

Farm Credit Administration

§ 652.1

(g) Notify directors, officers, and employees of the conflict-of-interest policy and any subsequent changes thereto and allow them a reasonable period of time to conform to the policy.

§ 651.3 Implementation of policy.

(a) The Corporation shall disclose any unresolved material conflicts of interest involving its directors, officers, and employees to:

(1) Shareholders through annual reports and proxy statements; and

(2) Investors and potential investors through disclosure documents supplied to them.

(b) The Corporation shall make available to any shareholder, investor, or potential investor, upon request, a copy of its policy on conflicts of interest. The Corporation may charge a nominal fee to cover the costs of reproduction and handling.

(c) The Corporation shall maintain all reports of all potential conflicts of interest and documentation of materiality determinations and resolutions of conflicts of interest for a period of 6 years.

§ 651.4 Director, officer, employee, and agent responsibilities.

(a) Each director, officer, employee, and agent of the Corporation shall:

(1) Conduct the business of the Corporation following high standards of honesty, integrity, impartiality, loyalty, and care, consistent with applicable law and regulation in furtherance of the Corporation's public purpose;

(2) Adhere to the requirements of the conflict-of-interest policy established by the Corporation and provide any information the Corporation deems necessary to discharge its responsibilities under this subpart.

(b) Directors, officers, employees, and agents of the Corporation shall be subject to the penalties of part C of title V of the Farm Credit Act of 1971, as amended, for violations of this regulation, including failure to adhere to the conflict-of-interest policy established by the Corporation.

PART 652—FEDERAL AGRICULTURAL MORTGAGE CORPORATION FUNDING AND FISCAL AFFAIRS

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APPENDIX A TO SUBPART B—RISK-BASED CAPITAL STRESS TEST

AUTHORITY: Secs. 4.12, 5.9, 5.17, 8.11, 8.31, 8.32, 8.33, 8.34, 8.35, 8.36, 8.37, 8.41 of the Farm Credit Act (12 U.S.C. 2183, 2243, 2252, 2279aa-11, 2279bb, 2279bb-1, 2279bb-2, 2279bb-3, 2279bb-4, 2279bb-5, 2279bb-6, 2279cc); sec. 514 of Pub. L. 102-552, 106 Stat. 4102; sec. 118 of Pub. L. 104-105, 110 Stat. 168.

SOURCE: 70 FR 40644, July 14, 2005, unless otherwise noted.

Subpart A—Investment Management

§ 652.1 Purpose.

This subpart contains the Farm Credit Administration's (FCA) rules for governing liquidity and non-program

investments held by the Federal Agricultural Mortgage Corporation (Farmer Mac). The purpose of this subpart is to ensure safety and soundness, continuity of funding, and appropriate use of non-program investments considering Farmer Mac's special status as a Government-sponsored enterprise (GSE). The subpart contains requirements for Farmer Mac's board of directors to adopt policies covering such areas as investment management, interest rate risk, and liquidity reserves. The subpart also requires Farmer Mac to comply with various reporting requirements.

§ 652.5 Definitions.

For purposes of this subpart, the following definitions will apply:

Affiliate means any entity established under authority granted to the Corporation under section 8.3(b)(13) of the Farm Credit Act of 1971, as amended.

Asset-backed securities (ABS) means investment securities that provide for ownership of a fractional undivided interest or collateral interests in specific assets of a trust that are sold and traded in the capital markets. For the purposes of this subpart, ABS exclude mortgage securities that are defined below.

Eurodollar time deposit means a non-negotiable deposit denominated in United States dollars and issued by an overseas branch of a United States bank or by a foreign bank outside the United States.

Farmer Mac, Corporation, you, and your means the Federal Agricultural Mortgage Corporation and its affiliates.

FCA, our, or we means the Farm Credit Administration.

Final maturity means the last date on which the remaining principal amount of a security is due and payable (matures) to the registered owner. It does not mean the call date, the expected average life, the duration, or the weighted average maturity.

General obligations of a state or political subdivision means:

(1) The full faith and credit obligations of a state, the District of Columbia, the Commonwealth of Puerto Rico, a territory or possession of the United States, or a political subdivision there-

of that possesses general powers of taxation, including property taxation; or

(2) An obligation that is unconditionally guaranteed by an obligor possessing general powers of taxation, including property taxation.

Government agency means an agency or instrumentality of the United States Government whose obligations are fully and explicitly guaranteed as to the timely repayment of principal and interest by the full faith and credit of the United States Government.

Government-sponsored agency means an agency, instrumentality, or corporation chartered or established to serve public purposes specified by the United States Congress but whose obligations are not explicitly guaranteed by the full faith and credit of the United States Government, including but not limited to any Government-sponsored enterprise.

Liquid investments are assets that can be promptly converted into cash without significant loss to the investor. A security is liquid if the spread between its bid price and ask price is narrow and a reasonable amount can be sold at those prices promptly.

Long-Term Standby Purchase Commitment (LTSPC) is a commitment by Farmer Mac to purchase specified eligible loans on one or more undetermined future dates. In consideration for Farmer Mac's assumption of the credit risk on the specified loans underlying an LTSPC, Farmer Mac receives an annual commitment fee on the outstanding balance of those loans in monthly installments based on the outstanding balance of those loans.

Market risk means the risk to your financial condition because the value of your holdings may decline if interest rates or market prices change. Exposure to market risk is measured by assessing the effect of changing rates and prices on either the earnings or economic value of an individual instrument, a portfolio, or the entire Corporation.

Maturing obligations means maturing debt and other obligations that may be expected, such as buyouts of long-term standby purchase commitments or repurchases of agricultural mortgage securities.

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Mortgage securities means securities that are either:

(1) Pass-through securities or participation certificates that represent ownership of a fractional undivided interest in a specified pool of residential (excluding home equity loans), multifamily or commercial mortgages, or

(2) A multiclass security (including collateralized mortgage obligations and real estate mortgage investment conduits) that is backed by a pool of residential, multifamily or commercial real estate mortgages, pass-through mortgage securities, or other multiclass mortgage securities.

(3) This definition does not include agricultural mortgage-backed securities guaranteed by Farmer Mac itself.

Nationally recognized statistical rating organization (NRSRO) means a rating organization that the Securities and Exchange Commission recognizes as an NRSRO.

Non-program investments means investments other than those in:

(1) “Qualified loans” as defined in section 8.0(9) of the Farm Credit Act of 1971, as amended; or

(2) Securities collateralized by “qualified loans.”

Program assets means on-balance sheet “qualified loans” as defined in section 8.0(9) of the Farm Credit Act of 1971, as amended.

Program obligations means off-balance sheet “qualified loans” as defined in section 8.0(9) of the Farm Credit Act of 1971, as amended.

Regulatory capital means your core capital plus an allowance for losses and guarantee claims, as determined in accordance with generally accepted accounting principles.

Revenue bond means an obligation of a municipal government that finances a specific project or enterprise, but it is not a full faith and credit obligation. The obligor pays a portion of the revenue generated by the project or enterprise to the bondholders.

Weighted average life (WAL) means the average time until the investor receives the principal on a security, weighted by the size of each principal payment and calculated under specified prepayment assumptions.

§ 652.10 Investment management and requirements.

(a) *Investment policies—board responsibilities.* Your board of directors must adopt written policies for managing your non-program investment activities. Your board must also ensure that management complies with these policies and that appropriate internal controls are in place to prevent loss. At least annually, your board, or a designated subcommittee of the board, must review these investment policies. Any changes to the policies must be adopted by the board. You must report any changes to these policies to FCA’s Office of Secondary Market Oversight within 10 business days of adoption.

(b) *Investment policies—general requirements.* Your investment policies must address the purposes and objectives of investments, risk tolerance, delegations of authority, exception parameters, securities valuation, internal controls, and reporting requirements. Furthermore, the policies must address the means for reporting, and approvals needed for, exceptions to established policies. Investment policies must be sufficiently detailed, consistent with, and appropriate for the amounts, types, and risk characteristics of your investments.

(c) *Investment policies—risk tolerance.* Your investment policies must establish risk limits and diversification requirements for the various classes of eligible investments and for the entire investment portfolio. These policies must ensure that you maintain prudent diversification of your investment portfolio. Risk limits must be based on the Corporation’s objectives, capital position, and risk tolerance. Your policies must identify the types and quantity of investments that you will hold to achieve your objectives and control credit, market, liquidity, and operational risks. Your policies must establish risk limits for the following four types of risk:

(1) *Credit risk.* Your investment policies must establish:

(i) Credit quality standards, limits on counterparty risk, and risk diversification standards that limit concentrations based on a single or related counterparty(ies), a geographical area,

industries or obligations with similar characteristics.

(ii) Criteria for selecting brokers, dealers, and investment bankers (collectively, securities firms). You must buy and sell eligible investments with more than one securities firm. As part of your annual review of your investment policies, your board of directors, or a designated subcommittee of the board, must review the criteria for selecting securities firms. Any changes to the criteria must be approved by the board. Also, as part of your annual review, the board, or a designated subcommittee of the board, must review existing relationships with securities firms. In addition, the board, or a designated subcommittee of the board, must be notified before any changes to securities firms are made.

(iii) Collateral margin requirements on repurchase agreements. You must regularly mark the collateral to market and ensure appropriate controls are maintained over collateral held.

(2) *Market risk.* Your investment policies must set market risk limits for specific types of investments, and for the investment portfolio or for Farmer Mac generally. Your board of directors must establish market risk limits in accordance with these regulations (including, but not limited to, §§ 652.15 and 652.40) and our other policies and guidance. You must document in the Corporation's records or minutes any analyses used in formulating your policies or amendments to the policies.

(3) *Liquidity risk.* Your investment policies must describe the liquidity characteristics of eligible investments that you will hold to meet your liquidity needs and the Corporation's objectives.

(4) *Operational risk.* Investment policies must address operational risks, including delegations of authority and internal controls in accordance with paragraphs (d) and (e) of this section.

(d) *Delegation of authority.* All delegations of authority to specified personnel or committees must state the extent of management's authority and responsibilities for investments.

(e) *Internal controls.* You must:

(1) Establish appropriate internal controls to detect and prevent loss,

fraud, embezzlement, conflicts of interest, and unauthorized investments.

(2) Establish and maintain a separation of duties and supervision between personnel who execute investment transactions and personnel who approve, reevaluate, and oversee investments.

(3) Maintain records and management information systems that are appropriate for the level and complexity of your investment activities.

(f) *Securities valuations.* (1) Before you purchase a security, you must evaluate its credit quality and price sensitivity to changes in market interest rates. You must also verify the value of a security that you plan to purchase, other than a new issue, with a source that is independent of the broker, dealer, counterparty, or other intermediary to the transaction. Your investment policies must fully address the extent of the prepurchase analysis that management needs to perform for various classes of instruments. For example, you should specifically describe the stress tests in § 652.40 that must be performed on various types of mortgage securities.

(2) At least monthly, you must determine the fair market value of each security in your portfolio and the fair market value of your whole investment portfolio. In doing so you must also evaluate the credit quality and price sensitivity to the change in market interest rates of each security in your portfolio and your whole investment portfolio.

(3) Before you sell a security, you must verify its value with a source that is independent of the broker, dealer, counterparty, or other intermediary to the transaction.

(g) *Reports to the board of directors.* At least quarterly, Farmer Mac's management must report to the Corporation's board of directors, or a designated subcommittee of the board:

(1) On the performance and risk of each class of investments and the entire investment portfolio;

(2) All gains and losses that you incur during the quarter on individual securities that you sold before maturity and why they were liquidated;

(3) Potential risk exposure to changes in market interest rates and

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any other factors that may affect the value of your investment holdings;

(4) How investments affect your overall financial condition;

(5) Whether the performance of the investment portfolio effectively achieves the board's objectives; and

(6) Any deviations from the board's policies. These deviations must be formally approved by the board of directors.

§ 652.15 Interest rate risk management and requirements.

