

**Farm Credit Administration
Office of Inspector General**

Audit Report

**FCA's Stress Testing Guidance,
and Use of Data and Analytical
and Examination Tools**

A-19-01

**Auditor-in-Charge:
Tammy Rapp**

September 19, 2019

FCAOIG

Farm Credit Administration
Office of Inspector General



September 19, 2019

The Honorable Glen R. Smith, Board Chairman and Chief Executive Officer
The Honorable Jeffery S. Hall, Board Member
Farm Credit Administration
1501 Farm Credit Drive
McLean, Virginia 22102-5090

Dear Board Chairman Smith and Board Member Hall:

The Office of Inspector General (OIG) completed an audit of the Farm Credit Administration's (FCA) Stress Testing Guidance and Use of Data and Analytical and Examination Tools. The objective of this audit is to evaluate FCA's progress in updating stress testing guidance and related data, and analytical and examination tools. This report contains one recommendation that was agreed to by FCA management. The Office of the Chief Operating Officer agreed to develop a project plan to ensure the timely completion of related stress testing tasks.

FCA made some progress in updating stress testing guidance since completing a stress testing project in March 2018. FCA plans to issue guidance on model risk management in the near future and is considering additional guidance on stress testing expectations in 2020.

FCA does not currently perform routine stress tests of Farm Credit System (FCS) institutions' financial or loan data, nor has FCA decided if it will perform routine stress tests. In the recent past, other federal financial regulators have decreased stress testing requirements on institutions they regulate. However, unlike the financial institutions regulated by the other federal financial regulators, the FCS Banks are jointly and severally liable for System failures, and the failure of one bank or several large associations could significantly impact the System. Therefore, FCA needs to thoroughly weigh the issues before deciding what direction it will take with respect to stress testing.

FCA is in the process of developing and implementing analytical and examination tools that will enhance its ability to perform systemic risk and data analysis. Over the past several years, FCA has been building the infrastructure for a data warehouse of FCS data and working with the FCS to improve data quality and consistency. Additionally, with recent hires and training, FCA is in the process of increasing its technical and analytical skills. Once FCA has a well-trained staff in stress testing and a data warehouse containing quality data from the FCS, FCA may have the tools necessary to perform stress tests of the FCS.

We reviewed examination procedures related to stress testing at 14 FCS institutions, including the four Farm Credit Banks. Our review revealed that various types of stress testing were performed at each of the institutions, and we did not identify any significant deficiencies in the examiners' coverage of stress testing.

Although FCA is using a phased approach to implement recommendations from the stress testing project, the Agency has yet to develop a project plan on implementing the recommendations. Without a project plan to guide efforts related to stress testing, FCA is at risk for delaying this project. Further delays in issuing updated guidance could impact the safety and soundness of the FCS. Examination staff are waiting on the planned guidance to update related sections in the exam manual and potentially add new procedures. Our review of examinations revealed one FCS bank was reluctant about being too prescriptive in providing direction to associations because they are awaiting updated guidance from FCA. Therefore, we recommended the Office of the Chief Operating Officer develop a project plan to ensure the timely completion of stress testing related tasks.

We appreciate the courtesies and professionalism extended by FCA personnel to the OIG staff. If you have any questions about this audit, Tammy and I would be pleased to meet with you at your convenience.

Respectfully,



Wendy R. Laguarda
Inspector General

Enclosure

EXECUTIVE SUMMARY

FCA's Stress Testing Guidance, and Use of Data and Analytical and Examination Tools

Report No. A-19-01

September 19, 2019

Objective

The objective of this audit was to evaluate FCA's progress in updating stress testing guidance and related data, and analytical and examination tools.

Recommendation

The OCOO needs to develop a project plan with milestones to ensure the timely completion of the following tasks related to stress testing:

- Identify the direction of the agency with respect to stress testing;
- Finalize guidance related to model risk management and stress testing expectations;
- Ensure examiners are provided with training on above guidance;
- Update examination manual to reflect content included in above guidance; and
- Ensure adequate staff expertise in stress testing.

FCA made some progress in updating stress testing guidance since completing a stress testing project in March 2018. FCA plans to issue guidance on model risk management in the near future and is considering additional guidance on stress testing expectations in 2020.

FCA does not currently perform routine stress tests of FCS institutions' financial or loan data, nor has FCA decided if it will perform routine stress tests. In the recent past, other federal financial regulators have decreased stress testing requirements on institutions they regulate. However, unlike the financial institutions regulated by the other federal financial regulators, the FCS Banks are jointly and severally liable for System failures, and the failure of one bank or several large associations could significantly impact the System. Therefore, FCA needs to thoroughly weigh the issues before deciding what direction it will take with respect to stress testing.

FCA is in the process of developing and implementing analytical and examination tools that will enhance its ability to perform systemic risk and data analysis. Over the past several years, FCA has been building the infrastructure for a data warehouse of FCS data and working with the FCS to improve data quality and consistency. Additionally, with recent hires and training, FCA is in the process of increasing its technical and analytical skills. Once FCA has a well-trained staff in stress testing and a data warehouse containing quality data from the FCS, FCA may have the tools necessary to perform stress tests of the FCS.

