Is It Time to Recalibrate Your IRR Model?

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Short-term interest rates have finally increased about 100bp after a long period near zero percent. Interest rate risk (IRR) should once again be measured for falling rate shifts with assumptions that may be significantly different than those for rising rate shifts. Changing conditions have also impacted assumptions for rising rate shifts. The model assumptions most likely to need regular maintenance as rates change include deposit betas, reinvestment rates, and prepayment speeds. During the recent period of ultra-low interest rates, institutions recorded important data points that may be useful for testing model output in falling rate shifts. At the peak of the most recent rising rate cycle, the Fed Funds rate remained at 5.25% for over a year, which provided relevant data points for testing model output in rising rate shifts. If your key model assumptions haven't been reviewed since short-term rates began to rise, it may be time to recalibrate your IRR model.

Recent deposit pricing likely represents minimum levels that should be considered for modeling purposes. For example, if an institution's savings rate hasn't increased for several years, then perhaps a conservative beta of 0% (or a floor rate) is appropriate for the falling rate shifts. Modeled deposit rates should not fall below these minimum pricing levels in the -100bp rate shift and should never be allowed to fall below zero for IRR simulations. Falling rate betas may need additional maintenance if deposit pricing or short-term rates increase from current levels. In rising rate scenarios, we're now closer to historical peaks from the most recent rate cycle. Consider an institution that has paid 0.50% for several years on a money market account and paid 4.50% at the peak of the most recent rate cycle. A year ago, the rate shift to simulate this peak rate environment was +500bp (i.e. 5.25% Fed Funds) and the beta required to reach historical peak pricing was 80%. Now the rate shift scenario is only +400bp and the beta is 100%. While it can be debated whether former rate relationships will hold, beta assumptions should still be tested for reasonableness as deposit pricing and interest rates change.

In addition to testing output for individual deposit products, institutions should evaluate model output for total funding costs. Favorable trends in deposit composition may result in simulated funding costs that are overly optimistic compared to actual historical experience. Institutions with decreased levels of CD funding may use conservative beta assumptions for each individual deposit account, but simulated total funding costs in the +400bp rate shift may be significantly favorable to those at the most recent peak. Model output for total funding costs should be

compared to relevant historical experience and any major variances should be discussed. Surge deposit adjustments may need to be considered and built into beta and decay assumptions.

Reinvestment rate assumptions may also need maintenance. During the most recent period of falling interest rates, loan pricing did not decrease as much as short-term interest rates at most institutions. Floors were implemented either formally or informally. These floors may represent appropriate minimum pricing levels in falling rate shifts, but it is unclear how current loan pricing will change in rising rate shifts. For example, if an institution currently offers certain loans at 5.00%, is it reasonable to assume that new loans will earn 9.00% in a +400bp rate shift? This may be optimistic compared to historical loan yields; however, many institutions automatically assume reinvestment rates will increase by the same amount as the rate shift. These assumptions can be especially unrealistic for longer-term loans in parallel rate shifts. Simulated model output should be tested for reasonableness by comparing asset yields and NIM to actual experience from the most recent historical peak. Competitive forces and the limited ability or willingness of borrowers to service debt at higher rates will likely keep asset yields and NIM within the actual historical range.

Prepayment assumptions are often based on either industry data or internal analysis. Assumptions based on industry data are generally limited to standardized products, such as mortgages or auto loans, with reliable prepayment data collected over multiple rate cycles. These prepayment models often apply to loans with specific terms and coupons and should be maintained accordingly. Prepayment models for other loan types are generally based on internal analysis and require qualitative adjustments. For example, if an institution has calculated its actual prepayment activity over the past several years, those prepayment speeds must be adjusted for rising and falling rate shifts even though the data was collected during a period of flat rates. If the institution calculated its actual prepayment activity during the last rate cycle, that data was collected more than a decade ago and may be skewed by economic conditions during that particular period. To avoid underestimating risk using subjective prepayment estimates, some institutions have simply adopted prepayment speed assumptions of zero for rising rate shifts. For falling rate shifts, conservative prepayment assumptions must be slightly higher than expected prepayment speeds, which requires an estimate of expected prepayment activity. Sensitivity testing has shown that prepayment assumptions below roughly 15% CPR do not have a tremendous impact on model output and all institutions must estimate prepayment speeds for non-standard loans; therefore, it is generally appropriate for institutions to use conservative prepayment assumptions that are slightly higher than expected for falling rate shifts and slightly lower than expected for rising rate shifts. Prepayment assumptions should also be consistent with any contractual prepayment penalties and the financial incentive to prepay loans in each rate scenario.

IRR models must be tested and updated regularly in changing conditions. Model output can be compared to historical data points and any major variances should represent reasonable expectations for future activity. Strong IRR programs are designed to measure a range of exposures and lead to constructive discussion about the overall level and major sources of risk. Evaluating key assumptions and model output is an important step in this process, especially during periods of changing interest rates.

(Link to original published article)