(a) The board of directors of Farmer Mac must provide effective oversight (direction, controls, and supervision) to the interest rate risk management program and must be knowledgeable of the nature and level of interest rate risk taken by Farmer Mac.

(b) The management of Farmer Mac must ensure that interest rate risk is properly managed on both a long-range and a day-to-day basis.

(c) The board of directors of Farmer Mac must adopt an interest rate risk management policy that establishes appropriate interest rate risk exposure limits based on the Corporation's risk-bearing capacity and reporting requirements in accordance with paragraphs (d) and (e) of this section. At least annually, the board of directors, or a designated subcommittee of the board, must review the policy. Any changes to the policy must be approved by the board of directors. You must report any changes to the policy to FCA's Office of Secondary Market Oversight within 10 business days of adoption.

(d) The interest rate risk management policy must, at a minimum:

(1) Address the purpose and objectives of interest rate risk management;

(2) Identify and analyze the causes of interest rate risks within Farmer Mac's existing balance sheet structure;

(3) Require Farmer Mac to measure the potential impact of these risks on projected earnings and market values by conducting interest rate shock tests and simulations of multiple economic scenarios at least quarterly;

(4) Describe and implement actions needed to obtain Farmer Mac's desired risk management objectives;

(5) Document the objectives that Farmer Mac is attempting to achieve

by purchasing eligible investments that are authorized by § 652.35 of this subpart;

(6) Require Farmer Mac to evaluate and document, at least quarterly, whether these investments have actually met the objectives stated under paragraph (d)(4) of this section;

(7) Identify exception parameters and post approvals needed for any exceptions to the policy's requirements;

(8) Describe delegations of authority; and

(9) Describe reporting requirements, including exceptions to policy limits.

(e) At least quarterly, Farmer Mac's management must report to the Corporation's board of directors, or a designated subcommittee of the board, describing the nature and level of interest rate risk exposure. Any deviations from the board's policy on interest rate risk must be specifically identified in the report and approved by the board, or a designated subcommittee of the board.

§ 652.20 Liquidity reserve management and requirements.

(a) *Minimum liquidity reserve requirement.* Within 24 months of this rule becoming effective, and thereafter, Farmer Mac must hold cash, eligible non-program investments under § 652.35 of this subpart, and/or on-balance sheet securities backed by portions of Farmer Mac program assets (loans) that are guaranteed by the United States Department of Agriculture as described in section 8.0(9)(B) of the Act (in accordance with the requirements of paragraphs (b) and (c) of this section), to maintain sufficient liquidity to fund a minimum of 60 days of maturing obligations, interest expense, and operating expenses at all times. You must document your compliance with this minimum reserve requirement at least once each month as of the last day of the month using month end data. Liquid asset values must be marked to market. In addition, you must have the capability and information systems in place to be able to calculate the minimum reserve requirement on a daily basis.

(b) *Free of lien.* All investments held for the purpose of meeting the liquidity reserve requirement of this section

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must be free of liens or other encumbrances.

(c) *Discounts.* The amount that may be counted to meet the minimum liquidity reserve requirement is as follows:

(1) For cash and overnight investments, multiply the cash and investments by 100 percent;

(2) For money market instruments with maturities of 5 business days or less, multiply the instruments by 97 percent of market value;

(3) For money market instruments with maturities greater than 5 business days and floating rate debt and preferred stock securities, multiply the instruments and securities by 95 percent of market value;

(4) For diversified investment funds, multiply the individual securities in the funds by the discounts that would apply to the securities if held separately;

(5) For fixed rate debt and preferred stock securities, multiply the securities by 90 percent of market value;

(6) For securities backed by Farmer Mac program assets (loans) guaranteed by the United States Department of Agriculture as described in section 8.0(9)(B) of the Act, multiply the securities by 75 percent; and

(7) We reserve the authority to modify or determine the appropriate discount for any investment used to meet the minimum liquidity reserve requirement if the otherwise applicable discount does not accurately reflect the liquidity of that investment or if the investment does not fit wholly within one of the specified investment categories. In making any modification or determination, we will consider the liquidity of the investment as well as any other relevant factors. We will provide notice of at least 20 business days before any modified discounts will take effect.

(d) *Liquidity reserve policy—board responsibilities.* Farmer Mac’s board of directors must adopt a liquidity reserve policy. The board must also ensure that management uses adequate internal controls to ensure compliance with the liquidity reserve policy standards, limitations, and reporting requirements established pursuant to this paragraph and to paragraphs (e), (f),

and (g) of this section. At least annually, the board of directors or a designated subcommittee of the board must review and validate the liquidity policy’s adequacy. The board of directors must approve any changes to the policy. You must provide a copy of the revised policy to FCA’s Office of Secondary Market Oversight within 10 business days of adoption.

(e) *Liquidity reserve policy—content.* Your liquidity reserve policy must contain at a minimum the following:

(1) The purpose and objectives of liquidity reserves;

(2) A listing of specific assets, debt, and arrangements that can be used to meet liquidity objectives;

(3) Diversification requirements of your liquidity reserve portfolio;

(4) Maturity limits and credit quality standards for non-program investments used to meet the minimum liquidity reserve requirement of paragraph (a) of this section;

(5) The minimum and target (or optimum) amounts of liquidity that the board believes are appropriate for Farmer Mac;

(6) The maximum amount of non-program investments that can be held for meeting Farmer Mac’s liquidity needs, as expressed as a percentage of program assets and program obligations;

(7) Exception parameters and post approvals needed;

(8) Delegations of authority; and

(9) Reporting requirements.

(f) *Liquidity reserve reporting—periodic reporting requirements.* At least quarterly, Farmer Mac’s management must report to the Corporation’s board of directors or a designated subcommittee of the board describing, at a minimum, liquidity reserve compliance with the Corporation’s policy and this section. Any deviations from the board’s liquidity reserve policy (other than requirements specified in § 652.20(e)(5)) must be specifically identified in the report and approved by the board of directors.

(g) *Liquidity reserve reporting—special reporting requirements.* Farmer Mac’s management must immediately report to its board of directors any non-compliance with board policy requirements that are specified in § 652.20(e)(5). Farmer Mac must report, in writing, to FCA’s Office of Secondary Market

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Oversight no later than the next business day following the discovery of any breach of the minimum liquidity reserve requirement at § 652.20(a).

§ 652.25 Non-program investment purposes and limitation.

(a) Farmer Mac is authorized to hold eligible non-program investments listed under § 652.35 for the purposes of complying with the interest rate risk requirements of § 652.15, complying with the liquidity reserve requirements of § 652.20, and managing surplus short-term funds.

(b) Non-program investments cannot exceed the greater of \$1.5 billion or thirty-five (35) percent of program assets and program obligations, excluding 75 percent of the program assets that are guaranteed by the United States Department of Agriculture as described in section 8.0(9)(B) of the Farm Credit Act of 1971, as amended.

§ 652.30 Temporary regulatory waivers or modifications for extraordinary situations.

Whenever the FCA determines that an extraordinary situation exists that necessitates a temporary regulatory waiver or modification, the FCA may, in its sole discretion:

(a) Modify or waive the minimum liquidity reserve requirement in § 652.20 of this subpart; and/or

(b) Modify the amount, qualities, and types of eligible investments that you are authorized to hold pursuant to § 652.25 of this subpart.

§ 652.35 Eligible non-program investments.

(a) You may hold only the types, quantities, and qualities of non-program investments listed in the following Non-Program Investment Eligibility Criteria Table. These investments must be denominated in United States dollars.

Non-Program Investment Eligibility Criteria Table

ASSET CLASS	FINAL MATURITY LIMIT	NRSRO ISSUE OR ISSUER CREDIT RATING REQUIREMENT	OTHER REQUIREMENTS	MAXIMUM PERCENTAGE OF TOTAL NON-PROGRAM INVESTMENT PORTFOLIO
(1) Obligations of the United States	None	NA	None	None
<ul style="list-style-type: none"> Treasuries Other obligations (except mortgage securities) fully insured or guaranteed by the United States Government or a Government agency. 				
(2) Obligations of Government-sponsored agencies	None	NA	None	None
<ul style="list-style-type: none"> Government-sponsored agency securities (except mortgage securities). Other obligations (except mortgage securities) fully insured or guaranteed by Government-sponsored agencies. 				
(3) Municipal Securities				
<ul style="list-style-type: none"> General obligations 	10 years	One of the two highest.	None	None
<ul style="list-style-type: none"> Revenue bonds 	5 years for fixed rate bonds and 10 years for index/floating rate bonds	Highest	None	15%
(4) International and Multilateral Development Bank Obligations	None	None	The United States must be a voting shareholder.	None
(5) Money Market Instruments				
<ul style="list-style-type: none"> Federal funds 	1 day or continuously callable up to 100 days	One of the two highest short-term.	None	None
<ul style="list-style-type: none"> Negotiable certificates of deposit 	1 year	One of the two highest short-term.	None	None
<ul style="list-style-type: none"> Bankers acceptances 	None	One of the two highest short-term.	Issued by a depository institution.	None
<ul style="list-style-type: none"> Prime commercial paper 	270 days	Highest short-term.	None	None
<ul style="list-style-type: none"> Non-callable term Federal funds and Eurodollar time deposits. 	100 days	Highest short-term.	None	20%
<ul style="list-style-type: none"> Master notes 	270 days	Highest short-term.	None	20%
<ul style="list-style-type: none"> Repurchase agreements collateralized by eligible investments or marketable securities rated in the highest credit rating category by an NRSRO. 	100 days	NA	If counterparty defaults, you must divest non-eligible securities as required under § 652.45.	None

Note: You must also comply with requirements of paragraphs (b), (c), and (d) of this section, and § 651.40 when applicable. "NA" means not applicable.

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ASSET CLASS	FINAL MATURITY LIMIT	NRSRO ISSUE OR ISSUER CREDIT RATING REQUIREMENT	OTHER REQUIREMENTS	MAXIMUM PERCENTAGE OF TOTAL NON-PROGRAM INVESTMENT PORTFOLIO
(6) Mortgage Securities				
• Issued or guaranteed by the United States or a Government agency.	None	NA	Stress testing under § 652.40.	None
• Government-sponsored agency mortgage securities.	None	One of the two highest.	Stress testing under § 652.40.	50%
• Non-Government agency or Government-sponsored agency securities that comply with 15 U.S.C. 77d(5) or 15 U.S.C. 78c(a) (41).	None	Highest	Stress testing under § 652.40.	15% combined
• Commercial mortgage-backed securities.	None	Highest	<ul style="list-style-type: none"> • Security must be backed by a minimum of 100 loans. • Loans from a single mortgagor cannot exceed 5% of the pool. • Pool must be geographically diversified pursuant to the board's policy. • Stress testing under § 652.40. 	
(7) Asset-Backed Securities secured by: <ul style="list-style-type: none"> • Credit card receivables • Automobile loans • Home equity loans • Wholesale automobile dealer loans • Student loans • Equipment loans • Manufactured housing loans 	None	Highest	Maximum of 5-year WAL for fixed rate or floating rate ABS at their contractual interest rate caps.	25% combined
(8) Corporate Debt Securities	5 years	One of the highest two for maturities greater than 3 years, and one of the highest three for maturities of three years or less.	Cannot be convertible to equity securities.	25%
(9) Diversified Investment Funds Shares of an investment company registered under section 8 of the Investment Company Act of 1940.	NA	NA	The portfolio of the investment company must consist solely of eligible investments authorized by this section. The investment company's risk and return objectives and use of derivatives must be consistent with FCA guidance and your investment policies.	None, if your shares in each investment company comprise less than 10% of your portfolio. Otherwise counts toward limit for each type of investment.

Note: You must also comply with requirements of paragraphs (b), (c), and (d) of this section, and § 651.40 when applicable. "NA" means not applicable.

(b) *Rating of foreign countries.* When investment is located outside the United States, the host country must ever the obligor or issuer of an eligible investment United States, the host country must

maintain the highest sovereign rating for political and economic stability by an NRSRO.

