PERFORMING STRESS TESTING

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Practical Solutions to Complex Financial Problems

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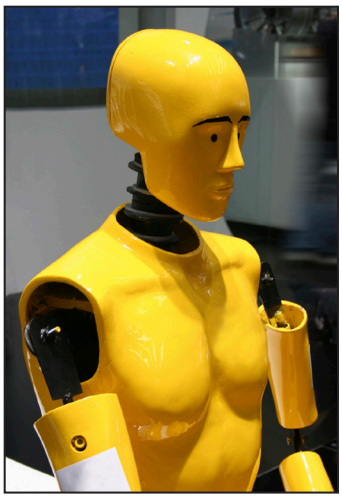
Stress testing in banking is not going away – it has been around in one form or another for generations past, and will continue to be part of the financial industry's future. As technology has evolved, the sophistication and importance of stress testing has evolved with it. Today, stress testing is not just for the largest and most complex institutions. All types and sizes of financial institutions have adopted stress testing as good business practice.

Our previous article "Stress Testing for Crash Dummies," examined why we should be performing stress testing in our institutions. The next question to be answered is "How do we go about doing this?" This article will suggest a few ideas to get you started. You are also encouraged to review Supervisory Insights Volume 11, Issue 2 from the FDIC (Winter 2014) for more direct guidance on this topic.



First, to recap the previous article – stress testing is not intended to mimic reality. It is about pushing things to the limits so you can better understand your weaknesses or stress points. The results from stress testing are not expected to happen. This is an important point and cannot be stressed (pun intended) enough. We are looking for anything that could cause us an issue so we can address it before it can occur.

I've waffled back and forth on several things over my career in banking. If income is what most managers care about and understand, why spend so much time and effort on valuation? Do we really need to model gaps, durations and other metrics or should we just pick one as our focus? And, the age-old question: Should I model flat balance sheets or growth when running ALCO scenarios?

My conclusion is that more is better. Easy to say, not always easy to do since modeling takes time. But it is important not to be one-dimensional in your analysis. Focusing completely on earnings and nothing else ignores almost all aspects of your embedded risk profile. Sensitivity to changes in interest rates and unrealized price changes could be missed, as well as possible impacts on your liquidity and ability to borrow money. Understanding the broader impact of your future decisions is vital to running an organization effectively and efficiently.

Running realistic scenarios is important to project your earnings and fine-tune your business plans. Conducting a full crash test (as described in the previous article) should take on as much of this realism as possible to truly see what could happen to your organization if a "Black Swan" event comes to fruition.

Stress testing has a different goal: to understand your exposure to individual types and amounts of risk. The easiest way to accomplish this is to create a baseline, then stress each factor one at a time. Immediate shocks up and down of market yield curves are the most common stress test. But since risk also lies in the way rates can move, there are several others that should be on your short list. Rates along the yield curve rarely move in parallel with each other.

Tightening and widening of spreads between points on the curve, such as the three month and 10 year Treasury are everyday occurrences. Occasionally, these relationships will even cross over and become negative.

An example is Figure 1, which depicts rates in 2000-2001. Note that for an extended period of time the three month Treasury rates are actually higher than the longer term Treasury rates.

