Asset/Liability Management in a New Era of Regulatory Scrutiny

Preparing for the "New Normal"

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The financial catastrophe that started in the fall of 2008 was a jarring wake-up call for everyone involved: Wall Street, Main Street, Washington and, of course, the regulators. No one knows for sure what the ultimate fallout will be, but it is clear that the impact will be long lasting.

Clearly, banks with troubled assets on their balance sheets felt the immediate effects of this crisis; for those who have survived, a long uphill battle is under way to get back on track. Even those institutions that were able to stay clear of the subprime debacle and other risky ventures were significantly affected and are not out of the woods.

More than anything else, bankers can expect enhanced regulatory scrutiny—particularly of their ability to manage and measure the growing risks. As regulators prepare for upcoming exams, you can be sure that model risk is high on their priority list. The latest regulatory advisory on Interest Rate Risk

(SR10-1) published in January 2010 confirms it—expectations are higher and you need to be prepared.

Ongoing validation of the asset/liability management (ALM) model and modeling process continues to be more challenging given the complexity of bank balance sheets, the uncertainty of the economy and consumer behavior and the increased reliance on more sophisticated modeling systems used to measure and manage risk. Given the significance accurate risk measurement plays in support of an effective ALCO (asset/liability management committee) decision-making process, and the related regulatory, accounting and compliance implications, managing model risk has never been more important.

This article addresses the recent trends in balance-sheet management, the evolution of the tools used to measure and manage risk, regulatory insights and what processes and controls institutions are implementing to ensure that model risk is adequately quantified, understood and managed.

Recent Trends in Balance-Sheet Management

Over the past several years, there has been a proliferation of new and more complex financial products and instruments that banks have been incorporating into their balance sheets. All of these products have some form of risk associated with them. Some are very straightforward and easy to model; others can challenge the most seasoned veterans of ALM modeling.

In addition to Wall Street developing more complex instruments for banks to invest in, there has been a notable growth in more sophisticated loan products with embedded options that make it increasingly more difficult to model and validate using traditional methods, tools and resources. Examples of such products include hybrid adjustable-rate mortgages (ARMs, for which there is an initial fixed/lockout period before theoretically becoming an adjustable-rate loan); variable-payment loans (the loan's payment characteristics change over time); and home equity loans and lines with multifaceted fixed lockout periods and prepayment penalty structures that can greatly affect repayment activities. Due to the lack of historical data on the behavioral aspects of these products, they are often a contributing factor to an ALM model's variance despite many back-testing processes.

The commercial lending arena also has its share of more complex products brought about by increased competition and a desire to build whatever will "win the deal." These products now include multifaceted prepayment penalty structures and characteristics that can change over time (for example, multiple cash flow/repayment schedules, varying repricing elements such as index, spread, caps and floors).

Competition and accounting pronouncements have had Wall Street and others such as the Federal Home Loan Bank system developing more complex funding structures that banks can use to manage earnings and interest-rate risk. There was a time when it seemed like there was a new product released every month with some creative name or mnemonic associated with it (knockouts, flippers, etc.). While many of these products can be very beneficial to banks and their interest-rate-risk-management process, additional modeling capabilities and efforts are required.

Even traditional funding sources have grown in complexity. It was only a few years ago that banks were aggressively competing for what appeared to be a limited precious supply of core deposits. Now many banks are experiencing a notable influx of nonmaturity deposits with uncertain retention attributes, making modeling of these potential surge balances most challenging.

All told, these changes to the industry and the products on the balance sheet are greatly affecting the ALM modeler's job to build accurate representations of the institution's risk profile and to validate the results. Identifying and managing model risk is quickly becoming as important as the model results, as ALCOs struggle to remain confident in their risk-measurement processes.