(c) *Marketable investments.* All eligible investments, except money market instruments, must be readily marketable. An eligible investment is marketable if you can sell it promptly at a price that closely reflects its fair value in an active and universally recognized secondary market. You must evaluate and document the size and liquidity of the secondary market for the investment at time of purchase.

(d) *Obligor limits.* (1) You may not invest more than 25 percent of your regulatory capital in eligible investments issued by any single entity, issuer or obligor. This obligor limit does not apply to Government-sponsored agencies or Government agencies. You may not invest more than 100 percent of your regulatory capital in any one Government-sponsored agency. There are no obligor limits for Government agencies.

(2) *Obligor limits for your holdings in an investment company.* You must count securities that you hold through an investment company towards the obligor limits of this section unless the investment company's holdings of the security of any one issuer do not exceed 5 percent of the investment company's total portfolio.

(e) *Preferred stock and other investments approved by the FCA.* (1) You may purchase non-program investments in preferred stock issued by other Farm Credit System institutions only with our written prior approval. You may also purchase non-program investments other than those listed in the Non-Program Investment Eligibility Criteria Table at paragraph (a) of this section only with our written prior approval.

(2) Your request for our approval must explain the risk characteristics of the investment and your purpose and objectives for making the investment.

§ 652.40 Stress tests for mortgage securities.

(a) You must perform stress tests to determine how interest rate changes will affect the cashflow and price of each mortgage security that you purchase and hold, except for adjustable

rate mortgage securities that reprice at intervals of 12 months or less and are tied to an index. You must also use stress tests to gauge how interest rate fluctuations on mortgage securities affect your capital and earnings. The stress tests must be able to measure the price sensitivity of mortgage instruments over different interest rate/yield curve scenarios and be consistent with any asset liability management and interest rate risk policies. The methodology that you use to analyze mortgage securities must be appropriate for the complexity of the instrument's structure and cashflows. Prior to purchase and each quarter thereafter, you must use the stress tests to determine that the risk in the mortgage securities is within the risk limits of your board's investment policies. The stress tests must enable you to determine at the time of purchase and each subsequent quarter that the mortgage security does not expose your capital or earnings to excessive risks.

(b) You must rely on verifiable information to support all your assumptions, including prepayment and interest rate volatility assumptions. You must document the basis for all assumptions that you use to evaluate the security and its underlying mortgages. You must also document all subsequent changes in your assumptions. If at any time after purchase, a mortgage security no longer complies with requirements in this section, Farmer Mac's management must report to the Corporation's board of directors in accordance with § 652.10(g).

§ 652.45 Divestiture of ineligible non-program investments.

(a) *Divestiture requirements—(1) Initial divestiture requirements.* Within 6 months of this rule's effective date, you must divest of all ineligible non-program investments or securities unless we approve, in writing, a plan that authorizes you to divest the instruments over a longer period of time. An acceptable plan generally would require you to divest of the ineligible investments or securities as quickly as possible without substantial financial loss.

(2) *Subsequent divestiture requirements.* Subsequent to the initial divestiture

period set forth in paragraph (a)(1) of this section, you must divest of an ineligible non-program investment or security within 6 months unless we approve, in writing, a plan that authorizes you to divest the instrument over a longer period of time. An acceptable plan generally would require you to divest of the ineligible investment or security as quickly as possible without substantial financial loss.

(b) *Reporting requirements.* Until you divest of the ineligible non-program investment or security, you must report at least quarterly to your board of directors and to FCA's Office of Secondary Market Oversight about the status and performance of the ineligible instrument, the reasons why it remains ineligible, and the manager's progress in divesting of the investment.

Subpart B—Risk-Based Capital Requirements

SOURCE: 71 FR 77253, Dec. 26, 2006, unless otherwise noted.

§ 652.50 Definitions.

For purposes of this subpart, the following definitions will apply:

Farmer Mac, Corporation, you, and your means the Federal Agricultural Mortgage Corporation and its affiliates as defined in subpart A of this part.

Our, us, or we means the Farm Credit Administration.

Regulatory capital means the sum of the following as determined in accordance with generally accepted accounting principles:

- (1) The par value of outstanding common stock;
- (2) The par value of outstanding preferred stock;
- (3) Paid-in capital, which is the amount of owner investment in Farmer Mac in excess of the par value of stock;
- (4) Retained earnings; and,
- (5) Any allowances for losses on loans and guaranteed securities.

Risk-based capital means the amount of regulatory capital sufficient for Farmer Mac to maintain positive capital during a 10-year period of stressful conditions as determined by the risk-based capital stress test described in § 652.65.

§ 652.55 General.

You must hold risk-based capital in an amount determined in accordance with this subpart.

§ 652.60 Corporation board guidelines.

(a) Your board of directors is responsible for ensuring that you maintain total capital at a level that is sufficient to ensure continued financial viability and—provide for growth. In addition, your capital must be sufficient to meet statutory and regulatory requirements.

(b) No later than 65 days after the beginning of Farmer Mac's planning year, your board of directors must adopt an operational and strategic business plan for at least the next 3 years. The plan must include:

- (1) A mission statement;
- (2) A review of the internal and external factors that are likely to affect you during the planning period;
- (3) Measurable goals and objectives;
- (4) Forecasted income, expense, and balance sheet statements for each year of the plan; and,
- (5) A capital adequacy plan.

(c) The capital adequacy plan must include capital targets necessary to achieve the minimum, critical and risk-based capital standards specified by the Act and this subpart as well as your capital adequacy goals. The plan must address any projected dividends, equity retirements, or other action that may decrease your capital or its components for which minimum amounts are required by this subpart. You must specify in your plan the circumstances in which stock or equities may be retired. In addition to factors that must be considered in meeting the statutory and regulatory capital standards, your board of directors must also consider at least the following factors in developing the capital adequacy plan:

- (1) Capability of management;
- (2) Strategies and objectives in your business plan;
- (3) Quality of operating policies, procedures, and internal controls;
- (4) Quality and quantity of earnings;
- (5) Asset quality and the adequacy of the allowance for losses to absorb potential losses in your retained mortgage portfolio, securities guaranteed as

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to principal and interest, commitments to purchase mortgages or securities, and other program assets or obligations;

(6) Sufficiency of liquidity and the quality of investments; and,

(7) Any other risk-oriented activities, such as funding and interest rate risks, contingent and off-balance sheet liabilities, or other conditions warranting additional capital.

§ 652.65 Risk-based capital stress test.

You will perform the risk-based capital stress test as described in summary form below and as described in detail in appendix A to this subpart. The risk-based capital stress test spreadsheet is also available electronically at <http://www.fca.gov>. The risk-based capital stress test has five components:

(a) *Data requirements.* You will use the following data to implement the risk-based capital stress test.

(1) You will use Corporation loan-level data to implement the credit risk component of the risk-based capital stress test.

(2) You will use Call Report data as the basis for Corporation data over the 10-year stress period supplemented with your interest rate risk measurements and tax data.

(3) You will use other data, including the 10-year Constant Maturity Treasury (CMT) rate and the applicable Internal Revenue Service corporate income tax schedule, as further described in appendix A to this subpart.

(b) *Credit risk.* The credit risk part estimates loan losses during a period of sustained economic stress.

(1) For each loan in the Farmer Mac I portfolio, you will determine a default probability by using the logit functions specified in appendix A to this subpart with each of the following variables:

(i) Borrower's debt-to-asset ratio at loan origination;

(ii) Loan-to-value ratio at origination, which is the loan amount divided by the value of the property;

(iii) Debt-service-coverage ratio at origination, which is the borrower's net income (on- and off-farm) plus depreciation, capital lease payments, and interest, less living expenses and in-

come taxes, divided by the total term debt payments;

(iv) The origination loan balance stated in 1997 dollars based on the consumer price index; and,

(v) The worst-case percentage change in farmland values (23.52 percent).

(2) You will then calculate the loss rate by multiplying the default probability for each loan by the estimated loss-severity rate, which is the average loss of the defaulted loans in the data set (20.9 percent).

(3) You will calculate losses by multiplying the loss rate by the origination loan balances stated in 1997 dollars.

(4) You will adjust the losses for loan seasoning, based on the number of years since loan origination, according to the functions in appendix A to this subpart.

(5) You will further adjust losses for loans that collateralize the general obligation of Off-Balance Sheet AgVantage volume, and for loans where the program loan counterparty retains a subordinated interest in accordance with appendix A to this subpart.

(6) The losses must be applied in the risk-based capital stress test as specified in appendix A to this subpart.

(c) *Interest rate risk.* (1) During the first year of the stress period, you will adjust interest rates for two scenarios, an increase in rates and a decrease in rates. You must determine your risk-based capital level based on whichever scenario would require more capital.

(2) You will calculate the interest rate stress based on changes to the quarterly average of the 10-year CMT. The starting rate is the 3-month average of the most recent CMT monthly rate series. To calculate the change in the starting rate, determine the average yield of the preceding 12 monthly 10-year CMT rates. Then increase and decrease the starting rate by:

(i) 50 percent of the 12-month average if the average rate is less than 12 percent; or

(ii) 600 basis points if the 12-month average rate is equal to or higher than 12 percent.

(3) Following the first year of the stress period, interest rates remain at the new level for the remainder of the stress period.

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(4) You will apply the interest rate changes scenario as indicated in appendix A to this subpart.

(5) You may use other interest rate indices in addition to the 10-year CMT subject to our concurrence, but in no event can your risk-based capital level be less than that determined by using only the 10-year CMT.

(d) *Cashflow generator.* (1) You must adjust your financial statements based on the credit risk inputs and interest rate risk inputs described above to generate pro forma financial statements for each year of the 10-year stress test. The cashflow generator produces these financial statements. You may use the cashflow generator spreadsheet that is described in appendix A to this subpart and available electronically at <http://www.fca.gov>. You may also use any reliable cashflow program that can develop or produce pro forma financial statements using generally accepted accounting principles and widely recognized financial modeling methods, subject to our concurrence. You may disaggregate financial data to any greater degree than that specified in appendix A to this subpart, subject to our concurrence.

(2) You must use model assumptions to generate financial statements over the 10-year stress period. The major assumption is that cashflows generated by the risk-based capital stress test are based on a steady-state scenario. To implement a steady-state scenario, when on- and off-balance sheet assets and liabilities amortize or are paid down, you must replace them with similar assets and liabilities. Replace amortized assets from discontinued loan programs with current loan programs. In general, keep assets with small balances in constant proportions to key program assets.

(3) You must simulate annual pro forma balance sheets and income statements in the risk-based capital stress test using Farmer Mac's starting position, the credit risk and interest rate risk components, resulting cashflow outputs, current operating strategies and policies, and other inputs as shown in appendix A to this subpart and the electronic spreadsheet available at <http://www.fca.gov>.

(e) *Calculation of capital requirement.* The calculations that you must use to solve for the starting regulatory capital amount are shown in appendix A to this subpart and in the electronic spreadsheet available at <http://www.fca.gov>.

[71 FR 77253, Dec. 26, 2006, as amended at 73 FR 31940, June 5, 2008]

§ 652.70 Risk-based capital level.

The risk-based capital level is the sum of the following amounts:

(a) *Credit and interest rate risk.* The amount of risk-based capital determined by the risk-based capital test under § 652.65.

(b) *Management and operations risk.* Thirty (30) percent of the amount of risk-based capital determined by the risk-based capital test in § 652.65.

§ 652.75 Your responsibility for determining the risk-based capital level.

(a) You must determine your risk-based capital level using the procedures in this subpart, appendix A to this subpart, and any other supplemental instructions provided by us. You will report your determination to us as prescribed in § 652.90. At any time, however, we may determine your risk-based capital level using the procedures in § 652.65 and appendix A to this subpart, and you must hold risk-based capital in the amount we determine is appropriate.

(b) You must at all times comply with the risk-based capital levels established by the risk-based capital stress test and must be able to determine your risk-based capital level at any time.