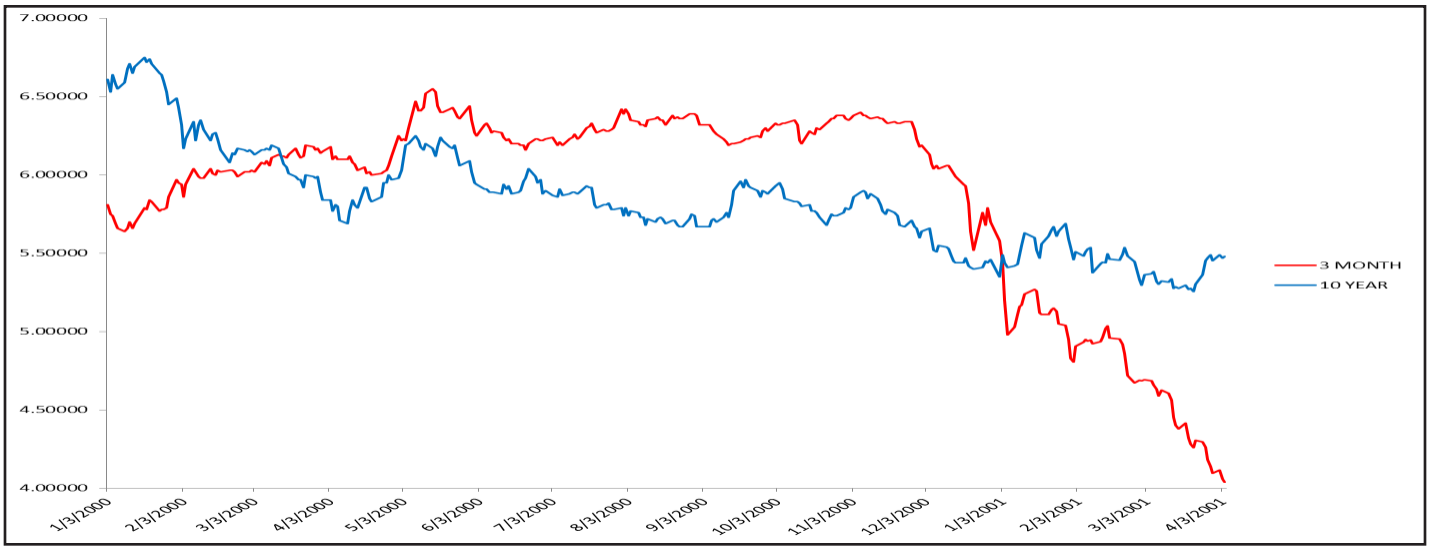


Figure 1. 2000 – 2001 Treasury Rates

These situations have happened in the past and are likely to happen again. Rate ramps (slower rate movements), twists (steeper, flatter, and inverted yield curves), basis tests (allowing spreads between indexes such as Treasury and LIBOR to narrow or widen) and other forms of rate tests should be considered to understand the risks in your positions.

When running these scenarios as much precision as possible is desired for instrument characteristics such as caps, floors and calls. You may want to explicitly ignore them to understand their value, but that is not related to stress testing. Our goal here is to isolate the impact of changes in the stress variables, so no other assumptions should be modified when running the stress – with one exception. If a direct correlation can be proven to exist, that correlation should be taken into account.

A good example of this would be prepayments. Prepayment behavior is largely impacted by rate movements, so prepayment estimates should adjust as these stress tests are performed. But other assumptions such as balances, spreads, term structures, etc., should be held constant unless a direct correlation can be proven to exist.

Market risk is commonly analyzed, but another important risk often ignored is assumption risk. Assumptions range from market-related to product-related to management-related. Rate tests help you isolate risk to market fluctuations; however, spreads, term structures, prepayments and growth are examples of assumptions you develop based on historical analysis or experience.

Other assumptions, such as deposit pricing, may be discretionary based on management and competitive pressures. What if things are different in the future and the patterns no longer hold true, or decisions may not be made the way they have been in the past? Stressing these assumptions by halving or doubling them will identify the amount of exposure you have to variations in each.

A short list of recommended stress tests would include the following:

- Rate shocks up and down
- Yield curve steepening and flattening (see Figure 2)
- Slower and faster prepayments
- Wider and tighter product spreads

