Earnings Impact of Derivatives Under Hedge Accounting

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Under FAS 133, all derivatives must be marked to market and the quarterly changes in value passed to earnings, either directly or through other comprehensive income in the case of a cash flow hedge. If the derivative is a hedge, the resulting earnings volatility can be mitigated by also booking the change in value of the hedged item. This so-called hedge accounting treatment is permitted only if the hedge is shown to be "highly effective."

Establishing whether or not a hedge is effective depends on both the testing procedure and the minimum passing threshold. Ideally, a hedge should be deemed highly effective only if it actually achieves the intended reduction of business risk. A corporation may be tempted to use a lenient test such as correlation in order to qualify easily. However, this may result in winning the battle but losing the war because the hedge may fail to achieve the desired reduction of earnings volatility.

In this article, we demonstrate how to estimate the expected earnings impact of a hedge, using accepted risk management methods. Our example is a fair value hedge that synthetically converts a fixed coupon bond to a LIBOR-based floater.

TESTING FOR EFFECTIVENESS

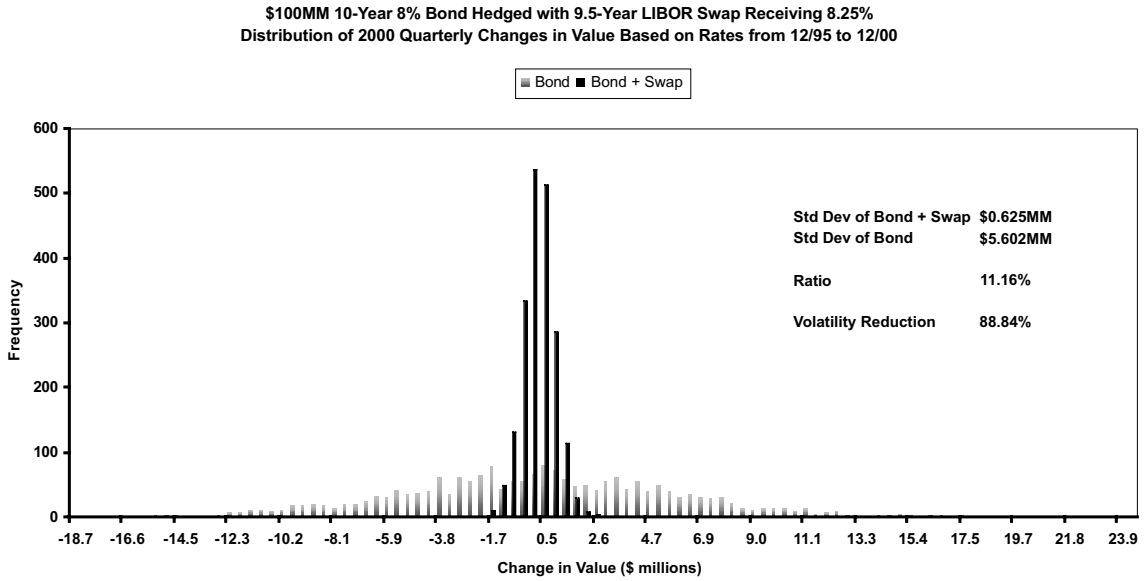
As mentioned earlier, in order to qualify for hedge accounting treatment under FAS 133, a hedge must be shown to be "highly effective." Because the FASB has not provided specific rules, interested parties (corporations, consultants, software providers) have designed their own hedge effectiveness tests. Some of these methods are based on accepted risk management principles while others are "seat of the pants" with quality varying commensurately in the results.

One yardstick that is consistent with risk management techniques is the *volatility reduction measure* (VRM). It is motivated by the fact that volatility reduction is the implicit intent of any hedging activity. While volatility can be measured in a variety of ways, the recommended choice is standard deviation. The scale of this measure when combined with an 80% volatility reduction threshold is completely in line with the familiar 80/125 rule. (The 80/125 rule has the right idea but can produce misleading results. For further discussion of this rule, see the two preceding articles on hedge effectiveness testing.)

As described by the authors in "Testing Hedge Effectiveness: The Volatility Reduction Measure" (*Bank of America Journal of Applied Corporate Finance*, Winter 2001), VRM compares the standard deviation of the hedged item (without the hedge) with that of the hedge package. A hedge is deemed highly effective if it reduces volatility by at least 80%.

