Yield Curve Implications of Interest Rate Hedges

By
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With the 1994 experience of the Federal Reserve Board raising interest by 300 basis points fading from corporate memory and interest rates currently exhibiting low levels of volatility, many institutions have been lulled into thinking that interest rates don't pose much of a financial risk. The assumption that quiescent conditions in fixed income markets will continue, however, will undoubtedly be challenged at some point; and risks in this area will again become a source of concern. Assuming agreement on this prediction, it makes sense to manage coming interest rate changes is *now,* when a view of stability is prevalent, rather than later when more dire circumstances will seem more imminent. Simply stated, taking a prophylactic action when the perceived risk is greater will undoubtedly be more costly than would be the case if the same actions (i.e., transactions) were undertaken when this risk appears to be less pressing.

Consider, for example, the case of a firm with floating rate debt. Clearly, this entity would bear higher interest expenses with rising interest rates. While a host of solutions exist for covering this risk, as a point of departure, the manager might start by considering the use of an interest rate swap or interest rate futures. Both serve as interest-rate-fixing mechanisms; and with multiple rate re-sets at issue, both synthetically move the borrower from a short-term point on the yield

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curve (e.g., a three- or six-month maturity) to a more distant point, reflected by the tenor of the swap or the length of the futures strip. The critical point is this: If a market consensus arises that short term interest rates will rise, that view will be reflected in the slope of the yield curve; and moving out on the curve – whether synthetically via swaps or futures or by physically restructuring the debt portfolio – will mean locking in an interest rate that may be well above the present cost of funds.

The problem is equally valid with other hedge alternatives. Besides futures and swaps, for instance, the hedger might consider buying a cap; but the price of a cap is influenced by the shape of the yield curve, as well. It should be understood that a cap is nothing more than a series of individual options (often referred to as “caplets”), each protecting a particular rate-setting exposure from the effects of interest rates rising above some threshold rate or strike yield. For example a two-year LIBOR cap with quarterly resets is simply a collection of seven individual options (assuming the interest rate on the first quarter of the two-years is already determined).

The first option covers the risk associated with the first rate reset, three months from now; the second covers the second reset, six months from now; the third covers the third reset nine months from now; etc. Each caplet would be purchased simultaneously (i.e., today); but each should be priced differently, reflecting (a) the time to expiration and (b) the probability that the strike yield will

be breached for the associated rate reset. On the first consideration, the caplets purchased to cover the more distant rate resets (i.e., those with more distant expiration dates) will undoubtedly be more costly, all else being equal. With regard to the second consideration, once again, the key is the yield curve.

With a consensus view that interest rates will remain stable, the yield curve would be flat and forward rates would be fairly uniform for successive forward periods. In an environment where interest rates were widely expected to rise, on the other hand, the yield curve would be upward sloping and forward rates would exhibit a step-like progression, rising for more distant forward periods. These forward rates serve as the market's best indicator of a the likelihood that the cap will become effective in successive periods.

Consider the case of a 6 percent two-year cap. Assume the forward rate associated with the first interest rate reset is 5 percent while the forward rate associated with the last reset is 7 percent. In this example – as with any situation where forward rates are higher for later periods – the likelihood of the cap being effective is smaller for the closer resets and greater for the more distant resets. Thus, the upward slope of the yield curve exaggerates the cost difference between the shorter versus the longer expiration caplets. Put another way, given the same spot market variable interest rate (i.e., for a given spot LIBOR), caps will be more expensive under more positively sloped yield curve conditions, and vice versa.

It should be noted that this yield curve effect is exactly opposite for the investment manager considering the purchase of a floor. In this case, the positively sloped yield curve makes it more likely that the floor will be effective for the near-term rate resets and less likely that it will be effective for the more distant resets.

The yield curve also is relevant for those who look to combine option purchases with option sales as a solution to the problem that they assess caps as being too expensive. For example, one common tactic for mitigating the cash requirement for the purchase of a cap is to sell a floor simultaneously. This combination is commonly referred to as a collar or, alternatively, a fence. In cases where the cost of the cap is exaggerated by yield curve condition, however, these same conditions will have the coincident effect of depressing the receipts associated with the sale of the floors. Put another way, when caps are judged to be expensive, floors will seem to be cheap; and when caps are cheap, floors are expensive. Thus, in an upward sloping yield curve environment, use of a collar in connection with variable rate liabilities pairs the purchase of an expensive cap with the sale of a cheap floor.

Another combination trade that does not suffer from this same criticism – or at least not to the same extent – is the construction of a corridor. Here, the hedger of variable rate debt buys a cap, say with a strike yield of 7 percent; and at the

same time, he/she sells a 9 percent cap. In effect, the corridor covers the risk of rates rising above 7 percent, but the firm gets re-exposed to interest rate risk if rates continue higher, breaking the 9 percent threshold. At the same time, if rates drop below 7 percent, the entity gets to enjoy the benefit of these lower interest rates. With this combination, the yield curve influences are in common for both the purchased and sold caps, so the effect of selling the second cap tends to mitigate (rather than exacerbate) the yield curve effects inherent in the pricing of the purchased cap.

With respect to current market conditions – at least at the time of this writing – the yield curve is quite flat and forward rates are reasonably consistent over a span of 10 years. This assessment can be readily validated by looking at the prices of eurodollar futures, traded at the Chicago Mercantile Exchange (CME). The CME lists these contracts on a quarterly cycle for forty quarters. The difference between the rate associated with the nearby quarter (i.e., the next-to-expire contract) versus the last quarter is currently less than 75 basis points. For a two- year horizon, the difference is only 30 basis points. In contrast, during the1994, analogous differences exceeded 350 and 220 basis points, respectively.

The comparative flatness of the current forward rates should serve as a beacon for financial managers, to cause them to act now to take control of their interest rate exposures. Given a portfolio of fixed income instruments – whether on the

asset side or the liability side – as long as a reasonably extended (i.e., multi-quarter) time horizon is under consideration, delaying the imposition of a hedge program could easily turn out to be a short-sighted decision. In this case, contrary to the old adage, the better alternative might be to strike while the iron is cold!