Assessing Interest Rate Caps

Alternatives to swaps, caps have their own costs and benefits

Ira G. Kawaller

Caps may not be for everyone, but far too many companies disregard these useful instruments. AFP member and consultant Ira Kawaller explains.

The idea of an interest rate cap has a lot of appeal: A cap assures the user that funding costs will be bound by some worst-case or maximum interest rate, but it allows for the possibility of borrowing at lower rates if interest rates stay low. What's not to like?

As appealing as the concept might be, prospective users likely have three critical concerns:

a. Will the cap work, i.e., will it do what it's supposed to do?
b. Is the price appropriate?
c. Will the cap foster any adverse impacts on financial statements?

The first of these questions is easy. The other two may be a little trickier.

Do caps work?

Caps do work as advertised, with some qualifications. In a perfect application, the cap buyer would seek a structure corresponding with the terms of the variable rate exposure. For example, if the variable rate loan were tied to one-month LIBOR with interest payments associated with monthly accrual periods, then the ideal swap would have the same one-month LIBOR serving as its underlying interest rate, with the same accrual periods and prospective settlement dates as the loan's. To the extent that these features cannot be perfectly matched, some degree of uncertainty would necessarily follow.

Sometimes a company's funding program might rely on an esoteric interest rate, and a cap dealer might not be willing to offer a cap with the same underlying rate. For example, it's unlikely that a commercial paper issuer would be able to purchase the perfect cap. In this case, the firm might consider using a LIBOR-based cap as a close

substitute. This cap will unquestionably cover the risk of LIBOR rising, but if LIBOR and the firm's commercial paper rates fail to move one-for-one, the cap results won't provide perfect protection. In the parlance of the market place, this hedge would suffer from basis risk.

Pricing concerns

Whether a cap's price is right is difficult to assess because caps are composite instruments. They are actually a series of options or caplets, one for each accrual period and associated interest payment. The price of the cap is the sum of these component option prices.

Option prices (and thus cap prices) are heavily dependent on consensus expectations relating to prospective interest rate volatility (read uncertainty). Higher expected volatility (more uncertainty) means higher cap prices. Making a judgment about whether caps are cheap or rich boils down to being able to assess whether consensus expectations are likely to be realized —not exactly the easiest of exercises.

These expectations are fickle. They tend to adjust whenever unanticipated economic news arises. News releases that are consistent with expectations will generally leave cap prices unaffected, but news that comes as a surprise often has significant pricing impacts. Critically, surprises work in both directions. With news releases affecting interest rates occurring on virtually a daily basis, cap prices can vary widely over short time spans. Unfortunately, we are often most motivated to consider buying caps just when they are most expensive, when the prospects for dramatic rate changes seem most severe. The trick is to buy caps before we need them.

An alternative assessment approach

To a certain extent, it isn't productive to worry whether caps are fairly priced. We presume we shop for a competitive price, but we really face a "take-it-or-leave-it" choice. The best option may be to compare the worst-case costs of funding —inclusive of the cost of the caps—for various caps available.

Consider the hedger who has variable rate funding tied to three-month LIBOR, with the desire to hedge expenses associated with, say, $50 million of variable rate funding over the coming three years. This cap would be composed of 12 caplets––one for each quarter— each having a notional size of $50 million. Beyond the notional size and expiration of the cap, the next most critical decision is the cap's *strike price* or *exercise price*, which determines the threshold interest rate at which the protection kicks in. A LIBOR-based cap with a strike price of 2.5 percent covers the risk of LIBOR rising above 2.5 percent; a strike price of 3.0 percent covers the risk of LIBOR rising about 3.0 percent, etc.

Suppose each of the following caps were available in the market:

Figure 1:

Strike price	Premium	Per annum (p.a.)	Worst case rate (w.c.r.)	ΔPremium	Δw.c.r.
3.00 %	0.68%	0.23%	3.23%	NA	NA
2.75%	0.81%	0.27%	3.02%	0.13%	-0.21%
2.50%	0.96%	0.32%	2.82%	0.15%	-0.20%
2.25%	1.15%	0.38%	2.63%	0.19%	-0.19%
2.00%	1.37%	0.46%	2.46%	0.22%	-0.18%

The price required for each of these caps would be the premium (expressed as a percentage) times the notional size of the cap. Thus, the 3.00%-strike cap would cost $6,800 per million; the 2.75%-strike cap would be $8,100 per million; etc. Moving down the page, we see increasingly better caps, with correspondingly higher premiums. The third column (Per annum), simply divides the premium by the number of years covered by the cap—in this case, three—to give an average cost per year. The worst-case rate (column 4) is the strike price plus the per annum cost. Effectively, this column provides the worst-case funding costs, inclusive of the cost of the cap, where the costs from purchasing the cap are spread evenly across all periods.

The last two columns show the incremental cost for buying the next-best cap and the incremental improvement of the worst-case rate. For instance, to move from the 3.00%-strike to the 2.75%-strike requires paying up 0.13 percent or 13 basis points, and for that you'd be able to improve the worst-case cost by 21 basis points. Upgrading further would require an additional 15 basis points in the annualized premium, to improve the worst-case cost by another 20 basis point. We can see that incremental per annual costs are getting larger as we move down the page, but the improvements in the worst-case costs of funds are getting smaller. Importantly, however, the incremental premium amount is a one-time increase, but the change in the worst-case rate applies for all of the years during the hedge horizon.