(c) If at any time the risk-based capital level you determine is less than the minimum capital requirements set forth in section 8.33 of the Act, you must maintain the statutory minimum capital level.

§ 652.80 When you must determine the risk-based capital level.

(a) You must determine your risk-based capital level at least quarterly, or whenever changing circumstances occur that have a significant effect on capital, such as exposure to a high volume of, or particularly severe, problem loans or a period of rapid growth.

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(b) In addition to the requirements of paragraph (a) of this section, we may require you to determine your risk-based capital level at any time.

(c) If you anticipate entering into any new business activity that could have a significant effect on capital, you must determine a pro forma risk-based capital level, which must include the new business activity, and report this pro forma determination to the Director, Office of Secondary Market Oversight, at least 10-business days prior to implementation of the new business program.

§ 652.85 When to report the risk-based capital level.

(a) You must file a risk-based capital report with us each time you determine your risk-based capital level as required by § 652.80.

(b) You must also report to us at once if you identify in the interim between quarterly or more frequent reports to us that you are not in compliance with the risk-based capital level required by § 652.70.

(c) If you make any changes to the data used to calculate your risk-based capital requirement that cause a material adjustment to the risk-based capital level you reported to us, you must file an amended risk-based capital report with us within 5-business days after the date of such changes;

(d) You must submit your quarterly risk-based capital report for the last day of the preceding quarter by the earlier of the reporting deadlines for Securities and Exchange Commission Forms 10-K and 10-Q, or the 40th day after each of the quarters ending March 31st, June 30th, and September 30th, and the 75th day after the quarter ending on December 31st.

[71 FR 77253, Dec. 26, 2006, as amended at 73 FR 31940, June 5, 2008]

§ 652.90 How to report your risk-based capital determination.

(a) Your risk-based capital report must contain at least the following information:

(1) All data integral for determining the risk-based capital level, including any business policy decisions or other assumptions made in implementing the risk-based capital test;

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(2) Other information necessary to determine compliance with the procedures for determining risk-based capital as specified in appendix A to this subpart; and

(3) Any other information we may require in written instructions to you.

(b) You must submit each risk-based capital report in such format or medium, as we require.

§ 652.95 Failure to meet capital requirements.

(a) *Determination and notice.* At any time, we may determine that you are not meeting your risk-based capital level calculated according to § 652.65, your minimum capital requirements specified in section 8.33 of the Act, or your critical capital requirements specified in section 8.34 of the Act. We will notify you in writing of this fact and the date by which you should be in compliance (if applicable).

(b) *Submission of capital restoration plan.* Our determination that you are not meeting your required capital levels may require you to develop and submit to us, within a specified time period, an acceptable plan to reach the appropriate capital level(s) by the date required.

§ 652.100 Audit of the risk-based capital stress test.

You must have a qualified, independent external auditor review your implementation of the risk-based capital stress test every 3 years and submit a copy of the auditor's opinion to us.

APPENDIX A TO SUBPART B OF PART 652— RISK-BASED CAPITAL STRESS TEST

- 1.0 Introduction.
- 2.0 Credit Risk.
 - 2.1 Loss-Frequency and Loss-Severity Models.
 - 2.2 Loan-Seasoning Adjustment.
 - 2.3 Example Calculation of Dollar Loss on One Loan.
 - 2.4 Treatment of Loans Backed by an Obligation of the Counterparty and Loans for Which Pledged Loan Collateral Volume Exceeds Farmer Mac-Guaranteed Volume.
 - 2.5 Calculation of Loss Rates for Use in the Stress Test.
- 3.0 Interest Rate Risk.
 - 3.1 Process for Calculating the Interest Rate Movement.

- 4.0 Elements Used in Generating Cashflows.
- 4.1 Data Inputs.
- 4.2 Assumptions and Relationships.
- 4.3 Risk Measures.
- 4.4 Loan and Cashflow Accounts.
- 4.5 Income Statements.
- 4.6 Balance Sheets.
- 4.7 Capital.
- 5.0 Capital Calculations.
- 5.1 Method of Calculation.

1.0 INTRODUCTION

a. Appendix A provides details about the risk-based capital stress test (stress test) for Farmer Mac. The stress test calculates the risk-based capital level required by statute under stipulated conditions of credit risk and interest rate risk. The stress test uses loan-level data from Farmer Mac's agricultural mortgage portfolio or proxy data as described in section 4.1 d.(3) below, as well as quarterly Call Report and related information to generate pro forma financial statements and calculate a risk-based capital requirement. The stress test also uses historic agricultural real estate mortgage performance data, relevant economic variables, and other inputs in its calculations of Farmer Mac's capital needs over a 10-year period.

b. Appendix A establishes the requirements for all components of the stress test. The key components of the stress test are: Specifications of credit risk, interest rate risk, the cashflow generator, and the capital calculation. Linkages among the components ensure that the measures of credit and interest rate risk pass into the cashflow generator. The linkages also transfer cashflows through the financial statements to represent values of assets, liabilities, and equity capital. The 10-year projection is designed to reflect a steady state in the scope and composition of Farmer Mac's assets.

2.0 CREDIT RISK

Loan loss rates are determined by applying the loss-frequency equation and the loss-severity factor to Farmer Mac loan-level data. Using this equation and severity factor, you must calculate loan losses under stressful economic conditions assuming Farmer Mac's portfolio remains at a "steady state." Steady state assumes the underlying characteristics and risks of Farmer Mac's portfolio remain constant over the 10 years of the stress test. Loss rates are computed from estimated dollar losses for use in the stress test. The loan volume subject to loss throughout the stress test is then multiplied by the loss rate. Lastly, the stress test allocates losses to each of the 10 years assuming a time pattern for loss occurrence as discussed in section 4.3, "Risk Measures."

2.1 Loss-Frequency and Loss-Severity Models

a. Credit risks are modeled in the stress test using historical time series loan-level data to measure the frequency and severity of losses on agricultural mortgage loans. The model relates loss frequency and severity to loan-level characteristics and economic conditions through appropriately specified regression equations to account explicitly for the effects of these characteristics on loan losses. Loan losses for Farmer Mac are estimated from the resulting loss-frequency equation combined with the loss-severity factor by substituting the respective values of Farmer Mac's loan-level data or proxy data as described in section 4.1 d.(3) below, and applying stressful economic inputs.

b. The loss-frequency equation and loss-severity factor were estimated from historical agricultural real estate mortgage loan data from the Farm Credit Bank of Texas (FCBT). Due to Farmer Mac's relatively short history, its own loan-level data are insufficiently developed for use in estimating the default frequency equation and loss-severity factor. In the future, however, expansions in both the scope and historic length of Farmer Mac's lending operations may support the use of its data in estimating the relationships.

c. To estimate the equations, the data used included FCBT loans, which satisfied three of the four underwriting standards Farmer Mac currently uses (estimation data). The four standards specify: (1) The debt-to-assets ratio (D/A) must be less than 0.50, (2) the loan-to-value ratio (LTV) must be less than 0.70, (3) the debt-service-coverage ratio (DSCR) must exceed 1.25, (4) and the current ratio (current assets divided by current liabilities) must exceed 1.0. Furthermore, the D/A and LTV ratios were restricted to be less than or equal to 0.85.

d. Several limitations in the FCBT loan-level data affect construction of the loss-frequency equation. The data contained loans that were originated between 1979 and 1992, but there were virtually no losses during the early years of the sample period. As a result, losses attributable to specific loans are only available from 1986 through 1992. In addition, no prepayment information was available in the data.

e. The FCBT data used for estimation also included as performing loans, those loans that were re-amortized, paid in full, or merged with a new loan. Including these loans may lead to an understatement of loss-frequency probabilities if some of the re-amortized, paid, or merged loans experience default or incur losses. In contrast, when the loans that are re-amortized, paid in full, or merged are excluded from the analysis, the loss-frequency rates are overstated if a higher proportion of loans that are re-amortized, paid in full, or combined (merged) into a new

loan are non-default loans compared to live loans.¹

f. The structure of the historical FCBT data supports estimation of loss frequency based on origination information and economic conditions. Under an origination year approach, each observation is used only once in estimating loan default. The underwriting variables at origination and economic factors occurring over the life of the loan are then used to estimate loan-loss frequency.

g. The final loss-frequency equation is based on origination year data and represents a lifetime loss-frequency model. The final equation for loss frequency is:

$$p = 1/(1+\exp(-(BX)))$$

Where:

$$BX = (-12.62738) + 1.91259 \cdot X_1 + (-0.33830) \cdot X_2 / (1 + 0.0413299)^{\text{Periods}} + (-0.19596) \cdot X_3 +$$

$$4.55390 \cdot (1 - \exp(-0.00538178) \cdot X_4) + 2.49482 \cdot X_5$$

Where:

- p is the probability that a loan defaults and has positive losses (Pr (Y=1 | x));
- X₁ is the LTV ratio at loan origination raised to the power 5.3914596;²
- X₂ is the largest annual percentage decline in FCBT farmland values during the life of the loan dampened with a factor of 0.0413299 per year;³
- X₃ is the DSCR at loan origination;
- X₄ is 1 minus the exponential of the product of negative 0.00538178 and the original loan balance in 1997 dollars expressed in thousands; and
- X₅ is the D/A ratio at loan origination.

h. The estimated logit coefficients and p-values are:⁴

	Coefficients	p-value
Intercept	-12.62738	<0.0001
X ₁ : LTV variable	1.91259	0.0001
X ₂ : Max land value decline variable	0.33830	<0.0001
X ₃ : DSCR	-0.19596	0.0002
X ₄ : Loan size variable	4.55390	<0.0001
X ₅ : D/A ratio	2.49482	<0.0000

i. The low p-values on each coefficient indicate a highly significant relationship between the probability ratio of loan-loss frequency and the respective independent variables. Other goodness-of-fit indicators are:

Hosmer and Lemeshow	
goodness-of-fit p-value	0.1718
Max-rescaled R ²	0.2015
Concordant	85.2%
Disconcordant	12.0%
Tied	2.8%

¹Excluding loans with defaults, 11,527 loans were active and 7,515 loans were paid in full, re-amortized or merged as of 1992. A t-test² of the differences in the means for the group of defaulted loans and active loans indicated that active loans had significantly higher D/A and LTV ratios, and lower current ratios than defaulted loans where loss occurred. These results indicate that, on average, active loans have potentially higher risk than loans that were re-amortized, paid in full, or merged.

²Loss probability is likely to be more sensitive to changes in LTV at higher values of LTV. The power function provides a continuous relationship between LTV and defaults.

³The dampening function reflects the declining effect that the maximum land value decline has on the probability of default when it occurs later in a loan's life.

