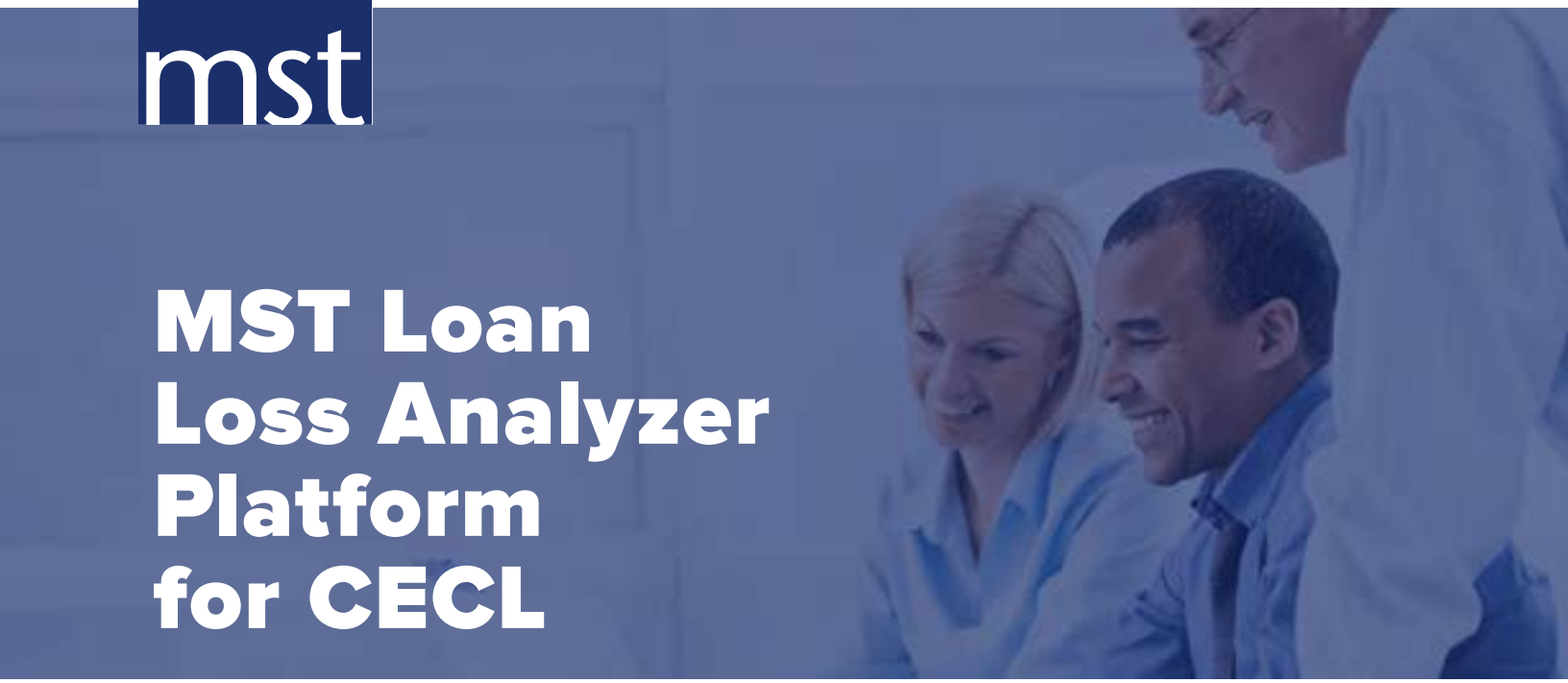


MST Loan Loss Analyzer Platform for CECL

MST empowers financial institutions with confidence in their allowance estimations and transition to CECL through innovative software solutions, advisory services, and education.

The MST Loan Loss Analyzer software platform provides a reliable, repeatable, efficient process for determining the allowance while satisfying accounting and regulatory requirements. Developed in 2006, the MST Loan Loss Analyzer (LLA) was the first and remains the leading solution for automating the allowance, rich with capabilities that not only streamline the process but provide a wide array of options for managing portfolio risk. Moreover, the LLA is a comprehensive and configurable system for assessing loan portfolio risk.

The MST Loan Loss Analyzer is developed and maintained by MainStreet Technologies (MST), the leader and pioneer in ALLL and CECL (allowance) solutions. Since entering the financial space, MST's sole focus is and will remain the development and support of allowance solutions, including solutions specific to Current Expected Credit Loss, or CECL. Today the LLA serves institutions as they execute their allowance under the current incurred loss standard, supports the financial institution with the features and capabilities to transition to CECL smoothly and confidently, and provides the platform for estimating and calculating the allowance under CECL, regardless of the methodology or methodologies the institution implements.

TRANSITION TO CECL

The LLA platform supports the institution in its transition to CECL with everything required to develop reasonable and supportable forecasts and execute a defensible allowance calculation.

