

Bank Asset/Liability Management

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Time for Better ALM Practices?

Mid-August 2007 was a time of interest rate volatility related to the subprime lending boom. This volatility was exacerbated by the inclusion of those assets in the collateralized debt obligation (CDO) market. An increase in rate volatility, *ceteris paribus*, results in greater earnings volatility for most banks.

Based on this increase in volatility, banks may wish to reassess their risk-measurement standards, including the frequency of measurement. When assessing a bank's risk position, it is important to consider both the bank's quantitative risk metrics the bank's qualitative risk management process

In a normal market, banks with moderate risk supervisors suggest that the bank have *acceptable practices*. Increased market volatility may result in increased risk; thus, supervisors may require *better practices*. Exhibit 1 illustrates this concept.

In Mid-August, the bond market saw anew the flight to quality. Investors of commercial paper and other short corporate debt shifted their investments to short Treasuries, which drove 3-month T-Bill yields down 2 percent, within two weeks. Shortly thereafter, investors saw them bounce back. This interest rate volatility generally increases banks' sensitivity to market risk, which is defined as *the degree to which changes in interest rates, foreign exchange rates, commodity prices, or equity prices can adversely affect a financial institution's earnings or economic capital*.

Quantitative Risk Measurement. The foundation of a *better* risk management process is a better risk measurement process. A few years ago, as part of its move towards enhanced risk management practices, including increased transparency, FNMA began by disclosing certain monthly risk measurements. These measurements

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included the following:

1. Risk to earnings resulting from yield level changes
 - Parallel yield curve shifts
2. Risk to earnings resulting from yield curve changes
 - Non-parallel yield curve shifts
3. Duration gap position
 - Asset duration less liability duration
4. Run 100s of scenarios for earnings and value at risk
 - Focus on *worst cases*

Exhibit 1

Risk assessment	Qualitative risk management process		
Quantitative risk metrics	Substandard Practices	Acceptable Practices	"Better" Practices
Low risk	Needs improvement	Acceptable	Acceptable
Moderate risk	Needs improvement	Acceptable	Acceptable
High risk	Needs improvement	Needs improvement	Acceptable

Source: OCC

of rates. While useful as a stress test or as long-term estimate of value risk, this may not be a realistic approach to estimating the risk to earnings, as the yield curve rarely shifts in a parallel fashion. As a result, this measurement may mislead both internal and external stakeholders of the amount of prospective earnings volatility.

It is important to note that these measurements are disclosed monthly. The production of internal matrices ranged from real-time to daily to monthly.

Risk to Earnings Resulting from Yield Level Changes: Parallel Yield Curve Shifts. Most banks utilize parallel yield curve risk shifts or *shocks* as an integral part of their risk measurement process (see Exhibit 2, as of June 30, 2007). The typical +/-2% parallel shift is primarily useful for estimating the impact of changes in the level

Risk to Earnings Resulting from Yield Level Changes: Non-Parallel Yield Curve Shifts. During the sustained flat to inverted yield curve of 2005 to 2007, many banks learned anew that they may be at least as exposed to risk from the shape, or slope, of the yield curve from the level of rates. In an earlier article in *BALM* (June 2006), we noted that banks should include both level and slope measures in their back-testing exercises.

With the UST rates from 3 months out to 5 years hovering around 4 percent to 4.25 percent, as of early September 2007, the bias is ever stronger for a Fed ease. For planning and risk measurement purposes, banks should consider estimating their earnings sensitivity over the next several quarters, utilizing non-parallel yield curve shifts (see Exhibits 3 and 4, as of June 30, 2007), in addition to parallel yield curve shocks typically used (Exhibit 2).

The approach to estimating slope risk is a two-step process:

