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ALM 101: Interest Rate Risk

Asset Liability Management (ALM) is the process of planning, controlling, and monitoring financial performance and risk. Risks may include credit, strategic, interest rate, liquidity, and reputation risk. My experience in working with credit unions and conducting financial literacy training is that the primary difficulty in understanding ALM is terminology. Focusing on the interest rate risk (IRR) component of ALM, we can crack the code of ALM Speak to understand why this is so important in credit union management.

Definitions:

From an oversight perspective, it is more important to understand what various ALM terms mean and how they are influenced by internal and external actions than to know how to calculate them.

Risk: The potential that events and/or actions may adversely impact capital and/or earnings.

Interest Rate Risk (IRR): Impact of changing interest rates on earnings and net worth, IRR is the risk that a credit union's earnings and capital will decrease as market interest rates change. This risk generally occurs because a credit union may have a disproportionate amount of fixed and variable rate instruments on either side of the balance sheet.

Net Economic Value (NEV): NEV is measured by calculating the present value of assets minus the present value of liabilities, plus or minus the present value of the expected cash flows on off-balance sheet instruments. What does that mean? The change in NEV simply measures the impact of changing interest rates on a credit union's net worth.

Economic Value of Equity (EVE): EVE is the present value of assets minus the present value of liabilities and cash flows, which is essentially the same as NEV. These two terms are commonly used interchangeably.

Income Simulation: Modeling different scenarios to determine the financial impact of internal and external factors such as changing interest rates, growth assumptions, and other strategies.

Value at Risk (VAR): In the credit union world, VAR is the estimated maximum loss expected in net worth. If net worth is currently \$8 million with a forecast of \$6 million following a stress test, the value at risk is \$2 million.

Earnings at Risk (EAR): Similar to VAR, EAR measure the quantity by which net income is projected to decline in the event of an adverse change in interest rates.

GAP Analysis: Measures the maturity and repricing difference between assets (loans and investments) and liabilities (deposits and borrowed funds) over a specific time period such as twelve months. This is usually expressed as a percentage to total assets. If assets and liabilities are comparable in maturity terms and abilities to reprice, the impact to earnings and net worth will be minimal when interest rates change. GAP analysis may be sufficient for credit unions with simple balance sheets, however credit unions with complex balance sheets need sophisticated models that integrate many aspects of credit union operations.



Payment Speeds: The timing of payments changes in different interest rate environments. Prepayments generally increase in a downward trending rate environment, primarily due to refinancing activity. Prepayments generally slow and move closer to contractual payment thresholds in an increasing rate environment. Financial modeling needs to account for these types of behaviors.

Non-Maturity Deposits (NMD): NMD are deposits with no maturity date, such as regular shares, money market, and checking accounts. NMD assumptions in IRR modeling have come under increased examiner scrutiny. These types of deposits tend to be less rate sensitive and lower cost but have no set rate or maturity date, presenting a challenge when determining core levels and retention rates. Historical analysis of these deposits in various interest rate environments is the most effective way to validate NMD assumptions when modeling and evaluating interest rate risk.

Interest Rate Risk Management

The primary goals of IRR management are to avoid extreme fluctuations in net earnings, maintain a relatively constant net interest income over time, and to preserve net worth. This is accomplished by matching maturity and repricing terms of loans and investments with deposits and borrowed funds. Most credit unions are liability sensitive, meaning liabilities are repricing and/or maturing faster than assets. This is because mortgages and other loans are longer term than member certificates. As a result, as market rates increase, deposits reprice faster than loans, and net interest income decreases. The degree of this change in income, and ultimately net worth, corresponds to the level of interest rate risk.

Risk management is not risk elimination. Credit unions can utilize strategies to minimize potential earnings instability and reduce risk to a tolerable level. This is accomplished through credit union policies that set limits on terms, pricing, concentration, types of products, etc. For example, limiting real estate loans to 400% of net worth and 25% of total assets helps to mitigate liquidity, concentration, and interest rate risk. Central to interest rate risk management is determining what levels of risks are acceptable, measuring the current position, and responding when risk is too high. Effective risk management aligns the ALM function with the strategic direction of the credit union.