We reviewed examination procedures related to stress testing at 14 FCS institutions, including the four Farm Credit Banks. Our review revealed that various types of stress testing were performed at each of the institutions. In 10 of the 14 examinations, examiners identified concerns in their examination workpapers and reports of examination related to stress testing performed by the institution. Based on guidance provided to examiners, we did not identify any significant deficiencies in the examiners' coverage of stress testing. However, some examiners limited their examination focus related to stress testing because of ongoing discussions within FCA. Additionally, one FCS bank was reluctant to be too prescriptive in providing direction to associations because it was awaiting updated guidance from FCA.

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ACRONYMS & ABBREVIATIONS

COO	Chief Operating Officer
EDGe	Enterprise Documentation and Guidance
EWP	Examination Workprogram
Farmer Mac	Federal Agricultural Mortgage Corporation
Farm Credit Act of 1971	Farm Credit Act of 1971, as amended
FCA	Farm Credit Administration
FCS	Farm Credit System
FDIC	Federal Deposit Insurance Corporation
FRB	Board of Governors of the Federal Reserve System
FY	Fiscal Year
IM	Informational Memorandum
NCUA	National Credit Union Administration
OCC	Office of the Comptroller of the Currency
OCOO	Office of the Chief Operating Officer
OE	Office of Examination
OIG	Office of Inspector General
ORP	Office of Regulatory Policy
ROE	Report of Examination
System	Farm Credit System
US	United States

BACKGROUND

The Farm Credit Administration

The Farm Credit Administration (FCA) is as an independent agency in the executive branch of the United States (US) Government. FCA is responsible for regulating and supervising the Farm Credit System (FCS or System) and the Federal Agricultural Mortgage Corporation (Farmer Mac). FCA derives its powers and authorities from the Farm Credit Act of 1971, as amended (Farm Credit Act of 1971).¹

The Office of Examination (OE) has primary responsibility for conducting examinations of System institutions to ensure the FCS operates in a safe and sound manner. The overall objective of the examination process is to ensure each System institution operates safely and soundly, complies with laws and regulations, and is financially positioned to meet the needs of agriculture and rural America.

FCA's Office of Regulatory Policy (ORP) manages policy and regulation development activities that ensure the safety and soundness of the FCS and support the System's mission. Policy and regulation development activities include the analysis of policy and strategic risks to the System based on economic trends and other risk factors.

Top Management Challenge Identified by FCA Office of Inspector General

The FCA Office of Inspector General (OIG) has consistently identified the examination and supervision program as one of four top management challenges. The following challenge is included in FCA's Fiscal Year (FY) 2018 Performance and Accountability Report (PAR).

"A significant challenge for FCA lies in identifying and addressing risks in the Farm Credit System (FCS or System) through effective examination and supervision to ensure the System remains safe and sound."

FCA management agreed with the OIG's assessment of this challenge and stated it would emphasize the importance of stress testing to System institutions in FY 2019.

Stress Testing

Stress testing is a risk management tool used by financial institutions to plan for potential adverse events that could impact their financial condition. More specifically, "stress testing is an analytical procedure for subjecting an institution to a hypothetical, yet plausible adverse scenario. The purpose is to measure the impact of the potential adverse scenario on the condition and

¹ See 12 U.S.C. §§ 2241,2243

performance of the institution and to devise contingency plans for responding to and managing the risk identified in the stress testing exercise.”²

AUDIT RESULTS

Brief Summary

The objective of this audit was to evaluate FCA’s progress in updating stress testing guidance and related data, and analytical and examination tools.

FCA made some progress in updating stress testing guidance since its completion of a stress testing project in March 2018, and is in the process of developing and implementing analytical and examination tools that will enhance its ability to perform systemic risk and data analysis.

As a result of our audit, we determined FCA needs to develop a project plan to guide FCA efforts related to stress testing.

Past efforts of the FCA in issuing regulations and guidance related to stress testing are outlined in Appendix A.

Review of Examinations

FCA ensures that System institutions and Farmer Mac³ operate safely and soundly and comply with applicable laws and regulations. Section 5.19 of the Farm Credit Act of 1971 provides the FCA with the authority to examine System institutions. FCA’s Board adopted a policy to use a “risk-based” approach to the oversight and examination for System institutions.

We reviewed examination procedures related to stress testing for a judgmental sample of 14 FCS institutions. Our judgmental sample included all four banks and different sizes and types of associations. As part of our audit, we reviewed the Report of Examination (ROE) for conclusions related to stress testing. In the Exam Workprogram (EWP), we reviewed documentation supporting procedures performed that were related to stress testing, results of the procedures reviewed, and conclusions. If we did not find documentation to support a stress testing procedure, we reviewed the scoping rationale to identify why a procedure was not performed. In most cases, the scoping rationale provided justification for not performing a procedure. In a few cases where we could not find any documentation, we followed up with the Examiner-in-Charge to provide additional information. We reviewed the most recent examination with a Statutory Compliance Date prior to March 31, 2019.

