

For example, suppose an entity issues fixed rate debt with a six-month horizon and quarterly interest payments. Simultaneously the firm enters

⁵ The example also assumes that the credit rating of the debt remained unchanged over the accounting period.

into swap to convert from fixed to floating rates. Further, assume that the quarters of the debt coincide perfectly with the accounting quarters. The issue at hand is how to measure PV* at the end of the first quarter.

Suppose that the conditions at the start of the first quarter were the following⁶:

Spot 3-month rates	-	5 %
Spot 6-month rates	-	6%
3-month rate, 3 months forward	-	7%

Under the first methodology, PV* at the end of the first quarter would be calculated using the 6 percent interest rate (i.e., reflecting the initial yield to maturity); in the second method, 5 percent would be used; and in the third, 7 percent would be used. It should be obvious that the different methodologies could result in substantially different basis adjustments for the hedged item, depending on the shape of the yield curve.

This uncertainty notwithstanding, it is important to note that interest accruals associated with this debt -- whether in connection with coupon accruals or amortization schedules -- must also continue to be recorded in earnings, separate and apart from the SFAS 133 requirements. Moreover, following each

⁶ Generally, bond yields will be quoted on a bond-equivalent basis. For this presentation, however, all yields are expressed as money market rates, for ease of comparisons. Moreover, to simplify the exposition, the rates shown do not reflect a “risk-neutral” environment where no arbitrage opportunities are present. This simplification, however, does not detract from the thrust of the discussion.

adjustment to the basis from the fair value hedge effects, a new calculation for prospective amortization becomes necessary to ensure that the retirement value of the debt will fully accrete to par at maturity.

At this point, it should be clear that besides imposing a new conceptual framework on the accounting for derivative instruments, whether intentionally or unintentionally, the FASB also has mandated an unprecedented level of reliance on valuation models and accounting systems. The calculations that are required by even the most straightforward derivative instruments are simply too mathematically challenging to leave to the back of an envelope. Achieving a comfort level with a system -- i.e., understanding what it's doing and having confidence that it is compliant with SFAS 133 requirements -- is no trivial task. Luckily, the postponement of the implementation date should give users a window of opportunity to find a system that will appropriately suit their needs.

FAS133 Diagram

Sungard Treasury Systems GTM Applications - FAS133 Summary

Current & Previous Accounting Period End FAS Summary
FAS Unit 000035

Earnings Summary

	Earnings	Effectiveness	Hedge-Accounting Treatment
5/31/99	623.65	99.965%	Interest-Rate Fair Value
4/30/99	-316.12	99.976%	Interest-Rate Fair Value

Exposure Summary: Debt: Fixed Rate

OF000319

	Periodic dMTM	Cumulative dMTM	MTM (Flat)
5/31/99	21,794.38	51,779,068.27	773,568,454.02
4/30/99	16,079.82	51,759,681.55	773,548,412.10

Hedge Summary: Swap: Receive-Fixed & Pay-Float

SW000086

	Periodic dMTM	Cumulative dMTM	MTM (Flat)
OF000124: Swap Leg: Receive Fixed			
5/31/99	-6,854.65	-9,013.48	-9,897.81
4/30/99	-4,987.56	-7,148.68	-7,740.05

	Periodic dMTM	Cumulative dMTM	MTM (Flat)
OF000125: Swap Leg: Pay Float			
5/31/99	-14,316.08	-51,751,837.91	-51,750,748.25
4/30/99	-11,408.38	-51,739,920.52	-51,739,136.19

FAS Instrument Details by Accounting Period End

Date	Type	ID	Designation Date	Notional Amount	Pricing Curve	
5/31/99	Exposure, Pay-Fixed	OF000319	2/8/99	825,000,000.00	CORP	▲
5/31/99	Hedge; Receive-Fixed Leg	OF000124	2/8/99	825,000,000.00	LIBOR	
5/31/99	Hedge; Pay-Float Leg	OF000125	2/8/99	825,000,000.00	LIBOR	
4/30/99	Exposure; Pay-Fixed	OF000319	2/8/99	825,000,000.00	CORP	
4/30/99	Hedge; Receive-Fixed Leg	OF000124	2/8/99	825,000,000.00	LIBOR	
4/30/99	Hedge; Pay-Float Leg	OF000125	2/8/99	825,000,000.00	LIBOR	▼

Note to the editor: This exhibit is intended as a side-bar to the article. A descriptive paragraph will be forthcoming. Thank you for your consideration.