Bank Asset/Liability Management

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Hedging Loan Commitments

The process of originating new loans involves issuing loan commitments that define the critical terms of the loan, giving the prospective borrower the option to take down the debt within a specified time frame. Thus, in fact, by issuing a commitment, the bank is extending a *put* option to the prospective borrower. That is, the loan commitment grants the prospective borrower the right, but not the obligation, to sell an asset, i.e., the loan, to the bank.

Differentiating this put option from most other options is the fact that this option is granted seemingly for free. While some banks normally charge an application fee, this fee typically reflects some administrative cost, rather than any amount that would be reflective of the fair value of the option, based on standard modeling considerations.

Upon granting this commitment, the bank faces three alternative outcomes:

1. The loan is taken down, and the bank maintains ownership of the loan, realizing a return on that asset over the course of its holding period.

2. The loan is taken down, but instead of holding the loan, the bank elects to sell it in the secondary market. The gain or loss on the asset during any holding period would reflect the difference between the final sales price and the original acquisition price (i.e., the starting balance on the loan).

3. The prospective borrower elects to walk away, and the loan is never consummated. In this case, no gain or loss is realized, save any overhead or administrative costs not covered by the commitment fee.

Suppose the bank expects the first of these three alternatives to be the case in question. In this situation, the loan would have to be financed with some liability, and the bank would realize some associated net interest margin. Given the fact that the interest rate on the loan is dictated by the terms of the commitment, the resulting net interest margin would bear interest rate risk if the outstanding balances and maturities of the funding failed to match those of the loan. That risk could be mitigated, however, using derivatives.

With this orientation, the bank would typically seek to hedge all or a portion of the uncertain funding costs that would be expected to arise during the period for which the loan's yield was fixed. The choice of the type of derivative instrument that would be used would depend on the extent of the desired coverage, the nature of the funding instruments that were expected to be used, and the particular hedge objective. Most banks will tend to rely on swaps or futures to lock in interest rates; but they might also enter into caps or collars to constrain effective funding rates to some predetermined range of funding rates, rather than fixing those costs, outright.

Regardless of the hedge objective, in most cases the notional amounts of the derivative would adjust through its term to reflect the anticipated progression of the outstanding loan balances throughout the life of the loan. For instance, if the

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outstanding balance on the loan were expected to decline over its holding period, the associated funding amounts would be structured to decline, commensurately. Given that, to the extent that the loan may have embedded prepayment options that make these outstanding balance projections uncertain, the hedging derivative might end up being too small or too large relative to the originally targeted coverage amount, depending on the direction of the forecasting error. If and when material deviations become evident, a modification to the hedge would be justified, which could mean substituting a new derivative contract for the original, or else adding a new derivative to affect a marginal adjustment.

If the bank expected to sell the loan in the secondary market, i.e., alternative 2 profiled above, a different hedge orientation would likely apply. In this case the hedge would probably be designed to address the uncertainty associated with the sales price of the loan. If the loan(s) could be well specified, the bank might be able to enter into forward contracts to set prospective sales prices and thus create perfect hedges that would lock in known gains or losses. A more general hedging approach could apply, however, if such forward contracts were unavailable in the derivatives' market place. In this case, the bank would measure the interest rate sensitivity of the loan, i.e., the loan's duration, and pair it with a derivative position having an equal but opposite sensitivity. The presumption underlying this construction, though, is that the interest rates for the loan and the asset underlying the derivative will move comparably, i.e., approximately one-for-one. If not, the notional size of the derivative would have to be adjusted to compensate for any expected deviation from this one-for-one relationship.

For both the first and second of the possible outcomes, the bank can pretty well assure profitable outcomes if the loan terms and the terms and structure of the hedging derivate are arranged simultaneously. Typically, though, that kind of coordination is impractical. More likely, the hedge would be executed some time *after* the commitment is issued. Best practices would then set the terms of the commitment in a manner that reflects the prevailing derivatives market conditions but allows for the possibility that, upon execution, the hedging derivative reflects a higher cost than were in effect as of the commitment's issue date. In other words, the bank would address this execution risk, or try to, by requiring an incrementally higher yield on the loan, hoping that the resulting terms would still be acceptable by the prospective borrower.

It should be clear that if the bank executes a derivative but the prospective borrower fails to take down the loan, the derivative will inevitably end up having some value. However, without a loan origination, there will be no offset. The problem only arises in one market scenario, however. That is, in a rising interest rate environment, the derivative would likely show a gain. Having no offset would be fine. On the other hand, with declining interest rates, the derivative would likely lose. In that case, what had been intended as a hedge would turn out to be a naked, losing derivative position.

The bank could seek to address this asymmetry issue in either of two ways. Probably the most typical approach would be to hedge a notional exposure that reflects the *expected* take down amount. This approach may make the most sense when the bank is working with a portfolio of commitments where, based on history and market conditions, the bank is able to make a reasonable estimation as to the percentages of the commitments that will convert to loans. With a 95 percent expectation, the notional size of the derivative would be scaled down to 95 percent of the commitment balance amounts.

The size of the hedge would then have to be adjusted once the actual takedown outcome is determined. Implicitly, this approach involves at least some unavoidable mismatch, given that the ultimate takedown percentage cannot be known with certainty until it's too late.

The second approach uses caps or purchased options as the hedging contract, as opposed to swaps or futures contracts. Irrespective of whether the orientation is to hedge the loan's associated funding costs or to hedge the intended sale of the loan, the bank still assumes that the loan will be taken down and matches the notional mounts of the derivative position to the expected loan through time. Although derivative losses with this hedge would still have no offset when the loan is not taken down, in this case the derivative's losses would be bounded. By the end of the term of the commitment, if the loan is not taken down the derivative should be liquidated. On the other hand, if the loan is taken down, the bank would have the option to leave the original hedge in place, or to liquidate it and replace it with another derivative that would deliver an alternative hedge objective.

As is always the case when using derivatives, hedgers have the ongoing capacity to adjust their hedge positions as market conditions and/or risk appetites evolve. Hedging loan commitments is no exception.

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