² <https://www.fca.gov/about/faq/stress-testing-expectations>

³ Although Farmer Mac is a federally chartered institution of the System, we discuss Farmer Mac and the System as separate entities, because Farmer Mac has a unique mission with a significantly different role than that of the System’s banks and associations.

OE uses the Enterprise Documentation and Guidance (EDGE) application, and specifically the EWP, to document examination workpapers. We reviewed a cross section of the procedures below from our judgmental sample of examinations:

- Stress tests of capital;
- Stress tests of investments;
- Stress tests of the loan portfolio;
- Stress tests of liquidity;
- Incorporation of various scenarios in stress tests;
- Independent validation of models used for stress tests; and
- Reporting stress test results to the board.

Examiners determined that various types of stress tests were performed at each of the institutions. Examiners documented their procedures and conclusions related to stress testing performed by institutions within various examination topics:

- Capital Adequacy;
- Capital Management;
- Allowance for Losses;
- Investments;
- Portfolio Planning & Analysis;
- Collateral Risk Management;
- Business Strategy & Planning;
- Earnings Adequacy;
- Earnings Management; and
- Liquidity Management.

Examiners identified and examined the following types of stress tests for each of the institutions in our sample:

- Capital stress tests;
- Investment stress tests for banks and some associations based on the type of investments held;
- Loan portfolio stress tests; and
- Liquidity stress tests for banks.

Examiners' coverage of an institution's stress testing also included:

- Efforts to stress test its portfolio under different scenarios;
- Progress with obtaining independent validation of stress testing models; and
- Reporting stress test results to the institution's board.

In 10 of the 14 examinations, examiners identified concerns in their examination workpapers related to stress testing performed by the institution. Identified concerns were included in the institution's ROE. The matters requiring attention in the reports of examination included:

- Expand stress testing policies and procedures;
- Enhance board involvement to include approval of stress testing scenarios and reporting stress test results;
- Improve model governance;
- Improve model validation practices;
- Improve data quality;
- Expand liquidity stress tests to address assumptions based on the institution's liquidity risk profile; and
- Add stress test results to the capitalization plan.

Based on guidance provided to examiners, we did not identify any significant deficiencies in the examiners' coverage of stress testing. OE's scoping guidance for portfolio planning and analysis, which includes examination of stress testing models, is risk-based. OE has targeted a comprehensive update of this area at least once every three examination cycles. However, some examiners limited their examination focus related to stress testing because of ongoing discussions within FCA.

FCS Bank Involvement with Associations

The FCS banks perform a coordinated stress test for each of their districts. The coordinated stress test allows for an annual forum to share stress test methodologies, evaluate results, and identify opportunities for enhancements. FCA recently met with FCS officials who presented the results of their 2018 coordinated stress tests. The stress test results indicated the System is not significantly threatened and holds sufficient capital to withstand significant stress. The banks used a common three-year scenario which included a severe but plausible scenario. There is consensus among the FCS banks to perform a recurring annual stress testing process. Also, FCA learned that the System continues to coordinate in developing and further refining approaches and assumptions to stress testing.

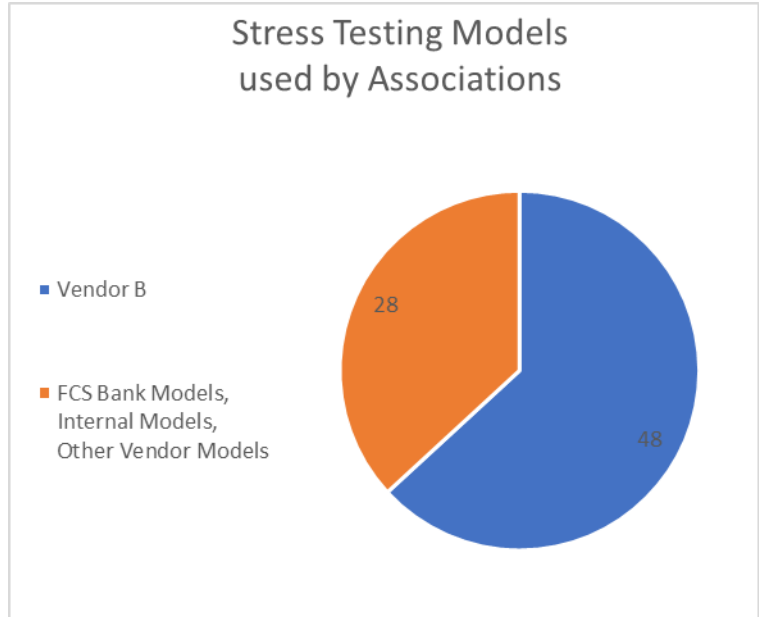
Bank examinations we reviewed demonstrated the banks' involvement with associations within their district. One bank traveled to associations and shared its stress testing methodology and results. This same bank included stress testing in a roundtable at the annual district conference. The examiner determined the bank utilizes stress testing as a forward-looking risk management tool at the bank, association, and district levels. Stress testing is used as a key input into bank activities related to risk identification, monitoring, and assessment. One examiner identified a bank that is reluctant about being too prescriptive in providing direction to associations. However, we note the FCA has issued guidance on stress-testing since 2002 based on its belief that stress-testing is a best practice for a safe and sound System institution.