The choice of the cap ultimately boils down to selecting from the available offerings, appreciating that this choice involves a trade-off. If interest rates were to rise sharply and remain high, the cap that offers the lowest worst-case outcome would be the preferred choice. (This is the situation when all of the caplets ultimately expire in-the- money.) On the other hand, if rates were to drop sharply and remain low, the cheapest option, or even no option at all, would yield the lowest-cost funding. (This is the case when all of the caplets expire out-of-the-money.) Unfortunately, at the time we have to make our purchase decision, we can't know which cap will yield the best results, because we don't know the future course of interest rates. A forecast might guide our choice, but it's not clear that our forecast will be right. This lack of certainty about future interest rates is what's causing us to hedge in the first place!

A cap, like any option, functions like a form of insurance. The choice of the strike price is like the selection of the deductible: A higher (lower) strike price is analogous to a larger (smaller) deductable. Thus, the choice of the strike price should reflect consideration of (a) what you can afford to pay in the up-front premium with (b) the amount of higher interest expense that you might be able to absorb comfortably. The cap should cover any incremental interest expense beyond the amount you would be willing to bear on your own.

Accounting concerns

At this point, it's appropriate to draw a distinction between the economics of using caps and the associated accounting. Most companies using caps would want to account for their caps using cash flow hedge accounting. Without hedge accounting, all gains or losses on the purchased cap—both realized and unrealized—would flow through current earnings. Thus, without hedge accounting, the current earnings would capture cap results that were intended to cover the economic risks associated with future interest rates. Hedge accounting, on the other hand, allows for a deferral of at least some portion of the cap's gains or losses relating to future accrual periods. Hence, hedge accounting would tend to mitigate income volatility, relative to the normal or undesignated accounting treatment, making hedge accounting the preferred accounting treatment for most companies.

Critically, hedge accounting isn't automatically available. Reporting entities must qualify by properly documenting the hedge relationship and satisfying specific conditions. Even if they meet prerequisites, a variety of accounting outcomes might arise, depending upon the way in which the processes outlined in the documentation when it was prepared at the outset of the hedge.

That said, most companies would likely opt to apply a procedure spelled out in Derivatives Implementation Issue (DIG) G20, "Assessing and Measuring the Effectiveness of a Purchased Option Used in a Cash Flow Hedge." This DIG issue dictates that the cost of the cap must be recognized in earnings, using the so-called caplet method. That is, the cost per period will move higher and higher, reflecting the fact that a caplet for a closer accrual period is a shorter-term option, while a caplet for a more deferred accrual period is a longer-term option.

Consider the three-year, 2.50%-strike price cap, shown in the table above to have a starting premium of 0.96 percent. We see from the following table that this cap is actually a portfolio of 12 caplets, one for each quarter. The closest three caplets happen to have negligible initial values, rounding to zero, but caplet prices rise thereafter. The most distant caplet has an initial value equal to 0.235 percent. Find the worst-case effective rate by adding the strike price of the cap, in this case, 2.50 percent, to the annualized caplet premium, four times the starting premium. For the first three quarters,

Figure 2:

Caplet coverage	Starting premium	Starting annualized premium	Worst case effective rate
Q1	0.000%	0.000%	2.50%
Q2	0.000%	0.000%	2.50%
Q3	0.000%	0.000%	2.50%
Q4	0.005%	0.020%	2.52%
Q5	0.015%	0.060%	2.56%
Q6	0.036%	0.144%	2.64%
Q7	0.069%	0.276%	2.78%
Q8	0.105%	0.420%	2.92%
Q9	0.124%	0.496%	3.00%
Q10	0.165%	0.660%	3.16%
Q11	0.206%	0.824%	3.32%
Q12	0.235%	0.940%	3.44%
Sum	**0.960%**		
Average	0.80%	0.320%	**2.82%**

the worst-case interest rate would be 2.5 percent, but thereafter it rises, reaching 3.44 percent by quarter 12.

No doubt, this unequal cost recognition will serve as a disincentive because higher interest expenses toward the end of the hedge horizon may be unacceptable even when lower costs early on offset them. On the other hand, for those companies that like the idea of back loading costs, the FASB has created a license to do exactly that. Such is life until FASB changes the rules. But don't hold your breath.

Caps and swaps

Caps may not be for everyone, but far too many companies disregard them categorically—possibly due to accounting considerations, but more likely due to the up-front cash requirement. To reject caps on either basis is woefully shortsighted because, more often than not, rejecting caps means embracing swaps.

Swaps generally bear no analogous up-front costs, but neither are they "free." The cost of the swap is a function of foregone opportunities, and it appears in swap losses, which don't fully show until the hedge is complete. In contrast, the cost of a cap, its premium, is known at the outset. This cost may turn out to be considerably cheaper than ultimate swap losses. Managers who ignore this possibility operate at a disadvantage.

Ira Kawaller is the founder of Kawaller and Co., a boutique advisory firm that assists commercial entities in their use of derivatives. He is also Managing Director of the Kawaller Fund. Contact him by email at kawaller@kawaller.com