New Tools/New Technologies

Many companies that develop ALM modeling software have made some significant enhancements to the tools used by banks for measuring and managing risk. The systems used by larger and more complex institutions have, by and large, been keeping pace with the need for more robust modeling capabilities, with deterministic models giving way to more sophisticated stochastic modeling processes. These increased capabilities, however, have come at a significant cost in terms of dollars, resources and time. In addition to increased software fees and hardware costs, additional staffing, perpetual

training and more robust processes and controls all are required. In many instances, third-party tools or analytics are also being licensed and used in order to take full advantage of the features. Elements such as multipath interest-rate generators, automated investment cash flow processors, multicomponent prepayment and other behavioral models are becoming more prevalent, putting additional pressure on model managers to know, understand and validate all of these moving parts.

Systems used by community banks are also rising to the occasion: Instrument-level processing is now available for in-house ALM modeling or by outsourcing providers (although many have yet to adopt these capabilities). In addition to eliminating the potential skewing of results when option-based characteristics (that is, embedded caps and floors) are averaged together, this modeling method can automate the processing of more complex structures (for example, callable/putable securities, deposits and borrowings). In addition, robust third-party tools and analytics can be integrated, whereby more complex elements can be modeled (collateralized mortgage obligations [CMOs], loan-level prepayments) in a fairly automated way. But the costs associated with these capabilities are not insignificant in terms of dollars, resources and time—all scarce commodities for many community banks today.

The New Normal

Examiners and compliance experts recognize that the ALM modeling process is growing in complexity and that the tools required are a function of the level of optionality embedded in a given balance sheet. There is not always a clear appreciation for the risk/return trade-offs among accuracy, effectiveness and cost, however. The bottom line is that examiners (and compliance experts) want to be confident that the information used by an institution is reliable for managing the type and quantity of risk embedded in the balance sheet.

We are clearly in a new era of risk management and ALCO activities that were once thought to be "nice to have" have quickly become "have to have." Based upon our experience and interactions with bankers, examiners and auditors, here is a substantive list of our observations and expectations for the new normal for risk management in the near future:

Tools and Analytics

- Regulators are increasingly concerned with the tools and analytics being used today to manage risk. As financial products become more complex, more sophisticated modeling methods are needed to manage and measure their risk.
- Institutions need to select tools based on the level of optionality embedded in their balance sheets.
- Regulators are expecting to see institutions use more sophisticated data warehousing tools and more robust instrument-level analytics.
- Models need to have the ability to more accurately capture cash flows for structured products (calls, puts, strikes, etc.) and have the ability to effectively model behavioral elements (prepayments and core deposit activity).
- Credit and default-risk modeling will continue to migrate into ALM modeling.

Data Accuracy

- Frequent data errors—such as incorrect maturity and pricing dates, inaccurate floors and caps entries and loan misclassifications—continue to produce significantly flawed model results. Examiners have little patience for these simple but frequent errors.
- Institutions also need to watch for errors in model setup parameters, default settings, data handling and accounting treatment. Potential overuse of data aggregation needs to be regularly monitored.

Assumptions

- Developing valid assumptions is the greatest hurdle for many institutions largely because of a lack of historical data and the limited benefit historical data provides as a predictor of future activity.
- Institutions should be using ALM-specific data warehousing tools and analytics to validate inputs of data, prepayments, replacement assumptions and deposit sensitivity.
- Validity of the key modeling assumptions (deposit sensitivity, prepayment, growth, replacement) needs be back-tested and supported empirically.

- Examiners and auditors will be paying close attention to complex structures with embedded options (CMO cash flows, callable and putable assets and liabilities), prepayment forecasting (investment and loans), core (nonmaturity) deposit retention and rate sensitivity and new volume replacement rate/term assumptions. Institutions will need to update their core deposit studies.
- Institutions should expand their interest-rate scenario sets to include more extreme rising-rate scenarios as well as nonparallel yield-curve scenarios.
- Assumptions should be periodically stress-tested whereby alternative scenarios that illustrate the relative effects of each major assumption on earnings and your risk profile are periodically simulated, summarized and discussed by ALCO.
- Larger banks—those with more complex security structures, high concentrations in fixed-rate mortgages and a notable nonmaturity deposit base—are expected to support the assumptions with more rigorous empirical analysis than smaller institutions with potentially less optionality.