Summary of Stress Testing Models Used by the Farm Credit System

OE provided a summary of stress testing models used by FCS banks and associations. There are two stress testing models currently used by FCS banks. One is an FCS bank-developed model, and the other model is provided by the same vendor. Two banks use a bank-developed model, while two banks use a vendor-developed model.

More than half of the 69 FCS associations use the same stress testing model vendor. The remaining associations use FCS bank models, their own internal model, or models provided by other vendors. Eighteen associations use more than one model.

The FCA must consider the risks of multiple institutions using the same stress testing model given that FCS banks are jointly and severally liable for System failures. Model flaws can result in inaccurate or invalid results and lead to institutions making improper business decisions that could significantly impact the System. Flawed stress-testing models can contribute to financial loss and damage the System's reputation. To this end, FCA asked one of the institutions to arrange for an independent validation of Vendor B who is frequently used by more than half of the associations. Additionally, OE advised examiners to review associations' stress testing model's assumptions, input, and back testing (testing actual results against model output to assess its accuracy).



Currently, the following guidance, expertise, and actions are used by FCA to assist examiners in their review of stress testing performed at FCS institutions:

FCA's Progress in Updating Stress Testing Guidance and Tools

- Regulations and guidance issued to examiners and institutions;
- Guidance issued by other federal financial regulators;
- Independent validation reports of FCS institutions' stress test models;
- Experience and knowledge from reviewing institutions' models;
- Training provided by a commonly used stress testing model vendor; and
- Presentations and meetings with FCS institutions to discuss their stress test results.

FCA does not currently perform routine stress tests of FCS institutions' financial or loan data, nor has FCA decided if it will perform routine stress tests.

Stress Testing Project

ORP completed a stress testing project in March 2018. This project included site visits with FCS institutions, review of FCA guidance, review of guidance from other regulators, independent research on stress testing, and meetings with internal FCA stakeholders regarding stress testing. The site visits provided ORP with an understanding of what the System is doing with regards to stress testing, the institutions' views on stress testing, and improvements FCA can make to its

guidance. ORP's review of institutions identified a general weakness in testing and validating stress testing models. Discussions with internal FCA stakeholders revealed a concern with the FCA's current ability to fully evaluate technical models and challenge institutions on those issues.

The project resulted in the following recommendations made by ORP to the FCA Board and senior staff to improve stress testing in the FCS and oversight by FCA:

- FCA should issue updated guidance on model risk management to promote rapid improvements in this area.
- FCA should consider issuing guidance on data quality because many institutions use simulation-based models due to incomplete data.
- FCA should issue updated guidance on FCA's stress testing expectations after issuing guidance on model risk management because model quality is necessary for effective stress testing.
- FCA should provide examiners with additional training and guidance on modeling and validation.
- If guidance is not effective in consistently promoting the needed improvements across the System, FCA should consider the regulatory process for providing a base level of expectations for System institutions.
- In the long-term, FCA should build a team with expertise in modeling, data, and analytics.

Phased Approach

The FCA will implement the recommendations resulting from the ORP stress testing project in phases. FCA staff discussed this phased approach at an informational presentation to the FCA Board during the July 2019 Board meeting. FCA plans to issue guidance on model risk management in the near future and additional guidance on stress testing expectations in 2020. FCS institutions can start to improve their models based on the first set of guidance while FCA determines which direction it will take with stress testing before issuing additional guidance. If the guidance does not generate the desired results by the FCS, FCA may issue a regulation at a later time. Additionally, FCA is tracking changes to stress testing requirements and guidance by other federal financial regulators. Other federal financial regulators have proposed amendments that decrease stress testing requirements by increasing the threshold in which institutions are required to undergo stress testing and reducing the frequency of stress testing.

First Phase of Guidance

Initially, FCA plans to issue guidance on model risk management to replace FCA's Informational Memorandum (IM) on Computer Based Model Validation Expectations issued in 2002. This guidance will also cover data used in models. This guidance will adopt much of the guidance issued by the Board of Governors of the Federal Reserve System (FRB) and the Office of the Comptroller of the Currency (OCC) in their joint SR Letter 11-7 with variations specific to the FCS. The Federal Deposit Insurance Corporation (FDIC) adopted this guidance in 2017. The core principles of model risk management are the same for all regulators.

Second Phase of Guidance

The second set of guidance will cover stress testing expectations and replace an IM that was issued in 2010. The second set of guidance is planned for 2020. This guidance will represent FCA's stress testing expectations of FCS institutions after FCA determines which direction it will take with respect to stress testing. Currently, FCA is still in the deliberation phase of considering various options and has not yet determined what its long-term plan will be with respect to stress testing.

Training Plans

FCA will provide examiners with training after issuing guidance on model risk management. FCA also plans to provide training after FCA leadership determines the long-term direction of the FCA with respect to stress testing. Recently, ORP and OE provided information to staff on an external training course specific to model risk management and model validation best practices.

Updating Exam Manual

OE plans to update the FCA Examination Manual after FCA issues additional stress testing guidance to the System. OE is considering adding a procedure that is specific to model risk management and updating other sections that reference outdated guidance.

