**RiskGPS: Stress Testing Key Assumptions**

**Purpose of Stress Testing**

Even the most carefully developed assumptions cannot predict the future with complete accuracy. Therefore, it is critical to examine how a range of outcomes may impact your bank’s risk profile. Stress testing documents your institution’s ability to withstand inaccurate assumptions and serves as a key component of sound risk management.

Stress testing in RiskGPS is designed to be efficient and user-friendly. In most cases, annual testing is sufficient—unless significant changes to assumptions are expected. Only a limited number of assumptions typically require stress testing. Stress testing is also necessary when:

* An assumption materially affects rate shock results.
* An assumption is based on historical data that may be significantly different in the future.

**Assumptions to Stress Test**

For most banks, three key assumption types meet the criteria for stress testing:

* **Loan Prepayment Percentages** *(Loan Assumptions)*
* **Betas** *(Deposit Assumptions)*
* **Decay Terms** *(Deposit Assumptions)*

Stress testing serves two important purposes:

1. Confirms the bank's ability to endure the most adverse plausible outcome for each assumption.
2. Quantifies the degree to which each assumption influences results.

**Guiding Principles**

* **Test each assumption type independently**, holding all others constant.
* **Apply the most adverse plausible value**—even if the scenario is unlikely.

**How to Stress Test Each Major Assumption Type**

**Preparation**

Before testing, **save a copy of your base case assumptions** to enable comparison and restore defaults between tests.

* 1. **Loan Prepayment Assumptions**

**This assumption questions, “what is the worst that could happen with prepayments?”.**

**Steps:**

1. Navigate to “Loan Assumptions.”
2. For falling rate scenarios (negative shocks), enter **100% prepayment** to simulate a full refinance or payoff of all fixed-rate loans and mortgage-backed securities. This forces immediate repricing of the full portfolio at lower rates, resulting in:
   * Reduced interest income
   * Lower net interest margin
   * Loss of market value appreciation
3. For rising rate scenarios (positive shocks), enter **0% prepayment** to simulate no refinancing activity at any shock level. This means the bank is locked into low-yielding loans while funding costs increase. This will impair interest income and earnings, and market values will decline because cash flow remains the same while the discount rate increases.
4. Leave the zero shock level unchanged
5. Click “OK” to apply changes. The system will refresh the “Rate Sensitivity Gap” page. Because you did not change prepayments at the zero point, the gap page will not change, but both rate shocked income and market value of equity will be adversely affected by stress assumptions.

**Analysis:**

* Select **View Report → Rate Shocked → Net Interest Margin Projections – 1 Year**.
* The **red line with squares** represents the minimum margin required to support net overhead and capital needs.
* The **yellow line with triangles** reflects the bank’s calculated margin. If the yellow line (calculated margin) remains above the red (minimum margin), there is no capital impairment and the bank passes the survivability test under extreme assumptions.

**Next:**

* Compare the projected net interest margin at each of the nine shock levels (zero, +/-400) to the base case assumptions.
* Ask whether the margin decline is tolerable. If not:
  + Use more conservative prepayment assumptions.
  + Adjust asset mix to reduce exposure to prepayment-sensitive instruments.

**Also Review:**

* View the Rate Shocked Economic Value of Equity report
  + The **red line** represents the minimum target/policy threshold for the capital ratio (this level is set in the Risk Tolerance assumptions).
  + The **yellow line** shows market value of assets to market value of equity ratio at each shock level.

If stress materially impacts the EVE, consider:

* Improving prepayment data quality.
* Reducing reliance on prepayment-sensitive assets.

**Save** this stress-tested version and **reset assumptions to normal** before proceeding to the next assumption type.

* 1. **Deposit Beta Assumptions**

This assumption questions, “what is the worst that could happen with deposit betas?”. In a rising rate environment, the worst possible beta is 100%, signifying that the bank will raise deposit rates by the full amount of the change in market rates.

**Steps:**

1. Go to “Deposit Assumptions.”
2. For rising rates:
   * Enter **100% beta** in the “User Defined” boxes. This simulates full rate pass-through to depositors.
3. For falling rates:
   * Enter **0% beta** to simulate no ability to reduce rates. This means the bank will not reduce rates at all, no matter how much market rates decline.

**Important Note:**  
Before clicking “OK,” **enter your base case decay rates** in the “User Defined” decay boxes. Otherwise, RiskGPS will recalculate decay rates based on the stress betas.

1. Click “OK.” The “Rate Sensitivity Gap” page will update. The new betas will cause a different distribution of non-maturing deposits. In RiskGPS, deposit betas impact the rate shock income analysis, but not the market value analysis.

**Analysis:**

* Select the Net Interest Margin Projections – 1 Year report.
* Review the margin simulations.
* Even if the results appear to violate policy under extreme stress, this is expected for stress testing and should warrant a discussion with the ALCO and board.

**Save the beta stress test results**, then reset betas to normal before continuing.

1. **Deposit Decay Terms**

What is the impact of decay rates? When rates rise, a shorter decay term lowers the amount of decrease in the market value of deposit liabilities because deposits will have to be replaced at a higher cost more quickly. When rates fall, a long decay rate increases the market value of the liability.

**Rising Rates:**

When rates rise, a shorter decay term lowers the amount of decrease in the market value of deposit liabilities because the deposits will have to be replaced at a higher cost more quickly.

* Entera **short decay term for non-maturing deposits (e.g., 12 months)** to simulate faster turnover of deposits at higher costs.

**Falling Rates:**

When rates fall, a long decay rate increases the market value of the liability. And an increase in the liability decreases the market value of equity. That’s because long term funding does not get much cheaper as rates fall.

* Enter a **long decay term for all non-maturing deposits (e.g., 120 months)** to simulate slow repricing of long-term liabilities.

**Steps:**

1. Enter decay terms as above for respective shock scenarios.
2. Click “OK” to apply.

**Analysis:**

* In RiskGPS, decay terms have no impact on margin analysis, so you only need to compare EVE results. Select the **Rate Shocked Economic Value of Equity** report.

The stress impact is proportional to the percentage of the bank’s liabilities held in non-maturing deposits. Decay assumptions will have a significant impact on EVE results.

**If volatility is high**, it is important to research and document the basis for the decay assumptions. Supporting research may include historical behavior, peer comparisons, or third-party data.

**Save a copy** of the plan with stressed decay assumptions, then **reset to normal levels** to conclude the testing cycle.

**Final Recommendations**

* **Stress testing is essential** for understanding exposure and protecting long-term financial stability.
* **Document all results and assumptions** for regulatory and board review.
* **Use insights to refine your risk tolerance and balance sheet strategy.**