Asset Liability Management in a CECL World

Michael Umscheid, President and CEO of ARCSys

Introduction

Current Expected Credit Loss (CECL) plays a crucial role with asset/liability management (ALM), because of the cash flow modeling aspects of CECL requires financial institutions to estimate and reserve for expected credit losses over the life of their financial assets utilizing forecasted cash flows or cash flows expected to be collected. The ALM process helps institutions manage the balance between asset and liability cash flows and understand the potential impacts of interest rate risk, credit risk, liquidity risk, and other market risks. This whitepaper will provide an overview of some of the key concepts needed to begin integrating ALM with CECL variables as part of the baseline.

For more information, view the ARCSys Learning Portal course Asset Liability Management in a CECL World.

CECL and ALM Integration

The introduction of CECL has brought with it new challenges for institutions. While CECL is designed to improve the accuracy of credit losses estimation, it also encourages a more comprehensive and integrated approach with asset/liability management (ALM). In addition, because CECL is part of the financial reporting process and internal controls over financial reporting, the conclusions made in the CECL estimation process are now the baseline for other cash flow models. CECL is the best estimation of future cash flows expected to be collected.

When integrating it is important to not only develop ALM processes that incorporate the results of the CECL model, but also the integration also requires establishing clear policies and procedures for managing these models jointly on an ongoing basis. This includes setting up clear guidelines for how changes or updates within the CECL model will be assessed, approved, implemented, and communicated to those preparing the asset/liability model.

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Managing CECL Cash Flow Assumptions with ALM

The CECL model should be the primary driver of cash flow assumptions within the asset baseline side of the asset/liability model, with changes in economic or market conditions being quickly reflected within the assumptions. This integration provides a comprehensive framework for analyzing liquidity, taking into account all relevant information when making decisions about cash flow management. Institutions should keep in mind that CECL is an estimation of cash flows expected to be collected including principal interest.

By utilizing dynamic asset/liability models that are responsive to all cash flow changes in CECL assumptions over time, financial institutions can maintain an accurate picture of their financial and liquidity positions, as well as assess other cash flow risk accordingly. This ensures that any adjustments made to the CECL model will be quickly incorporated into the underlying assumptions of the asset/liability model.

When integrating CECL and asset/liability models, it is crucial that the assumptions employed by both models are similar. This means utilizing similar data points to ensure that results generated by both models are reliable and consistent. Because CECL has a forecasting element, the forecasted amounts for charge-offs and prepayments need to be incorporated into the asset/liability model with consideration of changes after the forecast period. In some cases, Reversion Rates in CECL may be either higher or lower than the forecasted impacts.

A well-constructed asset/liability model will factor in CECL assumptions over time to consider scenarios that may arise such as a decline in the economy or an increase in interest rate levels. By doing so, institutions can have a better understanding of their liquidity position and other risk positions by running different scenarios through the model. This then allows them to make informed decisions regarding their current and future cash flows and manage pricing accordingly.

Risk Appetites

The primary types of risk that should be considered with ALM are defined below:

- Credit Risk: The risk from a borrower's failure to meet the terms of their contract with an institution is known as credit risk.
- Prepayment Risk: Risk from when the borrower pays their loan ahead of schedule payments, leaving the lender with additional cash to utilize

- Interest Rate Risk: When there is risk to earnings or capital from changes in interest rates, it is known as interest rate risk
- Liquidity Risk: Liquidity risk is the risk to an institution's current or projected financial condition and resilience that comes from an inability to meet financial obligations when they are due

Risk appetite is the amount of risk, at a broad level, that an institution is willing to accept in pursuit of its strategic objectives. Approaching risk appetite from multiple perspectives and types of risk. Consider the following components when considering risk for an institution:

- Risk Capacity: The maximum amount of risk that an institution can bear, otherwise the total amount of risk that the capital within an institution can bear
- Risk Appetite: The amount of risk that an institution is willing to accept within its overall capacity, otherwise the amount of capital that the institution is willing to put at risk
- Target Risk Profile: The allocation of the risk appetite to the different risk categories, within each pool
- Actual Risk Profile: The risks assumed currently in the different risk categories, within each pool

Considering risk capacity first allows external stakeholders' views to be incorporated and a proactive statement of the desired risk appetite to be established. This approach ensures that senior management are aligned on risk appetite, although it may require more investment up front. Risk appetites may also vary depending upon the type of loan, investment, or product being considered. Risk appetite levels may vary within an institution based on asset type or pool. The levels of risk may be defined as:

- High Appetite: The institution is willing to take on a higher level of risk to achieve higher returns
- Moderate Appetite: The institution is willing to take on a moderate level of risk to achieve a balanced return
- Low Appetite: The institution is only willing to take on a low level of risk to minimize potential losses
- No Appetite: The institution is not willing to take on any risk to minimize potential losses

Understanding the risk results from the CECL model, primarily credit and prepayment risks, and utilizing the forecasted results as the baseline for other models will improve overall model results and cohesion.