EXHIBIT 1

Volatility Reduction Measure (Prospective Test)



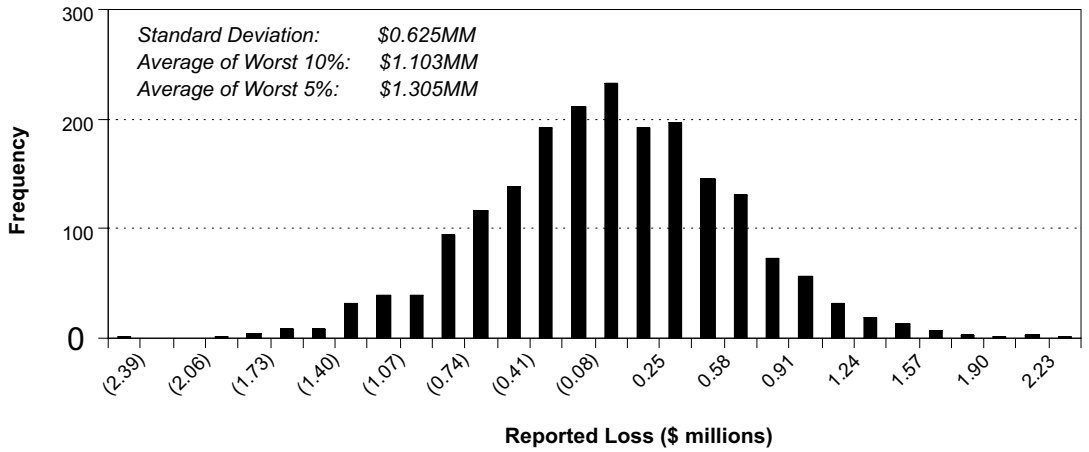
PROJECTING EARNINGS IMPACT

Independent of testing method, given an assumption about future prices, there should be no disagreement about the earnings impact of a hedge. If future price assumptions are provided as a statistical distribution, we can calculate a corresponding distribution of earnings impacts. From the latter we can obtain various representative statistics. These include the standard deviation of the earnings impact, and averages of the relevant tail of the distribution such as that of the worst 5% and the worst 10%.

Consider a corporation that has converted its 10-year, 8% fixed-rate debt obligation into a floater by entering into a "plain-vanilla" interest rate swap in which it pays LIBOR and receives 8.25% fixed. The corporation has indicated that it wishes to hedge only the LIBOR component of interest rates as permitted under FAS 133. As shown in Exhibit 1, this hedge, with a VRM of 88.84%, is highly effective and thus qualifies for hedge accounting treatment. The goal is to project the performance of the hedge at the end of first quarter.

EXHIBIT 2

Simulated Quarterly Loss Under Hedge Accounting ($100MM 10-Year 8% Bond and a 9.5-Year 8.25% LIBOR Swap)



We use Monte Carlo simulation to obtain a distribution of the yield curve one quarter hence. Starting with today's curve, tomorrow's curve is obtained by applying a randomly drawn historical change. This process is repeated 62 times (the number of trading days in a quarter), resulting in a single simulation of a curve one quarter ahead. Using this curve, we obtain the corresponding earnings impact of the hedge.

We repeat this process a large number of times (2,000 in this example) to obtain the distribution of the earnings impact of the hedge (*see Exhibit 2*). The standard deviation of the earnings impact is $0.625 million. The average of the worst 5% of cases is $1.305 million while that of the worst 10% is $1.103 million.

The data allow us to estimate the probability that the reported loss from the hedge will exceed a particular level. For example, the probability of the loss exceeding $1 million is 5.35%; that of exceeding $2 million is less than 0.25%.

CONCLUSION

We have demonstrated how to project the earnings impact of a highly effective hedge. While our example is chosen from the realm of fixed income, our approach is completely general. It can be applied to commodities, currencies, as well as portfolio-based and dynamic hedging strategies.

These results accentuate the importance of using a rigorous hedge effectiveness test. A loose test may qualify a hedge for favorable accounting treatment, but the chickens will come home to roost when it is time to report earnings. Projecting expected earnings behavior serves as an early warning system for the sensible financial executive.