- Data Warehouse – collects data from the institution's core and other data systems. A tailored import normalizes data between the systems and makes data available on demand.
- Shadow Loss Analysis – allows you to run parallel allowance calculations and test different methodologies, such as Probability of Default / Loss Given Default (PD/LGD), Migration, Cohort, Transition Matrix, Discounted Cash Flow, Historical Loss, etc, for CECL compliance and to determine the model or models that best suit the institution and its portfolio.
- Pool Segmentation – allows the institution to segment the loan portfolio by any number of characteristics, such as: vintage, product, risk, geography, etc.
- Correlation Analysis and Linear Regression (The MST Virtual Economist) – provides an easy way to study a wide set of economic variables and understand how relevant metrics will influence portfolio performance. The MST Virtual Economist allows the bank or credit union to select and track the economic data relevant to its locale and portfolio, then understand how its loan experience correlates to those economic trends.

ACCURACY

Eliminates the errors inherent in manual data entry and Excel spreadsheets and provides greater management and oversight for controls

MULTIPLE SYSTEMS/INTERFACES

Captures loan data through an automatic download directly from the core loan application and integrates with all core processing systems. The institution can incorporate data from any source useful for determining the allowance and in support of greater analytics and reporting, Data can be accessed or downloaded as frequently as desired.

METHODOLOGIES

Accommodates all methodologies such as:

- Loss Migration
- Probability of Default/Loss Given Default (PD/LGD)
- Cohort Analysis
- Transition Matrix
- Vintage Analysis
- Historical Loss
- Discounted Cash Flow
- Other CECL-Compliant Approaches

Q-FACTOR ANALYSIS

Methodologies for adjusting qualitative factors can vary from extremely subjective to otherwise quantified in a model driven approach. The LLA supports whatever degree of automation or lack thereof required by your methodology and management oversight.

VERIFIABLE AUDIT TRAIL

Verifies the accuracy of the calculation so auditors and regulators can see exactly what was done and why.

ROBUST REPORTING

Provides standard and client-defined reports that present allowance-related calculations and trends in recognizable formats. Common reports include footnote disclosure reports such as the CECL Vintage disclosure and ASU 2010-20 footnote disclosures; reports on impact analysis, migrations, audit trails for SOX and other risk management requirements and more; issues reports in multiple formats, such as Excel, Word or PDF.

AUTOMATED POOLING AND SEGMENTING

ASC 450-20 loans - Automates pooling ASC 450-20 loans based on the institution's specific pooling methodology. Pooling segments can be configured to accommodate any level of detail or distinction, such as considering pool performance by loan type for each institution branch or region. Works with virtually unlimited pooling structures.

Specific Reserves - Automates segmenting loans based on the institution's policies and methodology for individual reserve consideration. Documents all aspects of the allowance calculation, including loan- specific information, for greater reporting detail than possible in a spreadsheet.

- Provides for cash flow calculations for loans where terms have been modified to determine a present value for those loans.
- Manages multiple pieces of collateral for a single loan as well as multiple loans connected to a single item of collateral.

TDR LOANS

Manages and reports on Troubled Debt Restructuring.

ACQUIRED LOANS

Combines acquired loans and provides for footnote disclosure reporting and portions of the Call Report.

BACK TESTING

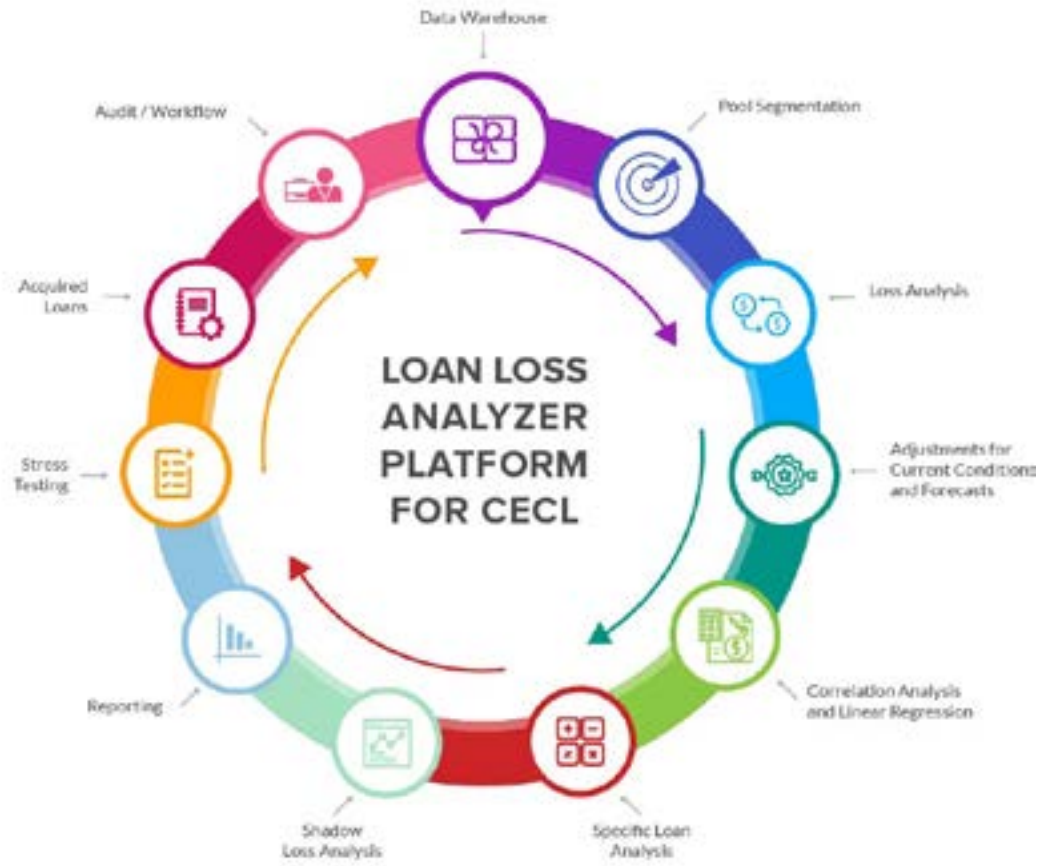
Automates the process of testing the methodology used for determining the allowance; compares the institution's prior estimate to actual results to allow for adjustments to its future estimate.