Chief Data Officer and Data Warehouse

Whichever direction the FCA takes with regard to stress testing, it cannot adequately evaluate or perform System institutions' stress tests without quality data and a well-trained staff. To this end, in June 2018, FCA transferred an economist from ORP into a newly-created position to coordinate data and analytics at FCA. FCA created this new position to elevate the importance of obtaining consistent quality data from the FCS. This economist has just been named the Chief Data Officer and will be responsible for coordinating agency-wide data governance. One of his key goals will be to maximize effective use of data in conducting examinations, policymaking, and agency operations.

FCA is in the process of developing and implementing analytical and examination tools that will enhance its ability to perform systemic risk and data analysis. FCA recognizes it will take years to improve FCS data and has been working with the System and prioritizing the most critical fields to improve first. Poor data quality could result in decisions based on misleading results. FCA has been building out the infrastructure for a data warehouse of FCS data and working with the FCS to improve data quality. Once the data warehouse contains quality FCS data, FCA may have the ability to use the data warehouse for performing stress tests of FCS institutions' data. However, there are many facets of stress testing that need to be carefully weighed before FCA determines whether it will perform stress tests of FCS institutions' data and what types of stress tests will be performed. If FCA develops the capability to stress test FCS institutions' data, it may be limited for internal risk management as part of FCA's safety and soundness function.

Hiring Initiatives

FCA is taking steps to increase its technical and analytical skills. In addition to creating a position that reports to the Chief Operating Officer (COO), the FCA recently hired two economists in ORP to focus on data analysis and stress testing. These positions can also be fundamental for improving modeling capabilities and knowledge of stress testing at FCA.

Stress Testing Evolution at Federal Financial Regulators

Over the past decade, the other federal financial regulators have modified their stress testing guidance and requirements.

In 2010, The Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank)⁴ required the FRB to conduct annual stress tests of FRB supervised nonbank financial companies and bank holding companies with total consolidated assets of \$50 billion or more. Additionally, Dodd-Frank required these same companies to perform their own semi-annual stress tests. Dodd-Frank also required other financial companies that had total consolidated assets of more than \$10 billion and were regulated by a primary Federal financial regulatory agency to conduct annual stress tests.

In 2018, the Economic Growth, Regulatory Relief, and Consumer Protection Act⁵ amended the stress testing requirements from Dodd-Frank as follows:

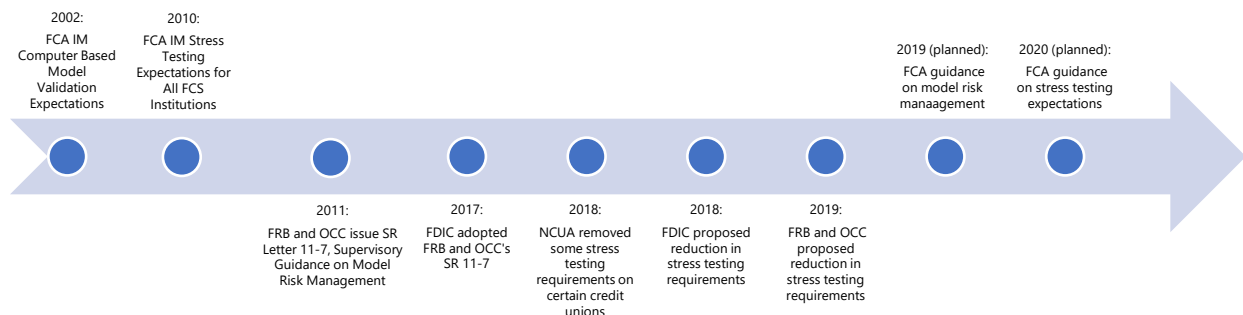
- Increased the threshold for FRB's requirement to conduct supervisory stress tests for FRB supervised nonbank financial companies from \$50 billion to \$250 billion;
- Increased the threshold and frequency for FRB's requirement to conduct supervisory stress tests for bank holding companies with total consolidated assets from \$50 billion or more to between \$100 billion and \$250 billion and from annual to periodic testing;
- Increased the minimum asset threshold for the company-run stress testing requirement from \$10 billion to \$250 billion;
- Revised the requirement for banks to conduct stress tests periodically instead of annually; and
- Reduced the number of required stress testing scenarios from three to two, eliminating the adverse scenario.

There is no statutory requirement directing FCA or FCS institutions to conduct stress testing. However, as shown on the chart below, the FCA has issued guidance on stress testing since 2002 based on its belief that stress testing is a best practice for a safe and sound System institution.

⁴ Public Law No. 111-203 Section 165

⁵ Public Law No. 115-174 Section 401

The timeline below shows key milestones related to stress testing guidance that FCA and other federal financial regulators have issued or planned since 2002. Above the line are FCA's key milestones. Below the line represents key milestone of other federal financial regulators.



In 2011, the FRB and OCC issued SR Letter 11-7, Supervisory Guidance on Model Risk Management. The purpose of SR 11-7 was to provide comprehensive guidance for banks on effective model risk management. In June 2017, the FDIC adopted the FRB's and OCC's guidance (SR 11-7) on model risk management for FDIC-supervised institutions with over \$1 billion in total assets. FDIC adopted this guidance to provide comprehensive guidance on effective model risk management and facilitate consistent model risk-management expectations across the banking agencies and industry.