1. First, utilize the usual parallel shift.
2. Then, utilize a form of

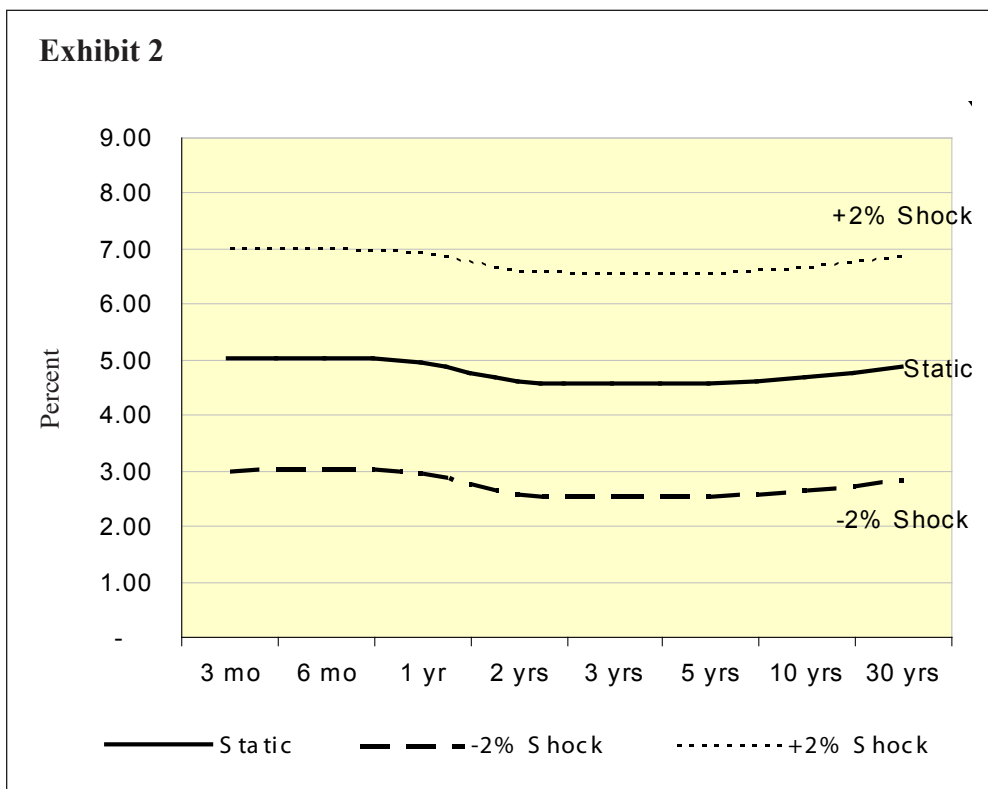


Exhibit 3. Slope Change Example

	Static	-2% Shock	“Big Bull”
Level change	0	-200	-200
Short rate change	0	-200	-300
Long rate change	0	-200	-100
Slope change	0	0	+200

more likely rate scenarios, it is easier to devise tactics to increase earnings and/or mitigate interest rate risk.

Duration Gap Position: Asset Duration Less Liability Duration. Most banks measure their duration gap position either directly, via modified duration metrics, or indirectly, via effective duration metrics. These are frequently communicated to ALCO and/or the board via a rate shock scenario that highlights the impact to economic value of equity (EVE). This summarized measure, in some institutions,

produces a sense of *shock and awe* and is dismissed as unrealistic as ALCO and board members may sense that their bank usually does not lose 25 percent of value in a short period due to market risk. This, of course, assumes that they do not fund their mortgage portfolio with short-term promotional CDs, or worse.

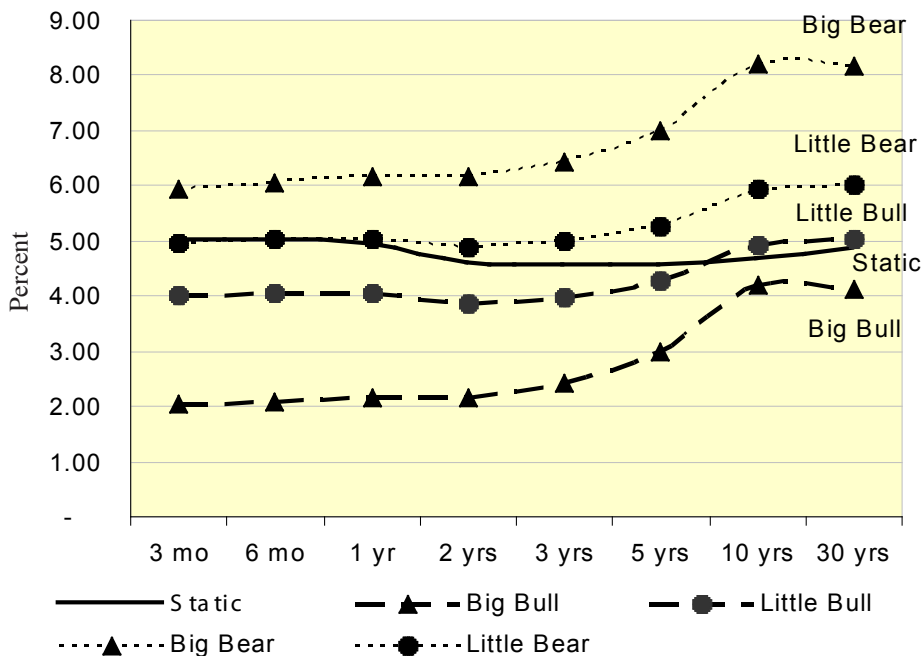
By first understanding how assets and liabilities may have scenario-dependent durations, it becomes easier to comprehend how the EVE may change in a non-linear fashion. For example, by explaining how asset (e.g., mortgage loans, and liability, structured borrowings — durations change with rates) we have found that boards become

capable of understanding duration analysis, resulting in the desired “Aha!” moment.