Processes and Controls

- Given the influx of new products on both sides of the balance sheet, regulators will be looking closely at policies and procedures that are in place to deal with those products.
- Institutions with properly designed procedures that are implemented and followed stand the best chance of achieving their intended purpose.
- Examiners will evaluate the model governance policies established by management and the board to determine if they are adequate relative to the use of the model and if the procedures used to comply with the policies are followed.
- Examiners will review model documentation, particularly operating procedures and assumption management processes. In addition to a review of the data reconciliation procedures, they are looking for participation by the various business lines in terms of developing assumptions and verifying results.
- Some level of security control is warranted; limiting use to authorized users only and backup procedures that ensure an institution can recover quickly should a technological disruption occur.
- Regulators will review change control procedures. The level of expectation generally varies upon the complexity of the modeling process. More

formal change control procedures can be expected for larger institutions using more complex systems.

- Whether your ALM modeling is handled in-house or outsourced, it is important that you understand the process that goes into building the model, developing the assumptions and verifying the accuracy of the results.
- Not all model processes produce reliable results, and examiners and auditors need to be convinced that your bank is doing what is necessary to ensure that your process is one that is reliable.
- Regulators want to know you understand what you're doing. In addition to meeting all the requirements on paper, they are going to want to talk to you and ask you about your ALM process.

Liquidity Risk Management/Forecasting

- Regulators have become increasingly concerned about the convergence of operational and contingency sources of liquidity. Institutions will be asked to demonstrate that they have a true back-up plan in place for liquidity.
- For institutions that are heavily dependent upon capital markets for their funding, regulators want to see more robust risk-measurement and management policies in place.
- Institutions need to be able to prepare a three- to six-month liquidity forecast reflecting expectations for cash flow and future liquidity needs.
- Liquidity sources/uses forecasts need to be stress-tested to determine the extent to which adverse conditions affect ongoing operations and access to contingency sources of funding.
- Regulators want to see that your liquidity policies and processes have been modified and updated to reflect today's financial environment. And they must be easy to understand by everyone involved.
- Requirements for your contingency liquidity plans likely go well beyond previous expectations. Your plans need to address all the key areas including cash flows, stress-testing scenarios, severity indicators and early warning systems.
- Your liquidity plans must show access to multiple funding sources at reasonable costs—and those sources must be recently tested.
- Institutions should be testing their liquidity lines on a quarterly basis—or at minimum, yearly—to ensure that those lines will be available to them in an emergency.

Capital Planning

- Because of the notable adverse economic conditions and the impact they have had on many institutions' earnings and capital, regulators are urging many organizations to develop capital plans that project leverage and risk-based capital levels out three years.
- For banks concerned about their risk-based capital levels dropping below 10 percent, the regulators want to see capital improvement strategies developed and documented.

Preparing for an ALM Exam or Audit—An Eight-Step Plan

Preparing for the next ALM exam or audit starts with knowing what is expected of you and your institution.

1. *Review the findings from your previous exam.*

   A good starting point is to review the findings from your previous exam or ALM audit. This is one of the first places we look when we perform independent reviews, as it provides valuable insight into an institution's risk-management process—and where on the priority list this process resides. If any recommendations were made, or your institution agreed to make specific improvements, be sure that the recommendations were considered and that the agreed-upon changes were implemented.

   An effective ALM process requires ongoing care and feeding to meet the challenges posed by the ever-increasing complexity and volatility of the banking business and, most likely, your balance sheet. A process that does not evolve over time can lead to risks being overlooked or, even more important, bad and costly decisions.