STRESS TESTING

Provides both loan-level stress testing (bottom-up) and portfolio stress testing (top-down).

GAAP COMPLIANT

Complies with all Generally Accepted Accounting Principles (GAAP).



The Loan Loss Analyzer Platform can be tailored to your institution's needs with a variety of features.

ALLL / CECL EDUCATION

MST is the industry leader in allowance-related education, providing a broad array of educational programs, events and services to clients and non-clients. The MST National Conference is an annual event, the only national conference dedicated to the allowance and related issues. MST offers timely webinars on critical allowance-related issues. Its network of resources includes bankers, CPAs, auditors, regulators and other subject-matter experts who provide direction to MST clients on an individual basis as well as through case studies, white papers, blogs, email alerts, conference presentations and training sessions. MST educates in collaboration with such industry groups as the Risk Management Association, American Bankers Association and Financial Managers Society.

ADVISORY SERVICES

With a team of former regulators, CPAs, and financial industry professionals, MST provides an array of allowance-related consultative and advisory services, including full CECL Blueprint, methodology design, validation, environmental factor determination, loan loss migration, examination assistance, staff resources and more.

For more information about the **MST Loan Loss Analyzer or Advisory Services, contact us: info@mainstreet-tech.com or 877-910-9789.**

DATA WAREHOUSE

The Current Expected Credit Loss (CECL) accounting standard requires institutions to assemble and analyze large amounts of data. Institutions will need considerably more historical and other types of data to project future losses than is needed under the incurred loss model.

Under the current incurred loss model, many financial institutions have calculated the ASC 450-20 portion of their allowance using aggregate, pool-level information. In most cases, this was acceptable from a regulatory and accounting standpoint. Under CECL, historical pool-level data alone will no longer be acceptable for calculation of loss rates that are applied for the calculation of the allowance.

The information in most institutions' core loan systems is insufficient as many core systems only store, at most, the last 12 to 18 months of loan information. (Even that data can be difficult or expensive to access.) Experts indicate historical data requirements for CECL of five years or more.

The first step in preparing for CECL is to begin capturing and storing loan-level detail and transactional information on a regular basis. The LLA platform serves as a data warehouse, storing all the data needed for a future expected-loss model in an institution's monthly or quarterly reporting periods, including all data fields captured with the import file or files that are fed into the LLA.

Among the data fields that institutions use in their allowance estimations under CECL and that are captured and maintained in the LLA:

LOAN DETAIL DATA	DESCRIPTION
Unique Loan Identifier	Can simply be the loan number, but could include other fields of information. This field allows the institution to pull loans together from different data sets as well as in combination with transactional information.
Loan Balance Information	The balance used to calculate the allowance (likely Book Balance or similar).

LOAN DETAIL DATA	DESCRIPTION
Loan Segmentation Information	Includes fields necessary for pooling loans into potential segments for allowance calculations. Common fields are loan types, call codes, collateral codes, purpose codes, class codes, NAICS codes. Also can include geographic indicators such as a region code or state identifier.
Loan Risk Classification Information	Any fields used to identify risk within a loan. Common fields are accrual status, days past due, risk rating, original and/or current LTV, TDR indicators and credit scores.

Other Loan Information	Other fields necessary for expected loss calculation, such as origination date, maturity date, current and original interest rate, payment amount, interest-only flags, as well as other fields that may assist with the calculation of the present value of future cash flows.
Other Relevant Loan Information	Any additional loan data fields relevant to the particular institution or methodology.

POOL SEGMENTATION

Unique to the LLA is its ability to run loss models with highly tailored pooling structures, and it automates the segmentation of loans by characteristics such as vintage, product, risk, geography, etc.