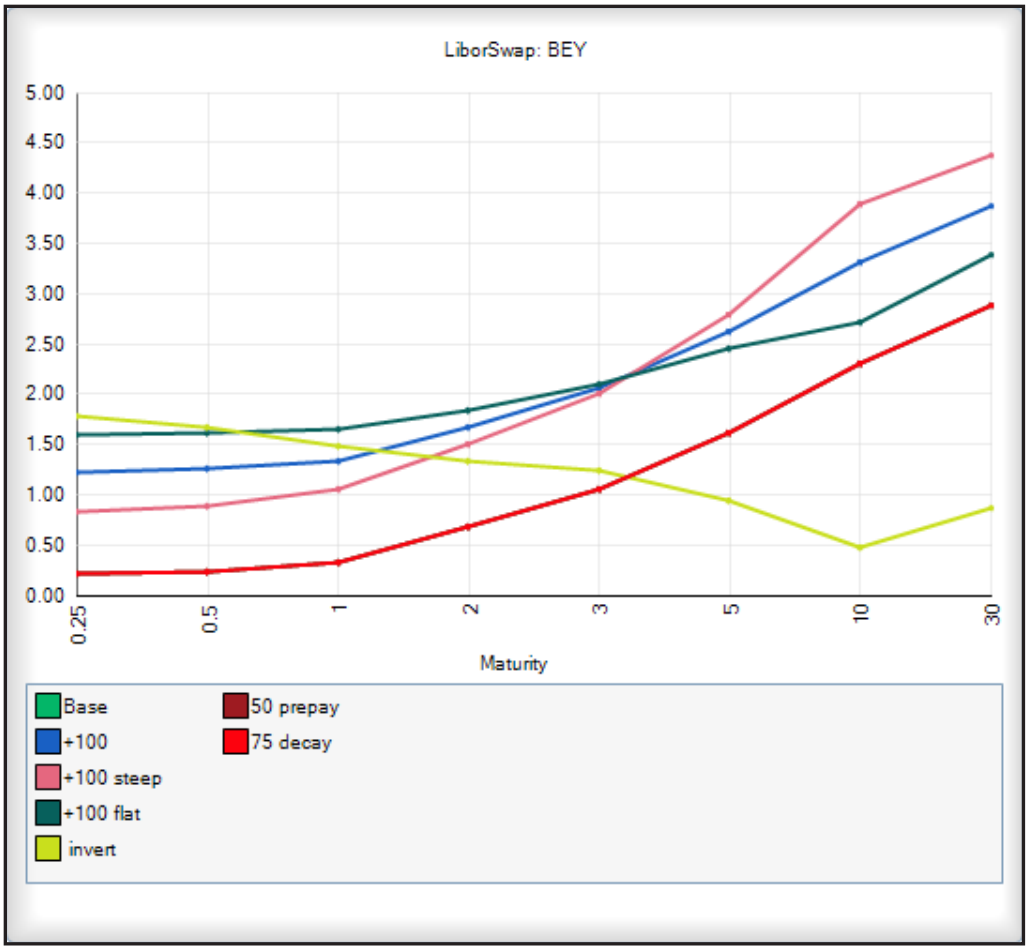


Figure 2. Yield Curve Stress Test Examples

The following are strongly encouraged, if possible:

- Gradual rate ramps up and down
- Rate cycle up/down and another down/up
- Varying spreads between yield curves and market rates
- Higher and lower rates of default
- Shorter and longer deposit pricing lags
- More and less "core" deposits

Other tests worth considering periodically are:

- Varying product mixes on new business generation
- Varying term structures on new business
- More and less volatility in your stochastics

Finally, as noted before, don't get caught in the trap of performing these tests and then only comparing the results of a single metric such as earnings. Develop a dashboard that allows you to look across various risk and earnings metrics. You might start with a few key indicators such as Net Interest Margin, Economic Value of Equity (EVE), Leverage and some form of liquidity ratio. You should also monitor one or two snapshot variances that show you the progression of your risk profile.

An example would be change in EVE between the starting point and one year forward (future), or even a simple focus on year 1 and year 2 income before taxes (IBT) as shown in Figure 3.