In April 2018, the National Credit Union Administration (NCUA) issued a final rule reducing the regulatory burden by removing some stress testing requirements on certain credit unions. The final rule also makes NCUA's requirements more efficient by authorizing covered credit unions to conduct their own stress tests in accordance with NCUA's requirements.

In response to the Economic Growth, Regulatory Relief, and Consumer Protection Act, the FDIC, FRB, and OCC reduced their stress testing requirements on their regulated institutions. In December 2018, the FDIC proposed raising its threshold for stress tests from \$10 billion to \$250 billion, revising the frequency to conduct stress tests, and reducing the number of required stress test scenarios. In February 2019, the FRB and OCC proposed raising its threshold for company-run stress tests from \$10 billion to \$250 billion, revising the frequency to conduct stress tests, and reducing the number of required stress test scenarios.

In February 2019, the FRB issued a policy statement outlining the key principles governing the FRB's approach to models used in supervisory stress testing.

Lack of Project Plan

Although FCA is using a phased approach to implement the ORP recommendations outlined above, the FCA has yet to develop a project plan on implementing the recommendations. Without a project plan to guide efforts related to stress testing, FCA is at risk for delaying this project. Further delays in issuing updated guidance could impact the safety and soundness of the FCS. The FCBs are jointly and severally liable for System failures, and the failure of one bank or several large associations could significantly impact the System. Examination staff are waiting on the

planned guidance to update related sections in the FCA Examination Manual and potentially add new procedures. Additionally, some examiners limited their examination focus related to stress testing because of ongoing discussions within FCA. Our review of examinations revealed one FCS bank was reluctant about being too prescriptive in providing direction to associations because they are awaiting updated guidance from FCA.

Recommendation:

The Office of the OCOO (OCOO) needs to develop a project plan with milestones to ensure the timely completion of the following tasks related to stress testing:

- Identify the direction of the FCA with respect to stress testing;
- Finalize guidance related to model risk management and stress testing expectations;
- Ensure examiners are provided with training on above guidance;
- Update examination manual to reflect content included in above guidance; and
- Ensure adequate staff expertise in stress testing.

Management Response:

Management agreed with our recommendation and stated they will develop a project plan by December 31, 2019.

OIG Response:

The OIG concurs with management's planned action.

OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of this audit was to evaluate FCA's progress in updating stress testing guidance and related data, and analytical and examination tools. We performed this audit at FCA's headquarters in McLean, Virginia, from January through August 2019.

The scope of this audit focused on stress testing guidance and related data and analytical and examination tools provided to FCS institutions (farm credit banks and associations) and FCA examiners. The scope of this audit was limited to FCS banks and associations and did not include Farmer Mac.

We performed the following steps to accomplish the audit objective:

- Identified and reviewed related laws and regulations;
- Identified and reviewed related guidance issued to FCS institutions;
- Identified and reviewed related policies, procedures, and guidance issued to examiners;
- Reviewed a judgmental sample of examination workpapers and reports for conclusions related to stress testing;
- Reviewed other related documentation and reports; and
- Interviewed the COO and personnel from OCOO, ORP, and OE with significant responsibilities related to stress testing.

We conducted this audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

We reviewed internal controls identified as significant to the audit objective and did not identify any material control weaknesses. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. We also assessed the computer-processed data relevant to our audit objective and determined that the data was sufficiently reliable.

We considered the risk of fraud and abuse during our audit and nothing came to our attention to indicate fraud or abuse was occurring.

At the end of this audit, we provided management with a draft report of our observations and held an exit conference on August 15, 2019.

APPENDIX A: REGULATIONS AND GUIDANCE ISSUED TO FARM CREDIT SYSTEM INSTITUTIONS AND EXAMINERS

Regulations

FCA's Board adopted a policy to develop regulations consistent with the Farm Credit Act of 1971. The policy states that FCA will develop regulations based on a determination that benefits from proposed regulations justify its cost and will focus its regulatory efforts on issues that address identified risks in System institutions.

FCA develops regulations (rules) to:

- Implement the Farm Credit Act of 1971 and other relevant laws,
- Help the FCS fulfill its public mission, and
- Ensure that the FCS operates safely and soundly.

FCA has issued regulations⁶ related to the following types of stress tests:

- Investments and
- Liquidity.

FCA regulations concerning these types of stress tests are located in title 12, part 615 of the Code of Federal Regulations:

- Part 615.5133(h) requires an institution to perform due diligence of its investments. As part of an institution's due diligence, part 615.5133(h) requires a pre-purchase analysis of investments and quarterly stress tests of the entire investment portfolio and individual investments. The institution must also perform stress testing on any structured investment that has uncertain cash flows, including all mortgage-backed securities and asset-backed securities, before purchase.
- Part 615.5134(f) requires periodic stress tests that probe the bank's ability to withstand shocks to its liquidity.
- Part 615.5174 requires stress tests on mortgage securities issued or guaranteed by Farmer Mac.
- Part 615.5180(c) requires policies and procedures for the bank that consider the effect of investments on interest rate risk based on the results of the required stress testing in part 615.5133(h)(4).