ASC 450-20 Y ASC 310-10 LOAN MANAGEMENT

The LLA also automates the pooling of loans for analysis:

- ASC 450-20 loans - Automates pooling ASC 450-20 (previously FAS 5) loans based on the institution's specific pooling methodology. Pooling segments can be configured to accommodate any level of detail or distinction, such as looking at pool performance by loan type for each bank branch or region. The LLA is highly flexible to work with virtually unlimited pooling structures.
- ASC 310-10 loans - Automates segmenting loans for ASC 310-10 (formerly FAS 114) impairment based on the institution's existing policies and methodology for impairment testing. Further, the LLA documents all aspects of the allowance calculation, including loan-specific information, for far greater reporting detail than possible in a spreadsheet.
    - Provides for cash flow calculations for loans where terms have been modified to determine a present value for those loans.
    - Manages multiple pieces of collateral for a single loan as well as multiple loans connected to a single item of collateral.

LOSS ANALYSIS

Among the methodologies financial institutions use to determine their loss reserve is loan migration analysis. As accounting standards shift to estimating future or expected losses, migration analysis will likely be the default methodology for determining the expected credit loss. The MST Loan Loss Analyzer automates the extensive data gathering and detailed pool segregation activities consistent with loan migration analysis best practices, accommodating the financial institution's unique migration methodology.

Like the historical average approach, the purpose of a migration analysis is simply to determine, based on the financial institution's experience over a historical analysis period, what rate of loss the institution has incurred on similarly criticized or past due loans. Such an analysis then allows the bank or credit union to determine the expected future loss rate of a given population of loans segmented by both general loan characteristics as well as credit risk grades or delinquency rates.

The most basic form of migration analysis, fixed loss migration, looks at a single point in time and makes determinations based on events happening to the loans forward a set period to determine the expected losses for loans in that population.

The MST Loan Loss Analyzer converts historical data from other systems for a comprehensive look-back on a loan-by-loan basis. MST makes loss migration analysis possible for financial institutions by gathering all the necessary components that exist in other systems used by financial institutions.

Besides making migration analysis a far less onerous process, the MST Loan Loss Analyzer provides:

- An accurate model for determining how past performance affects future outcomes, providing for predictable performance in the loan portfolio

- Retrieval and management of all existing data in the financial institution's systems on individual loan losses, including the risk rating for each loan

- Automation and organization of the migration analysis process toward the most meaningful results:

    - Pooling loans in a meaningful manner
    - Separating individual loans within pools into risk-rating categories
    - Identifying each loan which has incurred a loss
    - Determining the net charge-off amount (gross charge-off plus any recoveries) for each loan, and applying the charge-off throughout each pool and period where the loan has lived
    - Tabulating the total balance for all loans within a specified risk rating
    - Selecting the historical period to be analyzed, based on individual quarters
    - Calculating the loss rate for each quarter and average loss rate for the selected time period

The MST Loan Loss Analyzer allows the financial institution to benefit by advantages provided by the more complex rolling migration by:

- Isolating loss components
- Calculating probability of default (PD) for each risk-based portfolio segment
- Calculating loss given default (LGD) amounts on a broader segment of loans
- Using multiple look-back and horizon periods
- Stress testing the portfolio for ALLL adequacy

MST Supports Loan Loss Analyzer Users With:

- Implementation of full-fledged loss migration systems
- Consultation services to help transition from current models
- Validation and back-testing existing models for accuracy

Using historical performance throughout the portfolio in a meaningful way to predict potential future losses, the platform provides the financial institution a loss migration model that delivers the highest levels of accuracy in determining its quarterly expected loss.

PROBABILITY OF DEFAULT / LOSS GIVEN DEFAULT (PD/LGD)

Institutions require more sophisticated methodologies than a simple historical loss analysis to estimate allowances under the Current Expected Credit Loss accounting standard. Projecting future losses will require analysis of a greater volume and more types of loan data as well as external economic data. The LLA allows the institution to test for expected loss, CECL-compliant models, including Probability of Default/Loss Given Default (PD/LGD), one of the methodologies being considered by financial institutions for calculating allowances under CECL.

A form of migration analysis, PD/LGD combines the calculation of the probability of loans experiencing default events with the losses ultimately associated with the loans experiencing those defaults.

- The PD component of the formula represents the probability loans in a certain risk-stratified segment will default. It is a percentage of loans that have defaulted in that pool over a look-back period. Some institutions choose to apply the formula by loan count, but, to give larger loans more weight, most prefer a "balance" approach, the percent of the total balance of the portfolio that has defaulted over the look-back period.
- The LGD component is the percentage of the defaulted loan balance that is ultimately charged off. Multiplying the PD by the LGD gives a loss rate, which is then applied to the loan portfolio balance to determine expected future losses.

By separating its two components, PD/LGD provides better insight – that is, more granularity – into loan losses, important to estimating under CECL. As well, account level modeling via PD/LGD provides more detailed risk profiling for each borrower.

Additional reasons for employing a PD/LGD migration methodology:

- Each component is driven by a separate set of

economic factors, which allows for a more dynamic view of the impact of those factors: an increase in unemployment would be more responsible for increasing the PD than the amount of LGD; a decline in real estate values would show up as more impactful on the LGD than the PD.