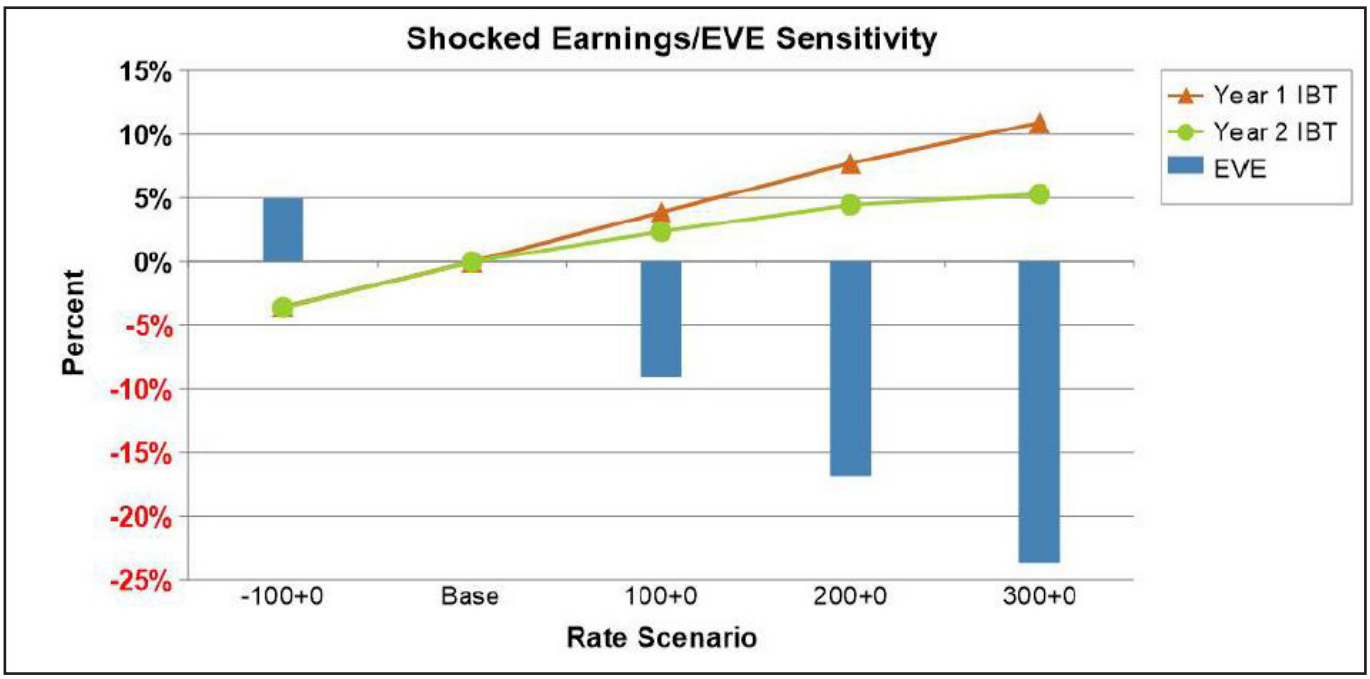


Figure 3. Shocked Earnings/EVE Sensitivity

This may sound like it is overwhelming, but it can be incorporated into your processes by doing a little at a time. Maybe you decide that you need more assumptions testing, so in March you stress prepayments. In June you adjust deposit pricing correlations, in September you focus on growth assumptions and in December you stress your product pricing. Over the course of time you have analyzed several of your assumptions without adding significant effort.

The last point I would like to make relates to reporting your risks. Adding pages and pages of numbers to your ALCO report may not improve your meetings and discussion. Quite the opposite, attendees may get lost in the details of your stress testing. You might consider categorizing the types of risk you are measuring into groups such as

1. Market
2. Liquidity
3. Credit
4. Model/Assumption

Then consider which metrics best fit into each category and focus on those, highlighting outliers in your stress tests. You may not always see outliers, which is probably good. But as your products and balance sheet structures change new risks will creep in, so be diligent with your efforts to continually understand your risks.

About the Author

Jerry Clark is Vice President of Sales for ZM Financial Systems and has more than 30 years of experience in market risk, treasury, accounting and finance. There are risks to his views on risk, so he recommends you stress test his ideas before implementing any of these at your institution.

About ZM Financial Systems

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