Bookletters and Other Guidance Issued to FCS Institutions

FCA-PS-64 provides rules for the transaction of business of the FCA Board. The FCA Board is responsible for determining the FCA's position on policy. Documents such as bookletters and

⁶ 12 C.F.R. §§ 615.5133, 615.5134, 615.5174, and 615.5180 were revised by 83 FR 27486 (issued June 12, 2018, effective January 1, 2019.)

informational memoranda must be approved by the FCA Board. However, signature authority may be delegated to senior staff members. The Chairman enforces the rules, regulations, and orders of the Board.

Although FCA did not issue regulations for loan portfolio stress tests, FCA issued bookletters and other guidance to FCS institutions that cover these types of stress tests. FCA issued stress testing related guidance to FCS institutions in the form of bookletters, informational memoranda, and frequently asked questions on FCA's website. This guidance describes FCA's requirements or expectations of the following types of stress tests performed by FCS institutions:

- Investments,
- Loan portfolio,
- Liquidity, and
- Capital.

Bookletters are documents that communicate the agency's position on specific issues. In 1991 and 2010, FCA issued the following bookletters that address stress testing:

- FCA issued Bookletter BL-012 regarding asset liability management practices on January 15, 1991. This bookletter advises institutions to prepare quarterly reports that inform directors of interest rate risks under different interest rate projections. Best case, worst case, and most likely interest rate scenarios should be reviewed. Additionally, the effects of 200-basis point shifts in interest rates on existing balance sheets should be analyzed. OE plans to revise this bookletter during 2019.
- FCA issued Bookletter BL-064 regarding investment asset management on December 9, 2010. This bookletter encourages institutions to use methodologies that incorporate stress testing of cash flows, collateral default, and prepayment assumptions. Credit risk stress testing provides a better understanding of how certain investments fit in the overall risk framework of the institution. This bookletter also provides a section that clarifies FCA's expectations for stress testing mortgage-backed securities.

IMs are FCA communications addressed to all FCS institutions. Generally, IMs communicate technical information and updates. FCA issued the following IMs that address stress testing:

- FCA issued an IM, Computer Based Model Validation Expectations, on June 17, 2002. This IM stresses the importance of independent validation of computer-based models and contains examples an institution can use to validate models. FCA plans to replace this IM with updated guidance in the near future.
- FCA issued a memo to FCS institutions on July 2, 2009, emphasizing robust stress testing, including loan stress testing at origination, and credit risk stress testing.
- FCA issued an IM, FCA's Stress Testing Expectations for All FCS Institutions, on March 4, 2010. This IM provides all FCS institutions regardless of size with FCA's expectations for stress testing various components of the balance sheet. It advises banks to focus on the source of risk in their balance sheet such as the investment portfolio and loan portfolio. FCA expects institutions to perform a comprehensive stress test at least once a year. FCA

recognizes that stress testing models will vary with the complexity of the institution and does not require a specific stress testing methodology to be used. FCA plans to replace this IM in 2020.

- FCA issued an IM, Portfolio Management in Volatile Times, on January 29, 2015. This IM informs institutions that FCA's examinations will continue to focus on institution's efforts to stress test its portfolios under different scenarios, including a "severe yet plausible" scenario and develop strategies to address emerging or expected risks.

In May of 2018, FCA posted answers to frequently asked questions about FCA's stress testing expectations on its website.

FCA plans to issue two additional forms of guidance related to stress testing. The first set of guidance will be on model risk management, which will replace an IM dated June 17, 2002, on Computer Based Model Validation Expectations. This guidance is planned in the near future. The second form of guidance will cover stress testing expectations and replace an IM dated March 4, 2010, on stress testing expectations. This guidance is planned for 2020 after FCA determines which direction it will take with respect to stress testing. FCA is using a phased approach for issuing guidance on stress testing so FCS institutions can start to improve their models while FCA determines which direction it will take with stress testing before issuing the second set of guidance. Additionally, FCA is tracking changes to stress testing requirements and guidance issued by other federal financial regulators.

Examination Manual and Other Guidance Issued to Examiners

The FCA Examination Manual contains guidance and several procedures that examiners may perform during their examination of an FCS institution. Because banks and associations have different risks, some procedures are specific to either a bank or an association. The FCA Examination Manual is available to FCS institutions on the agency's website. FCA examiners use the FCA Examination Manual to help ensure the quality and consistency of their examinations, and System institutions use it to better understand the criteria by which they are being examined.

There are several examination procedures documented in the FCA Examination Manual related to stress testing performed by FCS institutions. The following include excerpts from the FCA Examination Manual that are specific to our stress testing objective and does not include all procedures or guidance that may be performed during an examination.

Overview

"The overall objective of the examination process is to ensure each System institution operates safely and soundly, complies with laws and regulations, and is financially positioned to meet the needs of agriculture and rural America."

"Risk-based examinations require judgment in determining the scope and depth of work performed for an institutional examination, as well as within specific examination areas."