- PD/LGD provides a more reliable approach to stress testing as each item to be stressed fits into either the probability of default or the value of underlying collateral. The institution can gauge the impact of every stressed item on one or the other variables, then run those through its asset liability model to determine the impact on capital and liquidity.

- PD/LGD is also largely in line with statistical techniques prevailing in the consumer lending arena and therefore more intuitively adaptable.

MST helps institutions transitioning to a migration methodology like PD/LGD from consulting services through to automation. We validate and back-test existing models based on migration by comparing migration results to a historical approach. As such, the institution employs the methodology as a "shadow" analysis to validate or challenge its current allowance estimates.

VINTAGE AND COHORT ANALYSIS

Expected losses are a current estimate of all contractual cash flows not expected to be collected. A model is a set of ideas and numbers that describe a particular state. The LLA allows the institution to test for various expected loss, CECL-compliant models, including cohort and vintage analyses:

To conduct a cohort analysis:

- Consider the loss accumulation period.
- Group loans outstanding at the beginning of that period by relevant risk characteristics ("cohorts").
- Measure losses accumulated on each cohort over the following loss accumulation period.
- Average the quarterly results over a loss cycle period for an expected loss rate for each cohort.
- At the measurement date, adjust the expected loss rate for current conditions and "reasonable and supportable" forecasts.

To conduct a vintage analysis:

- Track homogeneous loans on the basis of a origination period or "vintage". (ie, calendar year, quarter, promotional program, etc.)
- Measure losses accumulated on each vintage.
- Apply the expected cumulative loss to the outstanding vintages.
- At the measurement date, adjust the expected loss rate for current conditions and "reasonable and supportable" forecasts.

TRANSITION MATRIX

Where an institution has applied a consistent measurement of risk to its loans for a least a full economic cycle, it can use the LLA's Transition Matrix function to track loan performance and estimate future losses. For institutions with the required rating data history and consistency, a transition matrix can provide a lifetime default rate for a particular grade for a particular loan pool, and a reliable and compliant method for forecasting future losses.

The LLA's Transition Matrix provides a measure of probability of default by tracking, over quarter-end or year-end periods, how loans move, or transition, from one risk metric to another. The matrix can be used to follow credit scores or delinquencies, but risk ratings are most commonly used.

The transition matrix process:

- Pick a measurement period.
- Look at all the loans in that pool that existed during that period to see how they moved from one risk rating to another.
- Apply percentages to loans that kept the same risk rating, moved to another rating bucket, defaulted or were paid off.
- Determine the rate of default for each rating grade

in the pool, which established the matrix probability of default for that measurement of risk for that grade.
- Apply the matrix to your current portfolio to project how those loans will move in the upcoming year and to termination of those loans – either paid off or defaulted.

Key considerations for using a transition matrix

- Consistency - A transition matrix is appropriate for any type of loan as long as the lender has consistently applied its risk metrics over several years. If risk ratings for example haven't been applied consistently, or definitions for ratings or other rating criteria have changed over time, the matrix won't produce reliable results.
- Sufficient rating data – Matrix calculations should cover a complete economic cycle, worse case scenarios as well as best, so that it can be a reliable forecast as economic conditions change.
- Establishing a transition matrix takes several years as the lender must follow the loans in the determined period and pool to their termination, defaulted or paid off.

Loss Given Default denominator – The matrix provides the probability of default part of the PD/LGD calculation. The loss given default must be calculated separately – there are several ways to determine the loss given default – that is, add the losses for the loans that have defaulted. The loss given default becomes the denominator; probability of default the numerator

DISCOUNTED CASH FLOW

Discounted Cash Flow is calculated using the present value of expected future cash flows (principal & interest) discounted at the loan's effective interest rate. It is a prescribed method for measuring impairment on an individual impaired loan. A CECL DCF allowance is defined as the difference between the amortized cost basis and the present value of the expected cash flows. CECL guidance specifically mentions DCF as a possible methodology, although it is clear that DCF is neither required, nor is reconciling the institution's chosen methodology to DCF. DCF is intended as a life-of-loan methodology, so many of the challenges of other methodologies – accretion of discounts, reversion period, prepayments, etc. – do not exist with DCF.

ADJUSTMENTS FOR CURRENT CONDITIONS AND FORECASTS (QUALITATIVE FACTORS)

The LLA allows you to make and support objective and quantified adjustments for current conditions and forecasts. The platform provides several options for management of Q-factors including a scale for rating the impact of the internal and external factors – both qualitative and environmental- the institution has determined applicable to account for losses beyond its historical losses. The Loan Loss Analyzer interprets the Q-factor data entered by the institution, then assigns a related basis-point adjustment as pre-determined by the financial institution as appropriate. All such ratings are defined according to the institution's preferences and methodology requirements.

Where preferred by management, the MST Loan Loss Analyzer can help remove subjectivity from the calculation and provides for greater consistency and documentation in Q-factor adjustments.