⁴The nonlinear parameters for the variable transformations were simultaneously estimated using SAS version 8e NLIN procedure. The NLIN procedure produces estimates of the parameters of a nonlinear transformation for LTV, dampening factor, and loan-size variables. To implement the NLIN procedure, the loss-frequency equation and

its variables are declared and initial parameter values supplied. The NLIN procedure is an iterative process that uses the initial parameter values as the starting values for the first iteration and continues to iterate until acceptable parameters are solved. The initial values for the power function and dampening function are based on the proposed rule. The procedure for the initial values for the size variable parameter is provided in an Excel spreadsheet posted at <http://www.fca.gov>. The Gauss-Newton method is the selected iterative solving process. As described in the preamble, the loss-frequency function for the nonlinear model is the negative of the log-likelihood function, thus producing maximum likelihood estimates. In order to obtain statistical properties for the loss-frequency equation and verify the logistic coefficients, the estimates for the nonlinear transformations are applied to the FCBT data and the loss-frequency model is re-estimated using the SAS Logistic procedure. The SAS procedures, output reports and Excel spreadsheet used to estimate the parameters of the loss-frequency equation are located on the Web site <http://www.fca.gov>.

j. These variables have logical relationships to the incidence of loan default and loss, as evidenced by the findings of numerous credit-scoring studies in agricultural finance.⁵ Each of the variable coefficients has directional relationships that appropriately capture credit risk from underwriting variables and, therefore, the incidence of loan-loss frequency. The frequency of loan loss was found to differ significantly across all of the loan characteristics and lending conditions. Farmland values represent an appropriate variable for capturing the effects of exogenous economic factors. It is commonly accepted that farmland values at any point in time reflect the discounted present value of expected returns to the land.⁶ Thus, changes in land values, as expressed in the loss-frequency equation, represent the combined effects of the level and growth rates of farm income, interest rates, and inflationary expectations—each of which is accounted for in the discounted, present value process.

k. When applying the equation to Farmer Mac's portfolio, you must get the input values for X_1 , X_3 , X_4 , and X_5 for each loan in Farmer Mac's portfolio on the date at which the stress test is conducted, using either submitted data or proxy data as described in section 4.1 d.(3) below. For the variable X_2 , the stressful input value from the benchmark loss experience is -23.52 percent. You must apply this input to all Farmer Mac loans subject to loss to calculate loss frequency under stressful economic conditions.⁷ The maximum land value decline from the benchmark loss experience is the simple average of annual land value changes for Iowa, Illinois, and Minnesota for the years 1984 and 1985.⁸

l. Forecasting with data outside the range of the estimation data requires special treatment for implementation. While the estimation data embody Farmer Mac values for various loan characteristics, the maximum farmland price decline experienced in Texas was -16.69 percent, a value below the benchmark experience of -23.52 percent. To control for this effect, you must apply a proce-

dure that restricts the slope of all the independent variables to that observed at the maximum land value decline observed in the estimation data. Essentially, you must approximate the slope of the loss-frequency equation at the point -16.69 percent in order to adjust the probability of loan default and loss occurrence for data beyond the range in the estimating data. The adjustment procedure is shown in step 4 of section 2.3 entitled, "Example Calculation of Dollar Loss on One Loan."

m. Loss severity was not found to vary systematically and was considered constant across the tested loan characteristics and lending conditions. Thus, the simple weighted average by loss volume of 20.9 percent is used in the stress test.⁹ You must multiply loss severity with the probability estimate computed from the loss-frequency equation to determine the loss rate for a loan.

n. Using original loan balance results in estimated probabilities of loss frequency over the entire life of a loan. To account for loan seasoning, you must reduce the loan-loss exposure by the cumulative probability of loss already experienced by each loan as discussed in section 2.2 entitled, "Loan-Seasoning Adjustment." This subtraction is based on loan age and reduces the loss estimated by the loss-frequency and loss-severity equations. The result is an age-adjusted lifetime dollar loss that can be used in subsequent calculations of loss rates as discussed in section 2.4, "Calculation of Loss Rates for Use in the Stress Test."

2.2 Loan-Seasoning Adjustment

a. You must use the seasoning function supplied by FCA to adjust the calculated probability of loss for each Farmer Mac loan for the cumulative loss exposure already experienced based on the age of each loan. The seasoning function is based on the same data used to determine the loss-frequency equation and an assumed average life of 14 years for agricultural mortgages. If we determine that the relationship between the loss experience in Farmer Mac's portfolio over time and the seasoning function can be improved, we may augment or replace the seasoning function.

b. The seasoning function is parameterized as a beta distribution with parameters of $p = 4.288$ and $q = 5.3185$.¹⁰ How the loan-seasoning

⁵Splett, N.S., P. J. Barry, B. Dixon, and P. Ellinger. "A Joint Experience and Statistical Approach to Credit Scoring," *Agricultural Finance Review*, 54(1994):39-54.

⁶Barry, P. J., P. N. Ellinger, J. A. Hopkin, and C. B. Baker. *Financial Management in Agriculture*, 5th ed., Interstate Publishers, 1995.

⁷On- and off-balance sheet Farmer Mac I agricultural mortgage program assets booked after the 1996 Act amendments are subject to the loss calculation.

⁸While the worst-case losses, based on origination year, occurred during 1983 and 1984, this benchmark was determined using annual land value changes that occurred 2 years later.

⁹We calculated the weighted-average loss severity from the estimation data.

¹⁰We estimated the loan-seasoning distribution from portfolio aggregate charge-off rates from the estimation data. To do so, we arrayed all defaulting loans where loss occurred according to the time from origination to default. Then, a beta distribution, $\beta(p, q)$, was fit to the estimation data scaled

Continued

distribution is used is shown in Step 7 of section 2.3, "Example Calculation of Dollar Loss on One Loan."

2.3 Example Calculation of Dollar Loss on One Loan

Here is an example of the calculation of the dollar losses for an individual loan with the following characteristics and input values:¹¹

Loan Origination Year	1996
Loan Origination Balance ..	\$1,250,000
LTV at Origination	0.5
D/A at Origination	0.5
DSCR at Origination	1.3984
Maximum Percentage Land Price Decline (MAX)	-23.52

Step 1: Convert 1996 Origination Value to 1997 dollar value (LOAN) based on the consumer price index and transform as follows: \$1,278,500 = \$1,250,000 · 1.0228
 $0.998972 = 1 - \exp(-.00538178) \cdot \$1,278,500 / 1000$

Step 2: Calculate the default probabilities using -16.64 percent and -16.74 percent land value declines as follows:¹²

Where:

$$Z_1 = (-12.62738) + 1.91259 \cdot LTV^{5.3914596} - 0.33830 \cdot (-16.6439443) - 0.19596 \cdot DSCR + 4.55390 \cdot 0.998972 + 2.49482 \cdot DA = (-1.428509)$$

$$\text{Default Loss Frequency at } (-16.64\%) =$$

$$1 / 1 + \exp(-1.428509) = 0.19333111$$

And

$$Z_1 = (-12.62738) + 1.91259 \cdot LTV^{5.3914596} - 0.33830 \cdot (-16.7439443) - 0.19596 \cdot DSCR + 4.55390 \cdot 0.998972 + 2.49482 \cdot DA = (-1.394679)$$

$$\text{Loss Frequency Probability at } (-16.74\%) =$$

$$1 / 1 + \exp(-1.394679) = 0.19866189$$

Step 3: Calculate the slope adjustment. You must calculate slope by subtracting the difference between "Loss-Frequency Probability at -16.64 percent" and "Loss-Frequency Probability at -16.74 percent" and dividing by -0.1 (the difference between -16.64 percent and -16.74 percent) as follows:

$$0.05330776 = (0.19333111 - 0.19866189) / -0.1$$

Step 4: Make the linear adjustment. You make the adjustment by increasing the loss-frequency probability where the dampened stressed farmland value input is less than -16.69 percent to reflect the stressed farm-

to the maximum time a loan survived (14 years).

¹¹In the examples presented we rounded the numbers, but the example calculation is based on a larger number of significant digits. The stress test uses additional digits carried at the default precision of the software.

¹²This process facilitates the approximation of slope needed to adjust the loss probabilities for land value declines greater than observed in the estimation data.

land value input, appropriately discounted. As discussed previously, the stressed land value input is discounted to reflect the declining effect that the maximum land value decline has on the probability of default when it occurs later in a loan's life.¹³ The linear adjustment is the difference between -16.69 percent land value decline and the adjusted stressed maximum land value decline input of -23.52 multiplied by the slope estimated in Step 3 as follows:

Loss Frequency at -16.69 percent =

$$Z_1 = (-12.62738) + (1.91259)(LTV^{5.3914596}) - (0.33830)(-16.6939443) - (0.19596)(DSCR) + (4.55390)(0.998972) + (2.49482)(DA) = -1.411594$$

And

$$1 / 1 + \exp(-1.411594) = 0.19598279$$

$$\text{Dampened Maximum Land Price Decline} = (-20.00248544) = (-23.52)(1.0413299)^{-4}$$

$$\text{Slope Adjustment} = 0.17637092 = 0.053312247 \cdot (-16.6939443 - (-20.00248544))$$

$$\text{Loan Default Probability} = 0.37235371 = 0.19598279 + 0.17637092$$

Step 5: Multiply loan default probability times the average severity of 0.209 as follows: $0.077821926 = 0.37235371 \cdot 0.209$

Step 6: Multiply the loss rate times the origination loan balance as follows:

$$\$97,277 = \$1,250,000 \cdot 0.077821926$$

Step 7: Adjust the origination based dollar losses for 4 years of loan seasoning as follows:

$$\$81,987 = \$97,277 - \$97,277 \cdot (0.157178762)^{14}$$

2.4 Treatment of Loans Backed by an Obligation of the Counterparty and Loans for Which Pledged Loan Collateral Volume Exceeds Farmer Mac-Guaranteed Volume

You must calculate the age-adjusted loss rates for these loans that include adjustments to scale losses according to the proportion of total submitted collateral to the guaranteed amount as provided for in the "Dollar Losses" column of the transformed worksheets in the Credit Loss Module based on new data inputs required in the "Coefficients" worksheet of the Credit Loss Module. Then, you must adjust the calculated loss rates as follows.

a. For loans in which the seller retains a subordinated interest, subtract from the total estimated age-adjusted dollar losses on the pool the amount equal to current unpaid principal times the subordinated interest percentage.

b. Some pools of loans underlying specific transactions could include loan collateral

¹³The dampened period is the number of years from the beginning of the origination year to the current year (i.e., January 1, 1996 to January 1, 2000 is 4 years).

¹⁴The age of adjustment of 0.157178762 is determined from the beta distribution for a 4-year-old loan.

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volume pledged to Farmer Mac in excess of Farmer Mac’s guarantee amount (“over-collateral”). Overcollateral can be either: (i) Contractually required according to the terms of the transaction, or (ii) not contractually required, but pledged in addition to the contractually required amount at the discretion of the counterparty, often for purposes of administrative convenience regarding the collateral substitution process, or (iii) both (i) and (ii).

1. If a pool of loans includes collateral pledged in excess of the guaranteed amount,

Loan	Origination balance	Age-adjusted loss rate (percent)	Estimated age-adjusted losses	Guarantee amount scaling adjustment (2/2.2) (Percent)	Losses adjusted for overcollateral
1	\$1,080,000	7.0	\$75,600	90.91	\$68,727
2	1,120,000	5.0	56,000	90.91	50,909

2. If a pool of loans includes collateral pledged in excess of the guaranteed amount that is required under the terms of the transaction, you must further adjust the dollar losses as follows. Calculate the total losses on the subject portfolio of loans after age adjustments and any adjustments related to total submitted overcollateral as described in “1.” above. Calculate the total dollar amount of contractually required overcollateral in the subject pool. Subtract the total dollars of contractually required overcollateral from the adjusted total losses on the subject pool. If the result is less than or equal to zero, input a loss rate of zero for this transaction pool in the Data Inputs worksheet of the RBCST. A new category must be created for each such transaction in the RBCST. If the loss rate after subtracting contractually required overcollateral is greater than zero, proceed to additional adjustment for the risk-reducing effects of the counterparty’s general obligation described in “3.” below.

3. Loans with a positive loss estimate remaining after adjustments in “1.” and “2.” above are further adjusted for the security provided by the general obligation of the counterparty. To make this adjustment, multiply the estimated dollar losses remaining after adjustments in “1.” and “2.” above by the appropriate general obligation adjustment factor based on the counterparty’s whole-letter issuer credit rating by a nationally recognized statistical rating organization (NRSRO).

A. The following table sets forth the general obligation adjustment factors and their components by whole-letter credit rating

you must adjust the age-adjusted, loan-level dollar losses by a factor equal to the ratio of the guarantee amount to total submitted collateral. For example, consider a pool of two loans serving as security for a Farmer Mac guarantee on a note with a total issuance face value of \$2 million and on which the counterparty has submitted 10-percent overcollateral. The two loans in the example have the following characteristics and adjustments.

