**RiskGPS: Rate Shocked Economic Value of Equity (EVE)**

**Understanding Economic Value of Equity (EVE)**

Economic Value of Equity (EVE) is the present value of a bank’s assets minus the present value of its liabilities. *EVE estimates the current value of a bank based strictly upon the cash flows (principal and interest) that are expected from all the assets and liabilities of the bank. These current values change when market interest rates change because the cash flows are discounted by the market interest rate. Simply speaking, the higher the market rate, the lower the present value.* A good example is the price of a bond. When market rates go up, bond prices go down.

It’s also important to remember:

* A **decrease in the present value of assets** results in a **lower EVE**.
* A **decrease in the present value of liabilities** results in a **higher EVE**, since liabilities are subtracted from assets in the EVE calculation.

**Rate Shocked EVE Analysis**

**What is a Rate Shock?**

Rate shock means that market rates are changed from their current level by the amount of the shock. However, the analysis is more complex than just altering the rate . Unlike many bonds, the cash flow of many types of bank assets and liabilities can change in response to market rates. The change may be in interest, principal, or both.

**Cash Flow Changes RiskGPS Considers in EVE Calculations**

* **Variable Interest Rates:** Cash flow may change because the interest rate on an asset or liability will change immediately, or, in the case of Adjustable Rate Mortgages (ARMs), at the next repricing date.
* **Prepayments:** Cash flows will also change because of prepayments. Prepayments apply to both loans and mortgage backed securities.
* **Callable Bonds:** These y off early if current rates fall below the bond’s coupon rate.
* **Non-Maturity Deposits:** Any difference in rising versus falling decay rates will change the cash flow. In RiskGPS, the decay rate determines the duration of the deposit category. That means that the longer the decay term, the larger the change in present value between shock increments.Because regulatory call reports lack the granularity needed to quantify the impact of changes in cash flow. **RiskGPS provides default assumptions (estimates)**, but these should be customized by the your bank.

**Analyzing the Rate Shocked EVE Report**

The most significant results are found in the **EVE as a Percentage of Present Value of Assets** graph:

* The **yellow line** (square markers) shows EVE outcomes across **nine rate shock levels** from **-400 to +400 basis points**.
* The **slope** of the line indicates whether the shock impact is positive or negative.
  + A **curved line** means there is **convexity** in the results. Convexity is usually caused by the assumptions – different levels between positive and negative shocks.

**Moderate convexity** may indicate reasonable assumptions were used. H**igh convexity** may indicate either a large mismatch in asset versus liability durations, or extraordinarily large differences I assumptions between rising and falling scenarios. Bank management should be prepared to explain the reasons for high convexity.

The position of the EVE line (**yellow** line), should be compared to the Minimum Capital Ratio line (red line with triangle markers), the **Minimum Capital Ratio**. This is typically set at **7% by default**, or as entered by the bank in Risk Tolerance settings.

If the yellow line drops below the red line at any shock level, the EVE ratio is below the bank’s capital threshold, signaling potential risk exposure.

Review the actual ratio of EVE to Market Value of Assets at each shock level. This ratio represents the size of the cushion available to absorb market losses should the bank need to shorten its maturity structure. This measure is not precise, but is one of the best available measures of the bank’s longer term rate risk exposure.

**Fair Values Table and Policy Limits**

**EVE Risk (% Change)**

The final row in the Fair Values table shows the EVE Risk (% change). Many banks set policy limits for the maximum percentage change per shock increment. Regulatory guidance recommends limits that cover the entire range between -400 to +400 shock, but the size of the limit should be based on the bank’s board to determine their **risk appetite**.

If a rate shock results in a % change exceeding policy limits, the ALCO and Board should:

* Review and approve a **corrective plan**, such as modifying maturities or certain types of assets and liabilities.
* Establish a **timeline for management to reassess assumptions or resolve data anomalies**.
* Approve the **shortfall for extreme or unlikely levels of shock**.
* Revise **policy limits** on the maximum percentage change per shock increment.

It’s also vital to evaluate the **direction and magnitude** of changes. For example, if rates are expected to rise, should the bank act to prevent EVE deterioration under positive shocks? Even if the answer is "no," it’s a worthwhile discussion.

**Further Analysis of Mismatched Maturities**

*Should the bank decide to consider changes in asset or liability maturities, or if there is any concern about the accuracy of the results, the remainder of the Fair Values table allows you to identify the specific types of assets and liabilities that are creating the mismatch.* Look at the **dollar change** between the center (Current) column and the ±400 shock columns:

* Large variations may stem from:
  + Excessively long maturity durations.
  + Inaccurate call report data or assumptions driving the result.

**Identifying Data Issues**

To diagnose potential data errors, consult the following RiskGPS Risk Report pages:

1. **"Yields and Costs" (Page 7):** Review the final column for any unrealistic yield values.
2. **"Rate Sensitivity Gap" (Page 14):**
   * The **first chart** shows maturity distribution data reported Securities (Schedule RC-B) and loans (Schedule RC-C).
   * The **second chart** reflects maturity distributions after assumption adjustments made in RiskGPS.
   * Errors may be addressed by amending the call report and reloading into RiskGPS.