Although Q-factors are determined by the institution, the MST Loan Loss Analyzer streamlines determination for many factors, such as:

- delinquencies vs. average (for the historical data period)
- non-accruals vs. average
- charge-offs vs. average
- volume of loans vs. average
- credit concentration levels
- classified loans

The Loan Loss Analyzer allows institution management to make additional adjustments for subjective internal and environmental factors, factors that often lack observable data to determine the amount of their impact on loan loss reserve calculations. Examples include:

- experience of the financial institution's lending staff
- changes in lending policies
- loan review quality
- regulatory requirements

In 2016 the Loan Loss Analyzer's Q-factor management feature was enhanced with a new user interface, which streamlines input and the documentation of factors to provide additional flexibility:

- Internal and external factors are accessed via a single combined page.
- Rating scales for Q-factor inputs can be created on a factor-by-factor basis.

ADVANCED Q-FACTOR MATRIX

An Advanced Q-Factor Matrix add-on module supports users looking for a more quantitative approach to Q-factors. This module allows you to create matrices based on internal or external variables that will then lead to a particular basis point adjustment. These variables can be external, user-input variables that drive the adjustment, or internal variables that could be automatically pulled from data within the Loan Loss Analyzer to drive the adjustment.

With the Advanced Qualitative Factor Matrix, institutions also have more flexibility to create factors or "sub-factors" that only apply to certain pools or groups of pools and not others.

Loan Loss Analyzer reports provide justification for how Q-factors have been calculated, and allows the institution to back test previous quarterly calculations to demonstrate directional consistency and accuracy, a vital risk-management process, in particular when the institution makes negative adjustments to its allowance.

CORRELATION ANALYSIS AND LINEAR REGRESSION (VIRTUAL ECONOMIST)

Estimating the allowance under CECL includes assessing the impact of economic factors and trends. CECL requires financial institutions to look into the future and assign value to prospective economic trends. Financial institutions need access to data and intelligence from which to draw conclusions.

Judging the potential for economic impact and translating it into an appropriate, compliant allowance is challenging for credit unions and banks other than the largest financial institutions, which have staff economists to gauge the influence of economic trends. Not only are most financial institutions without staff economists, their portfolios typically do not provide sufficient data for econometric modeling. Further, community bank and credit union loan portfolios are more idiosyncratic than large banks', and are therefore likely more exposed to local economic sways. Economic data plays a greater role in their portfolio performance and therefore in their CECL estimates.

MST developed the **MST Virtual Economist,** to address that challenge.

The MST Virtual Economist gives the institution an easy way to look at a wide set of economic variables and understand how relevant metrics will influence portfolio performance. The tool links the institution to economic data sources, including the Federal Reserve Economic Database (FRED), which maintains more than 247,000 economic series from 79 different sources. In applying FRED, the financial institution can compare selected national data to institutional data: internally generated, from the FFIEC and from peer banks.

The MST Virtual Economist:

- Allows the institution to select and track the economic data relevant to its own locale and portfolio, then understand how its loan experience correlates to those economic trends.
- Allows the institution to match and correlate economic data specific to each loan segment for the most relevant analysis.
- Visually displays the correlations to demonstrate the strength of each metric and delivers a correlation coefficient that reveals the potential impact of the economic data on that segment of the portfolio.
- Allows the institution to consider forecasts from six months to five years out, leveraging data from the Federal Open Market Committee (FOMC) and the Philadelphia Federal Reserve's State Leading and State Coincident Indexes.

The MST Virtual Economist gives the institution an automated solution for selecting economic factors relevant to its community and portfolio, access data relative to those factors, match the data to its own as well as external historical loan loss data it has gathered, analyze the impact of the selected economic trends on future loan losses and make adjustments to its allowance accordingly.

Under CECL each institution is required to consider economic factors in determining future expected loan losses. The MST Virtual Economist provides an efficient method to evaluate economic factors and project their impact on the institution's loss rate, find new variables that impact the institution's loss rate, and determine the relevance of the economic factors the institution already uses to make qualitative adjustments.

The MST Virtual Economist allows the institution to compare the loan portfolio to a variety of economic indicators to determine which ones matter.

> Under CECL you are required to consider economic factors in determining future expected loan losses. The MST Virtual Economist is an efficient, automated way to evaluate qualitative economic factors and project their impact on the institution's loss rate, find new variables that impact the loss rate or determine the relevance of the economic factors you are already using to make qualitative adjustments.

Tom Cunningham
Economist
Federal Reserve Bank of Atlanta, (retired)

SHADOW LOSS ANALYSIS

In much the same way an institution uses shadow loan processing for dual accrual accounting of commercial loans, a second or "Shadow Loss Analysis" allowance methodology provides greater assurance of accuracy under the current incurred loss accounting standard for estimating the ALLL. Moreover, the Shadow Loss Analysis tool allows the institution to test potential models for estimating their allowance under the impending CECL (Current Expected Credit Losses) standard.

In a Shadow Loss Analysis, the financial institution manages a separate and different loss model in addition to its existing model, or manages the same model with different assumptions, such as a longer loss emergence period or different look-back period. Basically, Shadow Loss Analysis serves as a check on an existing model. A second quantitative model applies a "reasonableness" test to the first calculation and gives you confidence in the calculation. While the results of the two are not expected to be identical, the second model allows the institution to note the difference between the two and track it over time. If the two diverge substantially, the trend could alert the institution to problems with its current methodology or at least to questions that need to be addressed.