Capital

Risks to capital focus on the amount of capital needed to protect against adversity, absorb unexpected losses, and continue meeting the financing needs of the institution's customers. FCA regulations do not require stress testing capital adequacy. However, the IM on FCA's Stress Testing Expectations for All FCS Institutions states that institutions should use stress testing results for understanding their capital adequacy in relation to their risk profile. The FCA Examination Manual states that examiners should consider the following when evaluating capital:

- Stress test results;
- Reporting stress test results to the board; and
- Internal audit coverage of model validation and compliance.

"Stress tests estimate if capital will be sufficient to survive potential stress scenarios or losses. If stress tests indicate the institution would become undercapitalized, then consideration should be given to either building more capital or taking other actions to align stress results with capital goals."

The FCA Examination Manual states that stress test scenarios should capture significant threats to capital that are severe yet plausible. Examples of possible stress events and scenarios include:

- Prolonged agricultural crisis (e.g., sharp changes in commodity prices, input costs, collateral values, and weather conditions);
- Acute stress on a particular asset class or credit concentration;
- Disappearance of government support programs;
- Deterioration in specialized or unsecured capital markets loans;
- Prolonged high asset growth;
- Draws on unfunded commitments and contingencies that result in losses;
- Disappearance of noncore business lines or vulnerable revenue sources;
- Operational risk;
- Counterparty default (e.g., default of largest counterparties);
- Losses from interest rate risk and asset/liability mismatches;
- Impairment on investments, particularly unsecured investments;
- Deterioration in, or assistance to, affiliated associations (banks only); and
- Simultaneous capital and liquidity crises that cause the bank to sell investments at a loss (banks only).

Allowance for Losses

The FCA Examination Manual states that stress testing can be used to show the impact of conditions such as commodity prices, weather, or collateral values, that may exist but may not be reflected in current risk ratings for loans.

Investments

"Investments can comprise a significant portion of an institution's assets, particularly at System banks, and impact capital and earnings. Therefore, an assessment of investment quality and related risk exposure is a key examination objective." OE revised the FCA Examination Manual for investments in January 2019. Examination procedures for this topic are risk-based for associations that hold investments since they can only hold investments guaranteed by the US Government or its agencies. The revised version includes guidance on pre-purchase and investment portfolio stress testing required by FCA regulation 615.5133(h) and model validation. The FCA Examination Manual states that examiners should consider the following when evaluating investments:

- Pre-purchase due diligence analysis for individual investments including stress testing results for any investment that is structured or has uncertain cash flows;
- Ongoing due diligence processes should address interest rate risk by stress testing the whole investment portfolio and individual investments at the end of each quarter;
- Controls for validating investment models;
- Internal audit coverage of model validation and compliance especially when models are revised or replaced; and
- Adequacy of bank reviews to address association investment risk and risk management processes which includes stress testing (banks only).

Loan Portfolio Management

"Portfolio planning and analysis are key components of an institution's overall business planning process and are essential for effective loan portfolio management." An important component of portfolio planning and analysis is loan portfolio stress testing. Examination procedures for this topic are risk-based with a comprehensive update at least once every three exam cycles. The FCA Examination Manual states that examiners should consider the following when evaluating loan portfolio stress testing at institutions:

- Loan portfolio stress testing processes;
- Board and senior management involvement in the stress testing process;
- The accuracy and completeness of individual loan data;
- Controls for validating models;
- Internal audit coverage of model validation and compliance especially when models are revised or replaced;
- The adequacy of the institution's stress testing reporting practices; and
- Potential shocks to collateral values and their effect on the institution.

Business Strategy and Planning

"Business planning is an organized and continuous process of ensuring that projections of the future operating environment influence current decisions." Business planning is reviewed every exam cycle. The FCA Examination Manual states that examiners should consider the following when evaluating the institution's business strategy and planning:

- Consideration of various possible scenarios when establishing baseline assumptions and projections with stress testing as part of the business planning process.

Liquidity

“The fundamental objective of liquidity risk management is to ensure the ongoing funding of operations under reasonable terms and conditions. However, the underlying risks and related risk management processes to accomplish this objective differ significantly at Farm Credit System (System) associations compared to banks.” The FCA Examination Manual states that examiners should consider the following when evaluating liquidity:

- Determine if the institution’s contingency funding plan incorporates stress test events and scenarios that capture significant threats to liquidity and potential actions to be taken during a liquidity crisis.

Updates Planned for Exam Manual and Other Guidance

OE plans to update the FCA Examination Manual after FCA issues additional stress testing guidance to the System. OE is considering adding a procedure that is specific to model risk management and updating other sections that reference outdated guidance.

Additional guidance was issued to examiners in May 2017 related to validation of stress test models. The guidance recognizes that modelling and validation expectations vary based on the complexity of the model, the size and risk of the institution, and their use throughout the System. FCA expects widely used models to be validated by third parties, while internal testing may be sufficient for less complex models used by lower risk associations

FCA maintains an intranet site that contains various stress-testing presentations and materials for examiners’ reference.

OE also issues guidance to examiners through directives. OE’s examination-related directives outline expectations for examination quality and controls as well as expectations for reporting examination results.



Farm Credit Administration
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