
ARTICLES

FAS 133 Effectiveness Assessment IssuesSusan Marlena Mangiero • GSM Associates • 15 Jun 2001

Now that the dust is starting to settle on FAS 133, people are taking a closer look at its various elements. Compliance is new enough that best practices are not yet readily available and lessons are still being learned. A topic likely to receive continued attention deals with hedge effectiveness assessment. Effectiveness can best be described as the degree of dollar offset for a derivative instrument, relative to the exposure being hedged. Though different tests are allowed, results are directly impacted by data choices. Moreover, the test methods are not perfect substitutes for each other. Sometimes one method may support a classification of effectiveness while another does not.

Data Issues

According to FAS 133, any company seeking to use hedge accounting must assess effectiveness at trade inception and regularly thereafter. Assessment takes place prospectively when a hedge is initiated and again at the beginning of each reporting period. Assessment also takes place after the fact or retrospectively at the end of each reporting period for as long as the hedge is in place.¹

¹ See Figure 2 of the article entitled "What is FAS 133 Effectiveness and When Does It Matter?" by Anthony Capozzoli for a nice visual overview of the effectiveness assessment and measurement process timeline. February 12, 2001.

The Derivative Implementation Group's Statement 133 Implementation Issue No. E7 lays out the basics regarding methodologies to assess hedge effectiveness. These include techniques that are frequently used in business already such as linear regression. Though the permitted methodologies are straightforward, crunching the numbers depends on data collection and therein lies the challenge.

Figure One (see below) includes a partial checklist of data-related questions. They are interconnected. To see why, consider a company that has decided to use 60 data points to perform all required hedge assessment tests. The analyst responsible for doing the work could either collect 5 years of monthly prices or several months of daily prices or just over a year of weekly prices. The final choice should reflect the underlying economic fundamentals of the hedged item but sometimes data realities intrude.

Suppose a 5-year period is selected and the data collection process begins. How should the decision change if it turns out that data is

not readily available for part of the most recent 5-year period? How should the analyst adjust newer data that is reported differently than in the past? These are two of the many critical issues that must be addressed.

Figure 1

1. What is the appropriate data frequency? Daily? Weekly? Monthly?
2. What calendar time period is relevant?
3. How many data points are needed?
4. Should price levels or price differences be used?
5. Should closing prices be used?
6. Should averages be used in lieu of point-in-time data?
7. Should data be weighted to reflect more recent price action?
8. Which vendor should be used to provide the data?
9. Is the data well behaved or should it be transformed for use in more sophisticated risk management tests?
10. What kind of transformation is appropriate?

Methodological Comparisons

In addition to data issues, a hedger must decide which effectiveness assessment methodology to use. The three methods frequently cited as viable choices include the Dollar Offset Ratio, regression R-Square and the Correlation Coefficient. The Dollar Offset Ratio is defined as the change in fair value of the derivative instrument divided by the change in fair value of the exposure being hedged.²

² Examples of how to compute the periodic versus cumulative Dollar Offset Ratio are presented in Table 1 of the article entitled "Is correlation coefficient the standard for FAS 133 hedge effectiveness?" by Susan and George Mangiero, GARP Risk Review, May 2001, page 22.

Regression R-Square measures the goodness of fit of the estimated linear model and is sometimes referred to as the Coefficient of Determination. The Correlation Coefficient measures linear association for a pair of random variables and takes a value between -1 and +1. For a linear regression that involves only one independent variable, the R-Square can be computed by either

finding the ratio of the Regression Sum of Squares to Total Sum of Squares or by squaring the Correlation Coefficient.

The former method of computation applies to all regressions, regardless of the number of independent variables. Squaring the Correlation Coefficient to find R-Square is valid only for simple regressions. However, FAS 133 effectiveness assessment regressions will never involve more than one independent variable.

Though they are all easy to compute, each metric represents different things. Moreover, they are not always going to support hedge effectiveness, regardless of whether one is testing prospectively or retrospectively. This is a big deal. Once a company selects a method and documents the criteria used to validate that choice, it would be hard to change the testing process without providing sound reasons for doing so. Changing methodology simply to ensure more frequent classification of trades as effective may invite scrutiny.

Regarding classification, a hedge is typically considered effective if the Correlation Coefficient falls between +0.80 and +1.00, the R-Square falls between +0.80 and +1.00 or the Dollar Offset Ratio falls between +0.80 and +1.25. Even though the numerical ranges are similar for the Correlation Coefficient and the R-Square number, they are inconsistent for some values.

For example, a Correlation Coefficient of +0.80 is equivalent to an R-Square value equal to +0.64, a number that would not permit a classification of effectiveness. An R-Square value of +0.80 is equivalent to a Correlation Coefficient of +0.89. Here, choosing the R-Square method and defining the acceptable range as a number that falls between +0.80 to +1.00 suggests more flexibility than would be the case if the Correlation Coefficient were used. Many companies are opting to use the Dollar Offset Ratio.

According to International Treasurer/FAS133.com, "Most companies are using the dollar offset method for both prospective and retrospective assessment of effectiveness. While the dollar offset has some real benefits - for example, it's very simple and relies on existing data - it has some drawbacks as well. It tends to 'magnify' noise when price changes are small or even non-existent, potentially leading to ineffectiveness and hence income volatility".

Figure Two provides a numerical comparison of these three assessment tests.³ Based on this information, an assessment using the Dollar Offset Ratio method could fail to classify a hedge as effective even when the competing methods would result in an assessment of effectiveness. For example, when the correlation is nearly perfect at +0.99, there is a 36% chance that the Dollar Offset Ratio would take a value less than +0.80 or bigger than +1.25.

³ The probability of the ratio X/Y falling below a specified number r can be computed as a function of the correlation coefficient for the X-Y pair. See "A Note on the Assessment of Hedge Effectiveness Using the Dollar Offset Ratio Under FAS 133" by Eduardo Canabarro, Goldman Sachs Fixed Income Research, June 1999, page 3.

Figure Two

CORRELATION COEFFICIENT	R SQUARE	% PROBABILITY OF DOLLAR OFFSET RATIO FALLING OUTSIDE ACCEPTABLE RANGE
+0.80	+0.64	79.52
+0.85	+0.72	76.32
+0.90	+0.81	71.29
+0.95	+0.90	61.38
+0.96	+0.92	57.92
+0.97	+0.94	53.33
+0.98	+0.96	46.81
+0.99	+0.98	36.15

Concluding Comments

Living with FAS 133 presents many challenges. Data issues and testing method selection choice are but two of the many issues facing companies that must comply with this new accounting standard. Measuring ineffectiveness is another topic altogether.

Briefly stated, a company may still end up reporting hedge ineffectiveness even though a hedge has been consistently classified as effective. The two procedures relate to completely different concepts. The dichotomy between assessment and measurement could widen considerably if short-term markets become more volatile, disproportionately affecting the derivative instrument but not the exposure being hedged (or the converse). Improper data choices add to the gap and the problem is more acute when dealing with a cross-hedge or a proxy hedge. The stark reality is that reporting hedge ineffectiveness is inevitable for an overwhelming majority of companies even when assessment test results suggest otherwise. One certainty stands. The ensuing months will be interesting ones.

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