Model Development

Model Development

Model development must not be completed in a vacuum. Incorporation of the developed CECL model inputs, analysis, forecasts must be incorporated into the other models to create model synergy. To ensure senior stakeholders understand the need for alternative macro and micro economic forecast variables similar to CECL, ALM and risk management teams must build risk models and risk-adjusted performance metrics in simulation applications. Moving away from qualitative and quantitative assumptions, financial institutions may need to consider incorporating a more in-depth quantitative analysis into their modeling, such as correlation modeling.

This more in-depth analysis improves not only asset/liability modeling, but other analysis such as stress testing as well. This necessitates a shift in internal governance practices, where management information reports must provide a coherent set of risk and profit projections for varied timelines.

Segmentation of Financial Assets and Liabilities

To build an effective asset/liability model, it is essential to understand the importance of segmenting financial assets and liabilities into pools with similar risk characteristics. This is where CECL plays an important part in what needs to be considered in asset/liability modeling. The two key risks in a CECL Discounted Cash Flow (DCF) model are charge-offs and prepayments, which are all selected on a pool basis, but forecasted and generally applied at the loan level. The pool's inputs and results, as well as the overall forecasted economic environment, can be directly integrated into the asset/liability model. CECL changed the game from a short-term two year cash flow assessment in ALM to a longer-term cash flow assessment in CECL. CECL forecasts are for the life of the assets adjusted for prepayments. Understanding the longer-term impacts of assets and liabilities may be beneficial to risk decisions and to better correlate cash flows through time.

Forecasting - Correlation and Dependency Modeling

Because CECL now incorporates a forecast element (the relationship of which must be established and documented), the forecasted economic environment must be directionally consistent with the overall

economic forecast, whether it be for housing prices, interest rates, etc.

Because CECL models require reasonable and supportable forecasts and these fall under the internal controls over financial reporting, the conclusion of the future economic environment is set in the CECL model as the forecast baseline. To create these reasonable and supportable forecasts, institutions utilize the following techniques to support the relationships between risk and the economic environment.

Correlation Modeling is a method of asset/liability modeling that uses statistical techniques to find and measure the relationship between two or more variables. This type of modeling is used to identify and quantify the relationship between these variables and to understand how changes in one variable will affect the other. Correlation modeling can be used to measure the strength of the relationship between variables and also to determine how sensitive a variable is to changes in the other variables.

Dependency Modeling is another type of asset/liability modeling that focuses on the impact of one variable on another. This type of linear modeling can be used to understand how changes in one variable will affect the other and to identify the variables that are most important in determining the overall performance of the model. For example, a certain percentage change in 10-Year Treasury Yield corresponds to a certain percentage change in prepayments.

Interest Rate Risk (IRR) Measurement Methods

IRR measurement methods are used to assess the potential impact of changes in interest rates on a financial institution's balance sheet and earnings. These methods are used to help financial institutions manage their IRR exposure and make informed decisions about their asset and liability portfolios. The switch to a cash flow forecast under CECL affects this analysis in several significant ways.

First, the Forecasted and Reversion Rates for charge-offs and prepayments, by pool, need to be applied to the overall cash flow forecast utilized in IRR modeling. Second, the addition of amortized cost basis elements should be considered as part of the overall loss applied to the calculation. Costs or fees paid upfront are cash flows and, if significant, they can have an impact on net earnings. Most CECL calculations do not apply expected interest rate changes to the allowance calculations.

Methods

Gap Analysis is an IRR approach that facilitates the recognition of gaps in repricing on rate-sensitive assets and liabilities. The purpose of this is to identify maturity and repricing mismatches over defined time horizons, between assets, liabilities, and off-balance sheet instruments.

Duration Analysis evaluates the impact of a change in interest rates on the value of a financial instrument or position. It takes into account the timing and magnitude of the cash flows that occur before the instrument's predetermined maturity date.

Earning Simulation Analysis can be used to calculate the influence of alterations in interest rates on net interest income, net profit, and capital across a variety of scenarios and exposures. Institutions use these models to work out the effect of varying interest rates on their financials in different scenarios. The purpose of this analysis is to determine risk to earnings, which also impacts capital-at-risk.

Value-at-Risk (VaR) is one of the significant ALM measurements. VaR is an essential tool for financial institutions to manage and quantify their risk, as it allows institutions to understand how much of their portfolio may be exposed to potential losses or gains in the current interest rate market conditions or utilizing forecasted market conditions. Therefore, to evaluate the value-at-risk, institutions need to utilize the current market rates that are being paid on deposits, expected on investments, and originated on loans.

