

FEDERAL AGRICULTURAL MORTGAGE CORP
Form 10-K
February 21, 2019

As filed with the Securities and Exchange Commission on February 21, 2019

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549
Form 10-K

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2018

or

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____.
Commission File Number 001-14951

FEDERAL AGRICULTURAL MORTGAGE CORPORATION
(Exact name of registrant as specified in its charter)

Federally chartered instrumentality of the United States 52-1578738
(State or other jurisdiction of incorporation or organization) (I.R.S. employer identification number)

1999 K Street, N.W., 4th Floor, Washington, D.C. 20006
(Address of principal executive offices) (Zip code)
(202) 872-7700
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Exchange on which registered
Class A voting common stock	New York Stock Exchange
Class C non-voting common stock	New York Stock Exchange
5.875% Non-Cumulative Preferred Stock, Series A	New York Stock Exchange
6.875% Non-Cumulative Preferred Stock, Series B	New York Stock Exchange
6.000% Fixed-to-Floating Rate Non-Cumulative Preferred Stock, Series C	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: Class B voting common stock

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act.

Yes No

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Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (17 C.F.R. §229.405) is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer Accelerated filer

Non-accelerated filer Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes No

The aggregate market value of the Class A voting common stock and Class C non-voting common stock held by non-affiliates of the registrant was \$787,705,568 as of June 30, 2018 based upon the closing prices for the respective classes on June 30, 2018 reported by the New York Stock Exchange. For purposes of this information, the outstanding shares of Class A voting common stock and Class C non-voting common stock held by directors, executive officers, and significant stockholders of the registrant, as applicable, as of June 30, 2018 were deemed to be held by affiliates. The aggregate market value of the Class B voting common stock is not ascertainable due to the absence of publicly available quotations or prices for the Class B voting common stock as a result of the limited market for, and infrequency of trades in, Class B voting common stock and the fact that any such trades are privately negotiated transactions.

As of February 1, 2019, the registrant had outstanding 1,030,780 shares of Class A voting common stock, 500,301 shares of Class B voting common stock and 9,137,610 shares of Class C non-voting common stock.

DOCUMENTS INCORPORATED BY REFERENCE

The definitive proxy statement relating to the registrant's 2019 Annual Meeting of Stockholders (portions of which are incorporated by reference into Part III of this Annual Report on Form 10-K)

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FORWARD-LOOKING STATEMENTS

In this report, the words "Farmer Mac," "we," "our," and "us" refer to the Federal Agricultural Mortgage Corporation, unless otherwise stated or unless the context otherwise requires.

Some statements made in this report, such as in the "Management's Discussion & Analysis of Financial Condition and Results of Operations" section, are "forward-looking statements" under the Private Securities Litigation Reform Act of 1995 about management's current expectations for Farmer Mac's future financial results, business prospects, and business developments. Forward-looking statements include, without limitation, any statement that may predict, forecast, indicate, or imply future results, performance, or achievements. These statements typically include terms such as "anticipates," "believes," "expects," "intends," "plans," "potential," "may," "could," "should," and similar phrases. This report includes forward-looking statements addressing Farmer Mac's:

- prospects for earnings;
- prospects for growth in business volume;
- trends in net interest income and net effective spread;
- trends in portfolio credit quality, delinquencies, substandard assets, credit losses, and provisions for losses;
- trends in expenses;
- trends in investment securities;
- prospects for asset impairments and allowance for losses;
- changes in capital position;
- future dividend payments; and
- other business and financial matters.

Management's expectations for Farmer Mac's future necessarily involve assumptions, estimates, and the evaluation of risks and uncertainties. Various factors or events, both known and unknown, could cause Farmer Mac's actual results to differ materially from the expectations as expressed or implied by the forward-looking statements, including the factors discussed under "Risk Factors" in Part I, Item 1A of this Annual Report on Form 10-K for the fiscal period ended December 31, 2018, and uncertainties about:

- the availability to Farmer Mac of debt and equity financing and, if available, the reasonableness of rates and terms;
- legislative or regulatory developments that could affect Farmer Mac, its sources of business, or the agricultural or rural utilities industries;
- fluctuations in the fair value of assets held by Farmer Mac and its subsidiaries;
- the rate and direction of development of the secondary market for agricultural mortgage and rural utilities loans, including lender interest in Farmer Mac's products and the secondary market provided by Farmer Mac;
- the general rate of growth in agricultural mortgage and rural utilities indebtedness;
- the effect of economic conditions, including the effects of drought and other weather-related conditions and fluctuations in agricultural real estate values, on agricultural mortgage lending and borrower repayment capacity;
- the effect of any changes in Farmer Mac's executive leadership;
- developments in the financial markets, including possible investor, analyst, and rating agency reactions to events involving government-sponsored enterprises, including Farmer Mac;

- changes in the level and direction of interest rates, which could, among other things, affect the value of collateral securing Farmer Mac's agricultural mortgage loan assets;
- the degree to which Farmer Mac is exposed to basis risk, which results from fluctuations in Farmer Mac's borrowing costs relative to market indexes; and
- volatility in commodity prices relative to costs of production, changes in U.S. trade policies, or fluctuations in export demand for U.S. agricultural products.