Whatever methodology the institution chooses to test for CECL in a shadow analysis, it should provide information beyond its current model. Additional information allows the institution to see trends in its portfolios that are hidden in a homogeneous loss approach. Such trends could alert the financial institution to a need for additional qualitative adjustments or the use of a loss emergence period. Or they could signal a need for something as fundamental as changes in its lending policy.

Shadow analyses using forward-looking projections that will be required under CECL tell the institution how expected losses will impact its allowance, and as such, provide information key to future growth, capital planning and overall profitability. Shadow analyses of various models help the institution choose an appropriate CECL-compliant model. A CECL-compliant loss analysis model that has been tested as a "shadow" will ultimately be more defensible and better documented than an untested, unproven model. Shadow Loss Analysis also helps with the documentation and justification of qualitative factors. Using the quantitative analysis from an existing historical loss model and tracking the changes over time, a shadow migration loss analysis model could justify qualitative factor adjustments for "Quality of Loan Review" or "Volume and Severity of Adversely Graded Loans." If the shadow loss model takes a PD/LGD approach, the changes in LGDs could justify the "Changes in Value of Underlying Collateral" factor as changes are tracked over time.

REPORTING

The business unit, as well as management, auditors, and regulators require thorough, accurate and frequent information as it applies to the allowance methodology and loan portfolio. Many times financial institutions prefer to retain those reports that have been created internally and modified over time, perhaps enhancing them with additional information. The Loan Loss Analyzer delivers both pre-defined reports, those created in advance by MST, and client-defined reports, those configured specifically for the financial institution at time of system implementation.

The LLA allows users to:

- Leverage pre-defined reports, which are regularly updated by MST
- Create their own reports using the Report Writer
- Get raw data downloads for true ad-hoc and other analysis

All LLA reports are integrated with MS Office and can be incorporated in live MS Excel worksheets, formulas included. The ability to see the formulas gives you documentation and allows you to confirm your calculations.

STRESS TESTING

Interagency guidance states that all institutions should plan for ways to meet funding needs under stressed conditions. A stress test is a forward- looking, quantitative evaluation of stress scenarios that could impact an institution's financial condition and capital adequacy. Stress tests are used to evaluate whether existing financial resources, such as capital and liquidity, and operational resources, such as staffing and internal systems, are sufficient to withstand economic downturns or unexpected events. Regulators consider stress testing prudent practice for all financial institutions.

Stress-test risk assessments are based on assumptions about potential adverse market events. While the financial institution determines the potential events to test, stress testing, like other forward-looking calculations, requires access to comprehensive sets of loan data for analysis. The MST Stress Test accesses the data collected and managed within the Loan Loss Analyzer, applies assumptions to reveal impacts to reserve and subsequently capital. By leveraging the complex quantitative modeling that financial institutions are already using for calculating their allowance , the MST Stress Test module begins with a supportable baseline, rather than an arbitrarily chosen starting point.

The MST Loan Level Stress Testing Module:

- Allows the institution to test different pools at the loan level to determine how various scenarios impact capital ratios.
- Allows the institution to test variables based on their underwriting criteria and tolerance levels.
- Directly tests such variables as past dues and FGICO scores.
- Indirectly tests such variables as debt service coverage based on changes in net operating income levels and loan-to-value scenarios based on changes in collateral values.
- Includes robust reporting capabilities that identify which loans cross risk thresholds based on various stress scenarios, how capital ratios are affected by various scenarios, and other loan level information.

The MST Scenario Level Stress Testing Module:

- Supports analysis based on changes to Probability of Default (PD), Loss Given Default (LGD), historical loss rates, loan migrations, and loan growth
- Allows for assessment at a portfolio and individual portfolio segment level
- Is used to analyze risk in the overall portfolio or portfolio segment for those factors applicable to that assessment
- Applies the calculated impact to the reserve, then to Tier 1 and Tier 2 Capital to evaluate adequacy
- Provides stress-test results documentation

ACQUIRED LOANS

MST developed the Acquired Loans (Acquired Portfolio Manager) feature for its Loan Loss Analyzer to support banks with acquired loans that must be accounted for under ASC 310-20 (formerly FAS 91) or ASC 310-30 (formerly SOP 03-3) rules. Acquired loans are often managed in a separate Day 2 accounting system and don't always make it back into the financial institution's core loan system. The Loan Loss Analyzer's Acquired Portfolio Manager bridges the gap by interfacing with the Day 2 system to collect both the "carrying values" and other relevant loan information to calculate additional reserves, evaluate remaining discount adequacy, and create call reports and footnote disclosures.