Applying Economic and Interest Rate Scenarios

Forecasting is an integral part of CECL and as such the CECL model creates two results that should be considered in the asset/liability modeling process. First, the CECL model requires reasonable and supportable forecasts, which require the institution to have documented expected economic impacts of correlated variables. Second, these variables may not be the same as those used in other models and may foster different results. The CECL model outputs should be used, or if different variables are used for forecasting the results should be compared.

Results, Reporting, and Documentation

Model Results

While CECL and ALM produce reports utilizing future cash flows, ALM produces a wide range of results based on what-if scenarios. Because CECL calculations should be considered the baseline for asset/liability modeling, some similarities between the two are necessary for consistency and integrity of the models. Both models are integral to distinct aspects of risk management for institutions. By juxtaposing the results derived from these two methodologies, one can unravel the multifaceted layers of risk assessment and strategic planning that underpin the stability and growth of financial entities.

Model Reporting and Documentation:

The entire asset/liability management process should be documented in a clear and concise manner to ensure compliance with regulatory requirements and internal policies. This should specifically include the integration of CECL conclusions, as it pertains to the model inputs, as well as the overall assessment of the future economic environment used to determine the baseline. Having forecast documentation that is different between the models would run afoul of best practices for model management.

Model Validation and Calibration

Since CECL becomes the baseline for the asset side of the asset/liability model, integrating the model validations between the models should be seriously considered. Regulators and auditors have, for the most part, not required non-public banks and credit unions to have detailed model validation policies; however, with the impact of CECL on the overall model practices of institutions, model management and validating those models becomes more important and significant.

Independent Validation of the Models

To ensure the accuracy and integrity of all models, independent validation should be performed periodically. This process involves identifying any potential weaknesses in the models, as well as any

areas that may require improvement or revision. It is also important to assess the assumptions used in the modeling process, including whether they are reasonable and consistent with CECL model conclusions. As CECL model conclusions change, so do the asset/liability model inputs.

The validation process should include a review of the data sources used, as well as assessing the effectiveness of any data cleansing techniques employed. Data sources should be verified to ensure accuracy and reliability. Furthermore, changes made to the models since their inceptions must be considered; reviewing these alterations can help determine whether they have had a significant effect on performance.

Finally, it is critical to consider external factors when validating the models. External factors such as economic and employment conditions can impact forecasts and should be considered consistently throughout the models when assessing their validity.

Testing Statistical Models

Ensuring each model is statistically sound and adheres to consistent statistical assessments requires testing and validation. One of the most common ways to evaluate a model's accuracy is back-testing, where the model is run against historical data to determine if it's accurate. Another method for ensuring that an asset/liability model is reliable is by running sensitivity tests. This involves simulating different circumstances, such as an economic downturn or regulatory change, to see how the model responds under these conditions. Doing so helps identify potential threats so they can be addressed proactively before they become an issue.

Sensitivity Analysis

Sensitivity analysis should be included to help determine which assumptions have the most influence on a model's output. By identifying key assumptions, management, when necessary, can refine the assumptions to increase the accuracy of their models. The most significant variables can be tested by keeping all other variables constant, changing the variable in question, and comparing the results to the base-case scenario. Additionally, sensitivity analysis can be used to determine the conditions under which key business assumptions or model parameters break down or when IRR may be exacerbated by other risks or earnings pressures.

Calibration for Historical Performance and Forward Looking Information

Accurately calibrating models is critical for institutions to produce reliable forecasts and make informed decisions. This process requires a thorough review of past performance data, including analysis of trends in the data and adjustments when necessary. It is also important to consider external factors such as economic conditions, interest rates, inflation rates, or other market forces that could impact the models' predictions.

Integration of Model Management Techniques

By integrating model components, model back-testing becomes an integrated process. Model risk management requires the back-testing of results. Evaluating external variables and any adjustments made to the model are key components of this evaluation process. Additionally, running simulations for various scenarios can help institutions assess different approaches and make changes where necessary to improve accuracy.

Compare and Contrast CECL and Asset/Liability Modeling Forecasts

In many cases, CECL has a more robust forecasting methodology than that which is utilized in an asset/liability model. It is important for institutions to compare the results of CECL and ALM forecasts with specific external factor components to gain a better understanding of their impact on asset/liability models. By doing this comparison, institutions can identify areas where either model could be improved upon by incorporating additional external factors or by making changes according to current economic realities.

Model Governance and Monitoring

To ensure the successful implementation and governance of CECL and asset/liability models, it is essential to follow best practices for model governance and monitoring. Establishing a robust model governance framework and policy is the first step in this process. This should include the identification of

roles and responsibilities of personnel involved in the model development and implementation, as well as the development of a risk management framework for overseeing and monitoring the models. It is important to consider that in many institutions, there are different teams associated with each model. Specific policies and procedures should be in place to make sure there is a clear internal control process in place.