Interest Rate Risk Measurement

Interest rate risk is measured by modeling interest rate changes, using computer modeling software. Gap analysis, income simulations, and valuation models are used to analyze and estimate IRR. This includes both rate shock testing for worst case scenario, and “ramping” rates up or down to model gradual interest rate movements. There are many factors that can be incorporated into a forecasting model, such as prepayment speeds, repricing options, rate delays, rate drivers, etc. Assumptions incorporated into the ALM model require a high degree of management discretion and should be well documented, consistent, and tested for accuracy. The easiest way to test for accuracy is to “back-test” prior forecasts by comparing them to actual results. Tighter risk limits may be needed if results are inconsistent or otherwise allow for potential inaccuracies. One of the challenges of risk management is knowing what to do with the interest rate risk results. Alternatives include selling assets, changing loan rates and terms, changing deposit rates, and revising overall balance sheet strategies.

Regulatory Focus

Credit unions are required to measure IRR at least semiannually, assuming there are no significant changes that warrant more frequent measurement. NCUA Rules and Regulations 703.90 requires quarterly measurement for more complex balance sheets. The primary objective of examiners’ ALM review involves analyzing the credit union’s approach to ALM and evaluating its balance sheet risk exposure.

A 300-basis point instantaneous and parallel rate shock is used by Examiners to evaluate IRR. This assumes that the balance sheet remains static (no growth or changes in composition) and all interest rates that can adjust will reprice immediately by a proportional amount. The cumulative effect is measured twelve months out to determine the amount of interest rate risk of a specific balance sheet. NCUA considers this a reasonable stress test. The rate shock test results can be categorized into various levels of risk. The following was taken from the NCUA Examiner’s Guide:

INTEREST RATE RISK EXPOSURE	LOW	MODERATE	HIGH
GAP to Total Assets: Cumulative 12-Month % Change	+/- 10%	+/- 10 - 20%	> +/- 20%
Net Interest Income (NII): After Shock Change Over 12-Month Period	< 20%	20 - 30%	> 30%
Net Income (NI): After Shock Change Over 12-Month Period	< 40%	40 – 75%	> 75%
NEV: After Shock Change In Net Worth	< 25%	25 – 50%	> 50%
Net Worth After Shock Value	> 6%	4 – 6%	< 4%

Examiners concentrate on the percentage change of net worth and after shock value when determining the amount of supervisory focus required. Credit unions that fall into the high category should be prepared for increased examiner attention. The interest rate risk management process must be more comprehensive with sophisticated analysis prepared on a regular basis. Management will be expected to demonstrate a thorough understanding of potential sources of balance sheet risk, risk measurement techniques, risk measurement results, and risk mitigation strategies.

Static Versus Dynamic Modeling

The benefits of using instantaneous and parallel modeling with a static balance sheet is that it can be repeated periodically, allowing you to compare results over time as the balance sheet composition changes. The data is relatively easy to validate, and examiners can compare your credit union to industry averages. However, this type of modeling fails to consider the credit union’s strategy and other factors that impact the balance sheet. To properly measure and manage interest rate risk, a dynamic forecast that incorporates strategies and trends is imperative.

Dynamic simulations allow the incorporation of management decisions into the forecast model. Dynamic simulation computer models rely on detailed assumptions regarding changes in balance sheet composition, growth projections, interest rate fluctuations, and non-interest income and expenses. This requires a fair degree of management discretion. Several what-if scenarios may be developed to analyze a range of outcomes and risk exposures. A disadvantage of dynamic modeling is that it requires more effort and assumptions than static modeling.

For these reasons, dynamic simulations along with the required shock test simulations are considered a best practice.



Asset Liability Management Red Flags to Watch Out For:

- Risk limit policy changes without documented evidence supporting the change, especially if levels are at or above established limits
- Inconsistent modeling results that cannot be explained or substantial variances when back-testing data
- Declining net interest margin
- Share growth that outpaces net worth growth, unless strategically supported