(Adjustment Factor = Default Rate × Severity Rate).¹⁵

Whole-letter rating	Default rate (percent)	Severity rate (percent)	General obligation adjustment factor (percent)
AAA	0.897	54	0.48
AA	2.294	54	1.24
A	2.901	54	1.57
BBB	7.061	54	3.82
Below BBB and Unrated	26.827	54	14.50

B. The adjustment factors will be updated annually as Moody’s annual report on Default and Recovery Rates of Corporate Bond Issuers becomes available, normally in January or February of each year. In the event that there is an interruption of Moody’s publication of this annual report, or FCA determines that the format of the report has changed enough to prevent or call into question the identification of updated factors, the prior year’s factors will remain in effect until FCA revises the process through rule-making.

4. Continuing the previous example, the pool contains two loans on which Farmer Mac is guaranteeing a total of \$2 million and with total submitted collateral of 110 percent of the guaranteed amount. Of the 10-percent

¹⁵ Emery, K., Ou S., Tennant, J., Kim F., Cantor R., “Corporate Default and Recovery Rates, 1920–2007,” published by Moody’s Investors Service, February 2008—the most recent edition as of March 2008; Default Rates, page 24, Recovery Rates (Severity Rate = 1 minus Senior Unsecured Average Recovery Rate) page 20.

total overcollateral, 5 percent is contractually required under the terms of the transaction. The pool consists of two loans of slightly over \$1 million. Total overcollateral is \$200,000, of which \$100,000 is contractually required. The counterparty has a single “A”

credit rating, and after adjusting for contractually required overcollateral, estimated losses are greater than zero. The net loss rate is calculated as described in the steps in the table below.

		Loan A	Loan B
1	Guaranteed Volume		\$2,000,000
2	Origination Balance of 2-Loan Portfolio	\$1,080,000	\$1,120,000
3	Age-adjusted Loss Rate	7%	5%
4	Estimated Age-adjusted Losses	\$75,600	\$56,000
5	Guarantee Volume Scaling Factor	90.91%	90.91%
6	Losses Adjusted for Total Overcollateral	\$68,727	\$50,909
7	Contractually required Overcollateral on Pool (5%)		\$100,000
8	Net Losses on Pool Adjusted for Contractually Required Overcollateral		\$19,636
9	General Obligation Adjustment Factor for “A” Issuer		1.57%
10	Losses Adjusted for “A” General Obligation		\$308
11	Loss Rate Input in the RBCST for this Pool		0.02%

A. The net, fully adjusted losses are distributed over time on a straight-line basis. When a transaction reaches maturity within the 10-year modeling horizon, the losses are distributed on a straightline over a timepath that ends in the year of the transaction’s maturity.

B. [Reserved]

2.5 Calculation of Loss Rates for Use in the Stress Test

a. You must compute the loss rates by state as the dollar weighted average seasoned loss rates from the Cash Window and Standby loan portfolios by state. The spreadsheet entitled, “Credit Loss Module.XLS” can be used for these calculations. This spreadsheet is available for download on our Web site, www.fca.gov, or will be provided upon request. The blended loss rates for each state are copied from the “Credit Loss Module” to the stress test spreadsheet for determining Farmer Mac’s regulatory capital requirement.

b. The stress test use of the blended loss rates is further discussed in section 4.3, “Risk Measures.”

3.0 INTEREST RATE RISK

The stress test explicitly accounts for Farmer Mac’s vulnerability to interest rate risk from the movement in interest rates specified in the statute. The stress test considers Farmer Mac’s interest rate risk position through the current structure of its balance sheet, reported interest rate risk shock-test results,¹⁵ and other financial activities. The stress test calculates the effect of interest rate risk exposure through market value changes of interest-bearing assets, liabilities, and off-balance sheet transactions, and

thereby the effects to equity capital. The stress test also captures this exposure through the cashflows on rate-sensitive assets and liabilities. We discuss how to calculate the dollar impact of interest rate risk in section 4.6, “Balance Sheets.”

3.1 Process for Calculating the Interest Rate Movement

a. The stress test uses the 10-year Constant Maturity Treasury (10-year CMT) released by the Federal Reserve in HR. 15, “Selected Interest Rates.” The stress test uses the 10-year CMT to generate earnings yields on assets, expense rates on liabilities, and changes in the market value of assets and liabilities. For stress test purposes, the starting rate for the 10-year CMT is the 3-month average of the most recent monthly rate series published by the Federal Reserve. The 3-month average is calculated by summing the latest monthly series of the 10-year CMT and dividing by three. For instance, you would calculate the initial rate on June 30, 1999, as:

Month end	10-year CMT monthly series
04/1999	5.18
05/1999	5.54
06/1999	5.90
Average	5.54

b. The amount by which the stress test shocks the initial rate up and down is determined by calculating the 12-month average of the 10-year CMT monthly series. If the resulting average is less than 12 percent, the stress test shocks the initial rate by an amount determined by multiplying the 12-month average rate by 50 percent. However, if the average is greater than or equal to 12 percent, the stress test shocks the initial rate by 600 basis points. For example, determine the amount by which to increase and

¹⁵See paragraph c. of section 4.1 entitled, “Data Inputs,” for a description of the interest rate risk shock-reporting requirement.

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decrease the initial rate for June 30, 1999, as follows:

Month end	10-year CMT monthly series
07/1998	5.46
08/1998	5.34
09/1998	4.81
10/1998	4.53
11/1998	4.83
12/1998	4.65
01/1999	4.72
02/1999	5.00
03/1999	5.23
04/1999	5.18
05/1999	5.54
06/1999	5.90
12-Month Average	5.10
Calculation of shock amount	
12-Month Average Less than 12%	Yes.
12-Month Average	5.10.
Multiply the 12-Month Average by	50%.
Shock in basis points equals	255.

c. You must run the stress test for two separate changes in interest rates: (i) An immediate increase in the initial rate by the shock amount; and (ii) immediate decrease in the initial rate by the shock amount. The stress test then holds the changed interest rate constant for the remainder of the 10-year stress period. For example, at June 30, 1999, the stress test would be run for an immediate and sustained (for 10 years) upward movement in interest rates to 8.09 percent (5.54 percent plus 255 basis points) and also for an immediate and sustained (for 10 years) downward movement in interest rates to 2.99 percent (5.54 percent minus 255 basis points). The movement in interest rates that results in the greatest need for capital is then used to determine Farmer Mac's risk-based capital requirement.

4.0 ELEMENTS USED IN GENERATING CASHFLOWS

a. This section describes the elements that are required for implementation of the stress test and assessment of Farmer Mac capital performance through time. An Excel spreadsheet named FAMC RBCST, available at <http://www.fca.gov>, contains the stress test, including the cashflow generator. The spreadsheet contains the following seven worksheets:

- (1) Data Input;
- (2) Assumptions and Relationships;
- (3) Risk Measures (credit risk and interest rate risk);
- (4) Loan and Cash Flow Accounts;
- (5) Income Statements;
- (6) Balance Sheets; and
- (7) Capital.

b. Each of the components is described in further detail below with references where

appropriate to the specific worksheets within the Excel spreadsheet. The stress test may be generally described as a set of linked financial statements that evolve over a period of 10 years using generally accepted accounting conventions and specified sets of stressed inputs. The stress test uses the initial financial condition of Farmer Mac, including earnings and funding relationships, and the credit and interest rate stressed inputs to calculate Farmer Mac's capital performance through time. The stress test then subjects the initial financial conditions to the first period set of credit and interest rate risk stresses, generates cashflows by asset and liability category, performs necessary accounting postings into relevant accounts, and generates an income statement associated with the first interval of time. The stress test then uses the income statement to update the balance sheet for the end of period 1 (beginning of period 2). All necessary capital calculations for that point in time are then performed.

c. The beginning of the period 2 balance sheet then serves as the departure point for the second income cycle. The second period's cashflows and resulting income statement are generated in similar fashion as the first period's except all inputs (*i.e.*, the periodic loan losses, portfolio balance by category, and liability balances) are updated appropriately to reflect conditions at that point in time. The process evolves forward for a period of 10 years with each pair of balance sheets linked by an intervening set of cashflow and income statements. In this and the following sections, additional details are provided about the specification of the income-generating model to be used by Farmer Mac in calculating the risk-based capital requirement.

4.1 Data Inputs

The stress test requires the initial financial statement conditions and income generating relationships for Farmer Mac. The worksheet named "Data Inputs" contains the complete data inputs and the data form used in the stress test. The stress test uses these data and various assumptions to calculate pro forma financial statements. For stress test purposes, Farmer Mac is required to supply:

a. *Call Report Schedules RC: Balance Sheet and RI: Income Statement.* These schedules form the starting financial position for the stress test. In addition, the stress test calculates basic financial relationships and assumptions used in generating pro forma annual financial statements over the 10-year stress period. Financial relationships and assumptions are in section 4.2, "Assumptions and Relationships."

b. *Cashflow Data for Asset and Liability Account Categories.* The necessary cashflow data for the spreadsheet-based stress test are

book value, weighted average yield, weighted average maturity, conditional prepayment rate, weighted average amortization, and weighted average guarantee fees. The spreadsheet uses this cashflow information to generate starting and ending account balances, interest earnings, guarantee fees, and interest expense. Each asset and liability account category identified in this data requirement is discussed in section 4.2, "Assumptions and Relationships."

c. *Interest Rate Risk Measurement Results.* The stress test uses the results from Farmer Mac's interest rate risk model to represent changes in the market value of assets, liabilities, and off-balance sheet positions during upward and downward instantaneous shocks in interest rates of 300, 250, 200, 150, and 100 basis points. The stress test uses these data to calculate a schedule of estimated effective durations representing the market value effects from a change in interest rates. The stress test uses a linear interpolation of the duration schedule to relate a change in interest rates to a change in the market value of equity. This calculation is described in section 4.4 entitled, "Loan and Cashflow Accounts," and is illustrated in the referenced worksheet of the stress test.

d. *Loan-Level Data for all Farmer Mac I Program Assets.*

(1) The stress test requires loan-level data for all Farmer Mac I program assets to determine lifetime age-adjusted loss rates. The specific loan data fields required for running the credit risk component are:

Farmer Mac I Program Loan Data Fields

- Loan Number
- Ending Scheduled Balance
- Group
- Pre/Post Act
- Property State

- Product Type
- Origination Date
- Loan Cutoff Date
- Original Loan Balance
- Original Scheduled P&I
- Original Appraised Value
- Loan-to-Value Ratio
- Debt-to-Assets Ratio
- Current Assets
- Current Liabilities
- Total Assets
- Total Liabilities
- Gross Farm Revenue
- Net Farm Income
- Depreciation
- Interest on Capital Debt
- Capital Lease Payments
- Living Expenses
- Income & FICA Taxes
- Net Off-Farm Income
- Total Debt Service
- Guarantee/Commitment Fee
- Seasoned Loan Flag

(2) From the loan-level data, you must identify the geographic distribution by state of Farmer Mac's loan portfolio and enter the current loan balance for each state in the "Data Inputs" worksheet. The lifetime age-adjustment of origination year loss rates was discussed in section 2.0, "Credit Risk." The lifetime age-adjusted loss rates are entered in the "Risk Measures" worksheet of the stress test. The stress test application of the loss rates is discussed in section 4.3, "Risk Measures."

(3) Under certain circumstances, described below, you must substitute the following data proxies for the variables LTV, DSCR, and D/A: LTV = 0.70, DSCR = 1.25, and D/A = 0.50. The substitution must be done whenever any of these data are missing, i.e., cells are blank, or one or more of the conditions in the following table is true.

Condition	Apply
1. Total Assets = 0	Proxy D/A.
2. Total Liabilities = 0	Proxy D/A.
3. Total assets less total liabilities <0	Proxy D/A.
4. Total debt service = 0 or not calculable	Proxy DSCR.
5. Net farm income = 0	Proxy DSCR.
6. LTV ratio = 0	Proxy LTV.
7. Total assets less than original appraised value	Proxy LTV, D/A.
8. Total liabilities less than the original loan amount	Proxy D/A.
9. Total debt service is less than original scheduled principal and interest payment	Proxy DSCR.
10. Depreciation, interest on capital debt, capital lease payments, or living expenses are reported as less than zero.	Proxy DSCR.
11. Original Scheduled Principal and Interest is greater than Total Debt Service	Proxy DSCR.
12. Calculated LTV (original loan amount divided by original appraised value) does not equal the submitted LTV ratio.	The greater of the two LTV ratios.
13. Any of the fields referenced in "1." through "12." above are blank or contain spaces, periods, zeros, negative amounts, or fonts formatted to any setting other than numbers.	Proxy all related ratios.