2. *Review your internal processes and controls.*

   Review your ALM-related internal processes and controls documentation to be certain that it reflects your current ALM process. This procedural documentation serves three primary purposes: First, it establishes guidelines and expectations for those responsible for building the model. Second, it provides a "corporate memory," allowing employees new to the

modeling process to more quickly participate. Third, this documentation provides a means to articulate the underlying assumptions used in the modeling process, particularly those that do not change regularly. This is useful not only to the model manager but also to those who are auditing the process and to those who are using the model output for decision-making purposes (ALCO).

Too often, we find this documentation to be outdated or incomplete, putting the institution at risk should the model manager leave without providing guidance to a successor. We've encountered numerous instances where model results were significantly off due to a poorly documented model that was "inherited," and the original processes couldn't be maintained.

At a minimum, this procedural documentation should include the following:

- A detailed list of the data sources and instructions as to how data is obtained and modified prior to use
- Detailed instructions for data import into the model and techniques unique to the institution's model and modeling process
- Reconciliation and other internal control procedures
- Explanation of how options are evaluated
- Sources for behavioral assumptions (prepayments, core deposits) used in the model
- Key deposit pricing assumptions
- Internal validation and back-testing procedures
- Model and system maintenance and backup/restoration procedures
- Data security procedures
- Independent review guidelines

3. *Review your vendors' processes and controls*

Ask your internal auditors to review the most recent copy of your ALM system vendor's internal processes and controls. If you outsource the ALM modeling function, as many of DCG's clients do, have your internal auditors review the most recent copy of your provider's processes and controls along with documentation on the software the provider is using.

While these vendors are not required to have a Statement of Auditing Standards No. 70 (SAS-70, *Service Organizations*) audit performed, they should be able to provide you with documentation that explains the processes and controls applied to their process (model preparation, data and results validation, security and software development and testing, if applicable). Be certain that you understand the processes and tools used by the vendor(s) to ensure you receive accurate and reliable results.

In the case of outsourcing, examiners and auditors want to make sure the process is accurate, independent and sufficient for your balance sheet's complexity—and that you have not abdicated your responsibility to internally verify and validate the results. In addition, examiners and auditors are looking for evidence that you are actively involved in developing and managing assumptions. The bottom line is that the model and process should not be a black box upon which ALCO relies for decision making. Unfortunately, with all of the additional tools being developed and implemented today, this is becoming more and more challenging.

4. *Review regulatory pronouncements and advisories*

The new Interagency Advisory on Interest Rate Risk (SR10-1) is a must read. While there are no new concepts revealed in the advisory, it does provide a very clear picture of what examiners will be looking for in your next exam. In addition, other regulatory guidelines related to ALM model validation should be reviewed. These include:

- Office of the Comptroller of the Currency (OCC) Bulletin 2000-16 *http://www.ffiec.gov/ffiecinfobase/resources/retail/occ-bl2000-16_risk_model_validation.pdf*
- Federal Deposit Insurance Corporation (FDIC) Model Governance Article *http://www.fdic.gov/regulations/examinations/supervisory/insights/siwin05/article01_model_governance.html*
- Joint Policy on Interest Rate Risk (SR96-13). *http://www.federalreserve.gov/boarddocs/srletters/1996/sr9613.htm*

5. *Document your modeling process and controls*

A well-documented ALM process can have a notable impact on your examination or audit results. The best processes can appear deficient if they are poorly communicated to those outside ALCO. In addition, an otherwise adequate process can be rendered inadequate if written communication within ALCO is insufficient.

As described earlier, your ALM modeling process and controls need to be documented and reviewed each year. This documentation should include descriptions of the sources of data used, the process of acquiring the data, verifying its accuracy, inputting the data into the model and validating the results. In addition, a description of key assumptions, including their sources and some form of periodic review and validation, is also an important element.

Finally, backup and restore procedures should be included in this documentation. While not critical to the survival of your institution, loss of a model can be costly in terms of time—not to mention the potential opportunity forgone because proper analysis couldn't be performed when needed.

Outsourcing doesn't excuse you from having to provide this documentation to your examiner or auditor; such documentation should be obtained and reviewed annually.