The Acquired Loans feature works in the following ways:

- Interfaces with any Day 2 accounting system to collect carrying values and all other pertinent loan data not available in the core loan system.
- For loans accounted for under ASC 310-20 (formerly FAS 91), compares remaining discounts to the loan reserve amount if it was included in the originated portfolio to determine if any additional reserve is necessary. *(For example, if the remaining discount is less than the "would-be" reserve, the Acquired Portfolio Manager calculates the difference as an additional reserve.)*

- For ASC 310-30 (formerly SOP 03-3) purchased impaired loans, where traditional reserves are not established, the system compares "would-be" reserves to remaining discounts to determine the adequacy of those discounts, and in turn, the reasonableness of current yields.

Combines carrying values of acquired loans with book balances of originated loans to help financial institutions produce call reports, footnote disclosures and other reporting that needs to be based on carrying values.

REVIEW, AUDIT WORKFLOW

MST Review both integrates and streamlines credit review functions though a sophisticated system of inter-related modules. Review ensures the accuracy of internal credit classification or grading systems, providing quality information to determine the allowance in accordance with regulations and GAAP.

Problem Loan Reporting, a core Review feature, allows the financial institution to quickly review and act upon problem or "criticized" loans. Problem Loan Review & Reporting simplifies time-consuming and unwieldy processes typical of Excel spreadsheets and email correspondence between lenders and credit that ultimately impact loss reserve determinations. Review provides for collaborative, comprehensive assessment where notes and flagging occur. The system then aggregates the data directly from your core loan platform, delivers the results of the review to the appropriate users and in a review form designed by the financial institution, then automatically routes the form from person to person in accordance with the institution's approval workflow.

Other common Review modules include:

- Watch List Reporting
- Criticized/Classified Assets Reporting
- Credit Grade Change Requests
- Charge-off Requests

Like all MST solutions, Review is designed to interface with the financial institution's core loan system, conveniently matching existing policies. The software solution is installed on the financial institution site, behind its firewall, with assigned user access to ensure complete security.

Each Review module addresses the financial institution's current needs; additional modules can be added as required. MST installs the system, trains staff and provides ongoing system support.

Benefits of Review

- Less time gathering and distributing data
- More time spent on critical analysis and decision-making
- Added efficiencies and cost savings due to fewer loan defaults
- Improved productivity which directly affects your institution's bottom line

MST SUPPORT

A COMPREHENSIVE PROGRAM OF ONGOING SUPPORT

The **MST Loan Loss Analyzer (LLA)** is a comprehensive solution. We begin with a study of your financial institution's loan operations processes, focusing on how you track and report on loan losses. Then we configure the LLA to work the way you work, honoring your institution-specific rules and processes, so your LLA system is easy to learn and use, and you can take advantage of its benefits quickly and broadly.

MST remains a close and observant partner to your loan operations. We work with you to ensure your LLA continues to meet your needs and to help you capitalize on its broad functionality in managing portfolio risk. Our program of ongoing support includes:

- Complete technical support
- System upgrades
- Ongoing project management

EDUCATION, TRAINING

MST is committed to offering high-quality education. An annual National Conference, workshops, webinars and frequent whitepapers are just a few of the opportunities. Visit the MST Academy at www.mainstreet-tech.com.

COMPLETE TECHNICAL SUPPORT

MST's technical support is comprehensive. We maintain your system. You need no additional IT expertise on staff; nor are there additional demands on your current IT staff.

Live and local

When you call the MST Technical Support Center your call is answered by a technician in our support operations headquarters. These qualified technicians are MST employees, working from our offices in Georgia, on hand to personally address your technical issues. More than 95 percent of our financial institution clients' technical issues are resolved during this initial call.

Technically advanced technical support

Most of the technical support required to maintain your LLA system is accomplished remotely. MST can access the server at your institution, or in the cloud if you choose, where LLA resides, to diagnose problems efficiently and perform a variety of activities, such as:

- Set up new lenders with access to the system, to receive daily exceptions updates and various reports, etc.
- Set authorization levels for new or reassigned employees.
- Manage changes to or add document types and reports.
- Download data from the financial institution's core system or other sources.
- Back up system data.

Web-based HelpDesk

MST connects with a network of field technicians via our web-based HelpDesk. HelpDesk provides for a highly responsive and effective level of support to our clients, allowing us to bring the specific expertise of a particular technician to bear on a client issue.

Your Maintenance History

Every call to our Support Center is logged; we maintain a maintenance history for each client. This history allows us to proactively support your system. We contact you periodically to share our observations and make recommendations, from adding new capabilities to your LLA to training new employees.

SYSTEM UPGRADES

MST shares all LLA system upgrades and enhancements with all our clients. We leverage client experiences and input to develop new capabilities for the LLA and to find ways to continue to enhance system performance. Enhancements and upgrades include:

- New features and functionality to enhance usability
- New report types or formats
- New ways to respond to ever-changing regulations
- "Best practices" for a variety of loan operations procedures

Our comprehensive service extends to finding ways to address issues unique to your specific situation.

Your MST account manager

Each MST client is served by a MST account manager. Your MST account manager works with you to resolve non-technical issues and help you capitalize on new opportunities by expanding the use of the MST LLA. Your MST account manager is your single source contact for questions and concerns, and responsible for ensuring you are getting maximum productivity and efficiency from the MST LLA.