In addition, the following loan data adjustments must be made in response to the situations listed below:

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Situation	Data adjustment
Original loan balance is less than scheduled loan balance	Substitute scheduled balance for origination.
Purchase (commitment) date (a.k.a. "cutoff" date) field and Origination date field are both blank	Insert the quarter end "as of" date of the RBCST submission.
Origination date field is blank	Model based on Cutoff date.
Seasoned Standby loans that include loan data	Proxy data applied.*

* Application of proxy data recognizes that underwriting data on seasoned Standby loans are not reviewed by Farmer Mac in favor of other criteria and frequently not origination data.

Further, because it would not be possible to compile an exhaustive list of loan data anomalies, FCA reserves the authority to require an explanation on other data anomalies it identifies and to apply the loan data proxies on such cases until the anomaly is adequately addressed by the Corporation.

e. *Weighted Haircuts for Non-Program Investments.* For non-program investments, the stress test adjusts the weighted average yield data referenced in section 4.1 b. to reflect counterparty risk. Non-program investments are defined in §652.5. The Corporation must calculate the haircut to be applied to each investment based on the lowest whole-

letter credit rating the investment received from a NRSRO using the haircut levels in effect at the time. Haircut levels shall be the same amounts calculated for the general obligation adjustment factor in section 2.4 b.3.A. above. The first table provides the mappings of NRSRO ratings to whole-letter ratings for purposes of applying haircuts. Any "+" or "-" signs appended to NRSRO ratings that are not shown in the table should be ignored for purposes of mapping NRSRO ratings to FCA whole-letter ratings. The second table provides the haircut levels by whole-letter rating category.

FCA WHOLE-LETTER CREDIT RATINGS MAPPED TO RATING AGENCY CREDIT RATINGS

FCA Ratings Category.	AAA	AA	A	BBB	Below BBB and Unrated.
Standard & Poor's Long-Term.	AAA	AA	A	BBB	Below BBB and Unrated.
Fitch Long-Term	AAA	AA	A	BBB	Below BBB and Unrated.
Moody's Long-Term	Aaa	Aa	A	Baa	Below Baa and Unrated.
Standard & Poor's Short-Term.	A-1+, SP-1+.	A-1, SP-1.	A-2, SP-2.	A-3	SP-3, B, or Below and Unrated.
Fitch Short-Term	F-1+	F-1	F-2	F-3	Below F-3 and Unrated.
Moody's	Prime-1, MIG1, VMIG1.	Prime-2, MIG2, VMIG2.	Prime-3, MIG3, VMIG3.	Not Prime, SG and Unrated..	
Fitch Bank Ratings ..	A	B, A/B	C, B/C	D, C/D	E, D/E.
Moody's Bank Financial Strength Rating.	A	B	C	D	E.

FARMER MAC RBCST MAXIMUM HAIRCUT BY RATINGS CLASSIFICATION

Ratings classification	Non-program investment counterparties (excluding derivatives) (percent)
Cash	0.00
AAA	0.48
AA	1.24
A	1.57
BBB	3.82

FARMER MAC RBCST MAXIMUM HAIRCUT BY RATINGS CLASSIFICATION—Continued

Ratings classification	Non-program investment counterparties (excluding derivatives) (percent)
Below BBB and Unrated	14.50

1. Certain special cases will receive the following treatment. For an investment structured as a collateralized obligation backed

by the issuer's general obligation and, in turn, a pool of collateral, reference the Issuer Rating or Financial Strength Rating of that issuer as the credit rating applicable to the security. Unrated securities that are fully guaranteed by Government-sponsored enterprises (GSE) such as the Federal National Mortgage Corporation (Fannie Mae) will receive the same treatment as AAA securities. Unrated securities backed by the full faith and credit of the U.S. Government will not receive a haircut. Unrated securities that are not fully guaranteed by a GSE will receive the haircut level in place at that time for "Below BBB and Unrated" investments unless the Director, at the Director's discretion, determines to apply a lesser haircut. In making this determination, the Director will consider the risk characteristics associated with the structure of individual instruments.

2. If portions of investments are later sold by Farmer Mac according to their specific risk characteristics, the Director will take reasonable measures to adjust the haircut level applied to the investment to recognize the change in the risk characteristics of the retained portion. The Director will consider relevant similar methods for dealing with capital requirements adopted by other Federal financial institution regulators in similar situations.

3. Individual investment haircuts must then be aggregated into weighted-average haircuts by investment category and submitted in the "Data Inputs" worksheet. The spreadsheet uses these inputs to reduce the weighted-average yield on the investment category to account for counterparty insolvency according to a 10-year linear phase-in of the haircuts. Each asset account category identified in this data requirement is discussed in section 4.2, "Assumptions and Relationships."

4.2 Assumptions and Relationships

a. The stress test assumptions are summarized on the worksheet called "Assumptions and Relationships." Some of the entries on this page are direct user entries. Other entries are relationships generated from data supplied by Farmer Mac or other sources as discussed in section 4.1, "Data Inputs." After current financial data are entered, the user selects the date for running the stress test. This action causes the stress test to identify and select the appropriate data from the "Data Inputs" worksheet. The next section highlights the degree of disaggregation needed to maintain reasonably representative financial characterizations of Farmer Mac in the stress test. Several specific assumptions are established about the future relationships of account balances and how they evolve.

b. From the data and assumptions, the stress test computes pro forma financial

statements for 10 years. The stress test must be run as a "steady state" with regard to program balances, and where possible, will use information gleaned from recent financial statements and other data supplied by Farmer Mac to establish earnings and cost relationships on major program assets that are applied forward in time. As documented in the stress test, entries of "1" imply no growth and/or no change in account balances or proportions relative to initial conditions with the exception of pre-1996 loan volume being transferred to post-1996 loan volume. The interest rate risk and credit loss components are applied to the stress test through time. The individual sections of that worksheet are:

(1) *Elements related to cashflows, earnings rates, and disposition of discontinued program assets.*

(A) The stress test accounts for earnings rates by asset class and cost rates on funding. The stress test aggregates investments into the categories of: Cash and money market securities; commercial paper; certificates of deposit; agency mortgage-backed securities and collateralized mortgage obligations; and other investments. With FCA's concurrence, Farmer Mac is permitted to further disaggregate these categories. Similarly, we may require new categories for future activities to be added to the stress test. Loan items requiring separate accounts include the following:

(i) Farmer Mac I program assets post-1996 Act;

(ii) Farmer Mac I program assets post-1996 Act Swap balances;

(iii) Farmer Mac I program assets pre-1996 Act;

(iv) Farmer Mac I AgVantage securities;

(v) Loans held for securitization; and

(vi) Farmer Mac II program assets.

(B) The stress test also uses data elements related to amortization and prepayment experience to calculate and process the implied rates at which asset and liability balances terminate or "roll off" through time. Further, for each category, the stress test has the capacity to track account balances that are expected to change through time for each of the above categories. For purposes of the stress test, all assets are assumed to maintain a "steady state" with the implication that any principal balances retired or prepaid are replaced with new balances. The exceptions are that expiring pre-1996 Act program assets are replaced with post-1996 Act program assets.

(2) *Elements related to other balance sheet assumptions through time.* As well as interest earning assets, the other categories of the balance sheet that are modeled through time include interest receivable, guarantee fees receivable, prepaid expenses, accrued interest payable, accounts payable, accrued expenses, reserves for losses (loans held and

guaranteed securities), and other off-balance sheet obligations. The stress test is consistent with Farmer Mac's existing reporting categories and practices. If reporting practices change substantially, the above list will be adjusted accordingly. The stress test has the capacity to have the balances in each of these accounts determined based upon existing relationships to other earning accounts, to keep their balances either in constant proportions of loan or security accounts, or to evolve according to a user-selected rule. For purposes of the stress test, these accounts are to remain constant relative to the proportions of their associated balance sheet accounts that generated the accrued balances.

(3) *Elements related to income and expense assumptions.* Several other parameters that are required to generate pro forma financial statements may not be easily captured from historic data or may have characteristics that suggest that they be individually supplied. These parameters are the gain on agricultural mortgage-backed securities (AMBS) sales, miscellaneous income, operating expenses, reserve requirement, guarantee fees and loan loss resolution timing.

(A) The stress test applies the actual weighted average gain rate on sales of AMBS over the most recent 3 years to the dollar amount of AMBS sold during the most recent four quarters in order to estimate gain on sale of AMBS over the stress period.

(B) The stress test assumes miscellaneous income at a level equal to the average of the most recent 3-year's actual miscellaneous income as a percent of the sum of; cash, investments, guaranteed securities, and loans held for investment.

(C) The stress test assumes that short-term cost of funds is incurred in relation to the amount of defaulting loans purchased from off-balance sheet pools. The remaining unpaid principal balance on this loan volume is the origination amount reduced by the proportion of the total portfolio that has amortized as of the end of the most recent quarter. This volume is assumed to be funded at the short-term cost of funds and this expense continues for a period equal to the loan loss resolution timing period (LLRT) period minus 1. We will calculate the LLRT period from Farmer Mac data. In addition, during the LLRT period, all guarantee income associated with the loan volume ceases.

(D) The stress test generates no interest income on the estimated volume of defaulted on-balance sheet loan volume required to be carried during the LLRT period, but continues to accrue funding costs during the remainder of the LLRT period.

(E) You must update the LLRT period in response to changes in the Corporation's actual experience with each quarterly submission.

(F) Operating costs are determined in the model using weighted moving average of operating expenses as a percentage of the sum of on-balance sheet assets and off-balance sheet program activities over the previous four quarters inclusive of the current submission date. The share will then be applied forward to the balances of the same categories throughout the 10-year period of the RBCST model. As additional data accumulate, the specification will be re-examined and modified if we deem changing the specification results in a more appropriate representation of operating expenses.

(G) The reserve requirement as a fraction of loan assets can also be specified. However, the stress test is run with the reserve requirement set to zero. Setting the parameter to zero causes the stress test to calculate a risk-based capital level that is comparable to regulatory capital, which includes reserves. Thus, the risk-based capital requirement contains the regulatory capital required, including reserves. The amount of total capital that is allocated to the reserve account is determined by GAAP. The stress test applies quarterly updates of the weighted average guarantee rates for post-1996 Farmer Mac I assets, pre-1996 Farmer Mac I assets, and Farmer Mac II assets.

(4) *Elements related to earnings rates and funding costs.*

(A) The stress test can accommodate numerous specifications of earnings and funding costs. In general, both relationships are tied to the 10-year CMT interest rate. Specifically, each investment account, each loan item, and each liability account can be specified as fixed rate, or fixed spread to the 10-year CMT with initial rates determined by actual data. The stress test calculates specific spreads (weighted average yield less initial 10-year CMT) by category from the weighted average yield data supplied by Farmer Mac as described earlier. For example, the fixed spread for Farmer Mac I program post-1996 Act mortgages is calculated as follows:

Fixed Spread = Weighted Average Yield less
10-year CMT 0.014 = 0.0694—0.0554

(B) The resulting fixed spread of 1.40 percent is then added to the 10-year CMT when it is shocked to determine the new yield. For instance, if the 10-year CMT is shocked upward by 300 basis points, the yield on Farmer Mac I program post-1996 Act loans would change as follows:

Yield = Fixed Spread + 10-year CMT .0994 =
.014 + .0854

(C) The adjusted yield is then used for income calculations when generating pro forma financial statements. All fixed-spread asset and liability classes are computed in an identical manner using starting yields provided as data inputs from Farmer Mac. The fixed-yield option holds the starting

yield data constant for the entire 10-year stress test period. You must run the stress test using the fixed-spread option for all accounts except for discontinued program activities, such as Farmer Mac I program loans made before the 1996 Act. For discontinued loans, the fixed-rate specification must be used if the loans are primarily fixed-rate mortgages.