By breaking this analysis into component parts, both the ease of understanding and ease of facilitating discussion of tactical alternatives are facilitated. This greatly assists in moving the ALM process from the measurement phase to the management phase.

Run 100s of Scenarios for Earnings and Value at Risk: Focus on Worst Cases. The above examples focused on pre-determined, or deterministic, rate scenarios. A more sophisticated approach is to use a form of stochastically

Exhibit 4. Slope Change Example



non-parallel yield curve shifts, or twists. More advanced ALM models have an automated form of implementing this process, both for ease of use and for period-to-period consistency.

Only by using both methodologies can a bank disaggregate level risk from slope risk.

The following is an example of the suggested rate scenarios that banks should consider as of June 30, 2007. In this instance, our analysis is focused on curve steepeners, but it is important to consider various twist scenarios. This topic was the note of a recent July 2007 BALM article. After analyzing your projections with these

determined scenarios, as with Monte Carlo or lattice-based scenarios. One advantage of this approach is that it is relatively straightforward to estimate the impact of increased or implied rate volatility. For example, if short rate volatility is at 15 percent during a time of Fed and market stability, but rises during time of Fed and market instability, consider using 30 percent short rate volatility, or higher.

Based on the underlying interest rate model(s) and portfolio(s), this can again produce the *shock and awe* results that are seen in the parallel rate shift scenarios. In contrast, this approach is based on a theoretically sound foundation. In addition, by reviewing the projected risk to earnings and values, especially when presented in a probabilistic setting, the ALCO can focus on hedging those scenarios that are projected to be unacceptably risky.

In addition, by running numerous scenarios, it is more likely to find, *ex ante*, a scenario that is reasonably closed to realized rate moves. This greatly simplifies the back-testing exercise championed by certain stakeholders.

Finally, when reviewing the results of this type of probabilistic analysis, it may be comforting for the ALCO to know that, based on market volatility, it is 90 percent likely to achieve its earnings objectives. Then, it

becomes a straightforward matter to hedge the remaining 10 percent of risk with carefully targeted transactions. That is, you can focus on buying insurance for only the scenarios that you need to hedge.

Of course, the opposite is also true. If, due to increased rate volatility, it is unlikely that you will reach your earnings objectives, your ALCO should clearly communicate this to the interested stakeholders and be prepared to take prompt action.

Summary. *Better* practices are always acceptable to interested stakeholders, including bank supervisors. These best practices include the following elements:

- Timely (e.g., monthly) measurement
- Transparent disclosure to internal and external stakeholders
- The integration of risk measurement, scenario-dependent tactical analysis, and the informed implementation of risk management decisions.

— Fred Poorman
The ALM Network

Falling Rates Present Opportunities

Banks have steadily increased their use of interest-rate swaps to make long-term fixed rate loans to commercial borrowers. They do it to provide their customers long-term fixed rates without the interest-rate risk associated with long-term financing. Put into simpler terms, they are providing attractive rates without jeopardizing their A/L position. Larger banks initiated this style of financing in the 90s but most banks now use the program to keep their good customers happy and to poach prospects from competitors. Exhibit 5 is a graph that depicts the flow of this loan program.

Exhibit 5 Flow. The bank makes a loan to the borrower. The borrower pays a fixed rate to the bank. The bank passes on the fixed rate to the swap counterparty. The swap coun-

terparty returns a floating rate (one month Libor + spread) to the bank. The bank has extended long-term fixed rate financing to its customer and, because of the swap, has netted a floating rate position. And, the interest-rate risk from the long-term fixed rate loan is greatly reduced.

Widening Spread. Over the last few months, rates have fallen considerably. This means that banks can make the exact same fixed rate loan quotes, with wider spreads, than they could a few months ago. This example takes a standard \$1 million loan fixed for 10 years with a 20-year amortization. In June, if a bank made this loan for 7.39 percent fixed they would have received one month Libor (5.32/June) + 1.59 or a net 6.91 percent (Exhibit 6).