6. *Document your ALCO meetings*

Except through an interview process, the effectiveness of ALCO's decision-making process can only be gleaned from your ALCO meeting minutes and any documentation you have for potential and implemented strategies. Be certain that your minutes describe ALCO's discussions regarding your institution's current position, including liquidity, interest-rate risk and capital adequacy and their relation to your policy's guidelines or limits. In addition, confirm that discussions of both potential strategies and the status of those previously implemented are well documented.

When decisions are made, be sure to record the names of those responsible for executing the plans and for providing a status report at the next meeting. These straightforward elements can go a long way to providing all the stakeholders, including ALCO, the board, auditors and your examiner, with confidence in ALCO's decision-making effectiveness.

It is easy for those outside of the bank's ALCO process to question decisions that have been made over the course of a year. If the documentation establishes the context in which decisions were made (that is, the risks present in the balance sheet at the time and the risk/rewards of taking action compared to inaction), your ALCO's success as decision makers will be more effectively conveyed.

7. *Update your policies*

Your polices should be updated to reflect any changes to your institution's operating philosophies, risk-measurement/monitoring processes and any new regulatory guidelines or accounting pronouncements. In addition, if there are any new structured products (on or off balance sheet) that the bank might consider using to manage risk, be sure to include language that describes the product, potential uses, benefits and risks.

We often tell clients to treat their policy statements like internal playbooks that, once read by a stakeholder, clearly convey management's understanding of the risk/reward trade-offs of its activities. Many of our clients begin their exams by asking examiners to read their policies first. In this way, they inform and, in some cases, educate their examiner and reduce the questions and challenges that would otherwise occur.

8. *Verify your results*

Accuracy, reliability and timeliness are the cornerstones of an effective ALM process. Without these elements, an ALCO cannot be an effective decision-making body. While technology has strengthened our ability to measure and monitor risk, the industry continues to introduce more complexity and optionality into bank balance sheets. As a result, more assumptions are required for our models, increasing the potential for model risk.

Potential model risk is a legitimate concern of regulators (and practitioners), and banks need to have processes in place to verify results and substantiate the assumptions that are used as part of the ALM modeling process. Verifying results should begin with an ongoing back-testing process that periodically (at least quarterly) tracks a model's forecasted results to current interest income and expense levels. How much effort you put in and how much detail is analyzed will depend upon an institution's balance-sheet complexity and the extent of the historical variances.

There Is No Free Lunch

We need to be mindful of the relative cost/benefit of any strategy or process we underwrite. While expectations have increased, and advances in information technology systems have greatly enhanced our ability to analyze, ALM is still as much an art as it is a science. The ALM model process should be looked upon as a perpetual work in process. It can be easy for compliance officers and examiners to apply rigid black-and-white tests and to recommend a standard set of corrective actions, but each institution's issues and modeling risks are different. And the relative costs of enhancing the model and modeling results vs. the benefits need to be considered carefully.

It is well and good to identify that an institution's process may not be as technically accurate as another, but if that institution recognizes its limitations, can periodically quantify the potential impact (cost vs. benefit) and has developed other processes to compensate for these deficiencies, this needs to be considered.

Understanding Risks/Rewards Is Vital

Being prepared for your next exam or ALM modeling audit should not be about simply meeting regulatory or compliance requirements. Today's uncertain business climate demands it. A management team that is well informed and confident in its understanding of the risk/reward dynamic stands a much greater chance of ongoing success in a marketplace that continues to grow in complexity and volatility. Institutions that choose not to evolve and adapt will face these growing challenges blindly—a recipe for

indecision, missed opportunity or worse. Make sure you and your institution are prepared.

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During his tenure at DCG, he has served in various capacities including Director of Financial Analytics. In addition, he has served as a technical resource for the development of DCG's products and services. Prior to joining DCG in 1992, he managed the asset/liability management and strategic planning process for a large regional bank in the northeast. Michael is a graduate of Fairfield University with a degree in Economics.