(5) *Elements related to interest rate shock test.* As described earlier, the interest rate shock test is implemented as a single set of forward interest rates. The stress test applies the up-rate scenario and down-rate scenario separately. The stress test also uses the results of Farmer Mac's shock test, as described in paragraph c. of section 4.1, "Data Inputs," to calculate the impact on equity from a stressful change in interest rates as discussed in section 3.0 titled, "Interest Rate Risk." The stress test uses a schedule relating a change in interest rates to a change in the market value of equity. For instance, if interest rates are shocked upward so that the percentage change is 262 basis points, the linearly interpolated effective estimated duration of equity is -6.7405 years given Farmer Mac's interest rate measurement results at 250 and 300 basis points of -6.7316 and 76.7688 years, respectively found on the effective duration schedule. The stress test uses the linearly interpolated estimated effective duration for equity to calculate the market value change by multiplying duration by the base value of equity before any rate change from Farmer Mac's interest rate risk measurement results with the percentage change in interest rates.

4.3 Risk Measures

a. This section describes the elements of the stress test in the worksheet named "Risk Measures" that reflect the interest rate shock and credit loss requirements of the stress test.

b. As described in section 3.1, the stress test applies the statutory interest rate shock to the initial 10-year CMT rate. It then generates a series of fixed annual interest rates for the 10-year stress period that serve as indices for earnings yields and cost of funds rates used in the stress test. (See the "Risk Measures" worksheet for the resulting interest rate series used in the stress test.)

c. The Credit Loss Module's state-level loss rates, as described in section 2.4 entitled, "Calculation of Loss Rates for Use in the Stress Test," are entered into the "Risk Measures" worksheet and applied to the loan balances that exist in each state. The distribution of loan balances by state is used to allocate new loans that replace loan products that roll off the balance sheet through time. The loss rates are applied both to the initial volume and to new loan volume that replaces expiring loans. The total life of loan losses that are expected at origination are

then allocated through time based on a set of user entries describing the time-path of losses.

d. The loss rates estimated in the credit risk component of the stress test are based on an origination year concept, adjusted for loan seasoning. All losses arising from loans originated in a particular year are expressed as lifetime age-adjusted losses irrespective of when the losses actually occur. The fraction of the origination year loss rates that must be used to allocate losses through time are 43 percent to year 1, 17 percent to year 2, 11.66 percent to year 3, and 4.03 percent for the remaining years. The total allocated losses in any year are expressed as a percent of loan volume in that year to reflect the conversion to exposure year.

4.4 Loan and Cashflow Accounts

The worksheet labeled "Loan and Cashflow Data" contains the categorized loan data and cashflow accounting relationships that are used in the stress test to generate projections of Farmer Mac's performance and condition. As can be seen in the worksheet, the steady-state formulation results in account balances that remain constant except for the effects of discontinued programs, maturing Off-Balance Sheet AgVantage positions, and the LLRT adjustment. For assets with maturities under 1 year, the results are reported for convenience as though they matured only one time per year with the additional convention that the earnings/cost rates are annualized. For the pre-1996 Act assets, maturing balances are added back to post-1996 Act account balances. The liability accounts are used to satisfy the accounting identity, which requires assets to equal liabilities plus owner equity. In addition to the replacement of maturities under a steady state, liabilities are increased to reflect net losses or decreased to reflect resulting net gains. Adjustments must be made to the long- and short-term debt accounts to maintain the same relative proportions as existed at the beginning period from which the stress test is run with the exception of changes associated with the funding of defaulted loans during the LLRT period. The primary receivable and payable accounts are also maintained on this worksheet, as is a summary balance of the volume of loans subject to credit losses.

4.5 Income Statements

a. Information related to income performance through time is contained on the worksheet named "Income Statements." Information from the first period balance sheet is used in conjunction with the earnings and cost-spread relationships from Farmer Mac supplied data to generate the first period's income statement. The same set of accounts is maintained in this worksheet as "Loan and

Cashflow Accounts” for consistency in reporting each annual period of the 10-year stress period of the test with the exception of the line item labeled “Interest reversals to carry loan losses” which incorporates the LLRT adjustment to earnings from the “Risk Measures” worksheet. Loans that defaulted do not earn interest or guarantee and commitment fees during LLRT period. The income from each interest-bearing account is calculated, as are costs of interest-bearing liabilities. In each case, these entries are the associated interest rate for that period multiplied by the account balances.

b. The credit losses described in section 2.0, “Credit Risk,” are transmitted through the provision account, as is any change needed to re-establish the target reserve balance. For determining risk-based capital, the reserve target is set to zero as previously indicated in section 4.2. Under the income tax section, it must first be determined whether it is appropriate to carry forward tax losses or recapture tax credits. The tax section then establishes the appropriate income tax liability that permits the calculation of final net income (loss), which is credited (debited) to the retained earnings account.

4.6 Balance Sheets

a. The worksheet named “Balance Sheets” is used to construct pro forma balance sheets from which the capital calculations can be performed. As can be seen in the Excel spreadsheet, the worksheet is organized to correspond to Farmer Mac’s normal reporting practices. Asset accounts are built from the initial financial statement conditions, and loan and cashflow accounts. Liability accounts including the reserve account are likewise built from the previous period’s results to balance the asset and equity positions. The equity section uses initial conditions and standard accounts to monitor equity through time. The equity section maintains separate categories for increments to paid-in-capital and retained earnings and for mark-to-market effects of changes in account values. The process described below in the “Capital” worksheet uses the initial retained earnings and paid-in-capital account to test for the change in initial capital that permits conformance to the statutory requirements. Therefore, these accounts must be maintained separately for test solution purposes.

b. The market valuation changes due to interest rate movements must be computed utilizing the linearly interpolated schedule of estimated equity effects due to changes in interest rates, contained in the “Assumptions & Relationships” worksheet. The stress test calculates the dollar change in the market value of equity by multiplying the base value of equity before any rate change from Farmer Mac’s interest rate risk measure-

ment results, the linearly interpolated estimated effective duration of equity, and the percentage change in interest rates. In addition, the earnings effect of the measured dollar change in the market value of equity is estimated by multiplying the dollar change by the blended cost of funds rate found on the “Assumptions & Relationships” worksheet. Next, divide by 2 the computed earnings effect to approximate the impact as a theoretical shock in the interest rates that occurs at the mid-point of the income cycle from period t_0 to period t_1 . The measured dollar change in the market value of equity and related earnings effect are then adjusted to reflect any tax-related benefits. Tax adjustments are determined by including the measured dollar change in the market value of equity and the earnings effect in the tax calculations found in the “Income Statements” worksheet. This approach ensures that the value of equity reflects the economic loss or gain in value of Farmer Mac’s capital position from a change in interest rates and reflects any immediate tax benefits that Farmer Mac could realize. Any tax benefits in the module are posted through the income statement by adjusting the net taxes due before calculating final net income. Final net income is posted to accumulated unretained earnings in the shareholders’ equity portion of the balance sheet. The tax section is also described in section 4.5 entitled, “Income Statements.”

c. After one cycle of income has been calculated, the balance sheet as of the end of the income period is then generated. The “Balance Sheet” worksheet shows the periodic pro forma balance sheets in a format convenient to track capital shifts through time.

d. The stress test considers Farmer Mac’s balance sheet as subject to interest rate risk and, therefore, the capital position reflects mark-to-market changes in the value of equity. This approach ensures that the stress test captures interest rate risk in a meaningful way by addressing explicitly the loss or gain in value resulting from the change in interest rates required by the statute.

4.7 Capital

The “Capital” worksheet contains the results of the required capital calculations as described below, and provides a method to calculate the level of initial capital that would permit Farmer Mac to maintain positive capital throughout the 10-year stress test period.

5.0 CAPITAL CALCULATION

a. The stress test computes regulatory capital as the sum of the following:

- (1) The par value of outstanding common stock;

(2) The par value of outstanding preferred stock;

(3) Paid-in capital;

(4) Retained earnings; and

(5) Reserve for loan and guarantee losses.

b. Inclusion of the reserve account in regulatory capital is an important difference compared to minimum capital as defined by the statute. Therefore, the calculation of reserves in the stress test is also important because reserves are reduced by loan and guarantee losses. The reserve account is linked to the income statement through the provision for loan-loss expense (provision). Provision expense reflects the amount of current income necessary to rebuild the reserve account to acceptable levels after loan losses reduce the account or as a result of increases in the level of risky mortgage positions, both on- and off-balance sheet. Provision reversals represent reductions in the reserve levels due to reduced risk of loan losses or loan volume of risky mortgage positions. The liabilities section of the “Balance Sheets” worksheet also includes separate line items to disaggregate the Guarantee and commitment obligation related to the Financial Accounting Standards Board Interpretation No. 45 (FIN 45) Guarantor’s Accounting and Disclosure Requirements for Guarantees, Including Indirect Guarantees of Indebtedness of Others. This item is disaggregated to permit accurate calculation of regulatory capital post-adoption of FIN 45. When calculating the stress test, the reserve is maintained at zero to result in a risk-based capital requirement that includes reserves, thereby making the requirement comparable to the statutory definition of regulatory capital. By setting the reserve requirement to zero, the capital position includes all financial resources Farmer Mac has at its disposal to withstand risk.

5.1 Method of Calculation

a. Risk-based capital is calculated in the stress test as the minimum initial capital that would permit Farmer Mac to remain solvent for the ensuing 10 years. To this amount, an additional 30 percent is added to account for managerial and operational risks not reflected in the specific components of the stress test.

b. The relationship between the solvency constraint (*i.e.*, future capital position not less than zero) and the risk-based capital requirement reflects the appropriate earnings and funding cost rates that may vary through time based on initial conditions. Therefore, the minimum capital at a future point in time cannot be directly used to determine the risk-based capital requirement. To calculate the risk-based capital requirement, the stress test includes a section to solve for the minimum initial capital value that results in a minimum capital level over the 10 years of zero at the point in time that

it would actually occur. In solving for initial capital, it is assumed that reductions or additions to the initial capital accounts are made in the retained earnings accounts, and balanced in the debt accounts at terms proportionate to initial balances (same relative proportion of long- and short-term debt at existing initial rates). Because the initial capital position affects the earnings, and hence capital positions and appropriate discount rates through time, the initial and future capital are simultaneously determined and must be solved iteratively. The resulting minimum initial capital from the stress test is then reported on the “Capital” worksheet of the stress test. The “Capital” worksheet includes an element that uses Excel’s “solver” or “goal seek” capability to calculate the minimum initial capital that, when added (subtracted) from initial capital and replaced with debt, results in a minimum capital balance over the following 10 years of zero.

[71 FR 77253, Dec. 26, 2006, as amended at 73 FR 31940, June 5, 2008]

PARTS 653–654 [RESERVED]

PART 655—FEDERAL AGRICULTURAL MORTGAGE CORPORATION DISCLOSURE AND REPORTING REQUIREMENTS

Subpart A—Annual Report of Condition of the Federal Agricultural Mortgage Corporation

Sec.

655.1 Content, timing, and providing of the Federal Agricultural Mortgage Corporation’s annual report of condition.

Subpart B—Reports Relating to Securities Activities of the Federal Agricultural Mortgage Corporation

655.50 Form and content.

AUTHORITY: Sec. 8.11 of the Farm Credit Act (12 U.S.C. 2279aa–11).

Subpart A—Annual Report of Condition of the Federal Agricultural Mortgage Corporation

§ 655.1 Content, timing, and providing of the Federal Agricultural Mortgage Corporation’s annual report of condition.

(a) The Federal Agricultural Mortgage Corporation shall prepare and publish an annual report of its condition that is equivalent in content to