Considering these potential risks and uncertainties, no undue reliance should be placed on any forward-looking statements expressed in this report. Farmer Mac undertakes no obligation to release publicly the results of revisions to any forward-looking statements to reflect new information or any future events or circumstances, except as otherwise mandated by the SEC. The information in this report is not necessarily indicative of future results.

PART I

Item 1. Business

GENERAL

Farmer Mac is a stockholder-owned, federally chartered corporation that combines private capital and public sponsorship to serve a public purpose. Congress has charged Farmer Mac with the mission of providing a secondary market for a variety of loans made to borrowers in rural America. A secondary market is an economic arrangement in which the owners of financial assets, such as the originators of loans, may sell all or part of those assets or pay a fee to offset some or all of the inherent risks of holding the assets. Farmer Mac's main secondary market activities are:

- purchasing eligible loans directly from lenders;
- providing advances against eligible loans by purchasing obligations secured by those loans;
- securitizing assets and guaranteeing the payment of principal and interest on the resulting securities that represent interests in, or obligations secured by, pools of eligible loans; and
- issuing long-term standby purchase commitments ("LTSPCs") for eligible loans.

Securities guaranteed by Farmer Mac may be retained by the seller of the underlying loans, retained by Farmer Mac, or sold to third-party investors.

Farmer Mac was established under federal legislation first enacted in 1988 and amended most recently in 2018 – Title VIII of the Farm Credit Act of 1971 (12 U.S.C. §§ 2279aa et seq.), which is sometimes referred to as Farmer Mac's charter. Farmer Mac is a government-sponsored enterprise ("GSE") by virtue of the status conferred by its charter. The charter provides that Farmer Mac has the power to establish, acquire, and maintain affiliates under applicable state law to carry out any activities that Farmer Mac otherwise would perform directly. Farmer Mac established its two existing subsidiaries – Farmer Mac II LLC and Farmer Mac Mortgage Securities Corporation – under that power.

Farmer Mac is an institution of the Farm Credit System (the "FCS"), which is composed of the banks, associations, and related entities, including Farmer Mac and its subsidiaries, regulated by the Farm Credit Administration ("FCA"), an independent agency in the executive branch of the United States government. Although Farmer Mac is an institution of the FCS, it is not liable for any debt or obligation of any other institution of the FCS. None of FCA, the FCS, or any other individual institution of the FCS is liable for any debt or obligation of Farmer Mac or its subsidiaries. The debts and obligations of Farmer Mac and its subsidiaries are not guaranteed by the full faith and credit of the United States.

Farmer Mac's two main sources of revenue are:

- interest income earned on assets held on balance sheet, net of related funding costs and interest payments and receipts on financial derivatives; and
- guarantee and commitment fees received for outstanding guaranteed securities and LTSPCs.

Farmer Mac funds its purchases of eligible loans (including participation interests in eligible loans) and guaranteed securities primarily by issuing debt obligations of various maturities in the public capital markets. Farmer Mac also uses the proceeds of debt issuance to fund liquidity investments that must comply with policies adopted by Farmer Mac's board of directors and with FCA regulations, which establish limitations on asset class, dollar amount, issuer concentration, and credit quality. Those

regulations can be found at 12 C.F.R. §§ 652.1-652.45 (the "Liquidity and Investment Regulations"). Farmer Mac's regular debt issuance supports its access to the capital markets, and Farmer Mac's liquidity investment assets provide an alternative source of funds should market conditions become unfavorable. As of December 31, 2018, Farmer Mac had \$1.6 billion of discount notes and \$14.6 billion of medium-term notes outstanding. For more information about Farmer Mac's eligible loan assets and liquidity investment assets, as well as its financial performance and sources of capital and liquidity, see "Management's Discussion and Analysis of Financial Condition and Results of Operations." For more information about Farmer Mac's debt issuance, see "Business—Financing—Debt Issuance."

Secondary Market

Farmer Mac's activities are intended to provide lenders with an efficient and competitive secondary market that enhances these lenders' ability to offer competitively-priced financing to rural borrowers. This secondary market is designed to increase the availability of credit at stable interest rates to America's rural communities and to provide rural borrowers with the benefits of capital markets pricing and product innovation. The secondary market provided by Farmer Mac functions as a bridge between the national capital markets and the agricultural and rural credit markets by attracting new capital for financing rural borrowers.

Farmer Mac's purchases of loans and obligations secured by loans and its sale of guaranteed securities to investors increase lenders' liquidity and lending capacity and provide a continuous source of funding for lenders that extend credit to borrowers in rural America. Farmer Mac's issuance of LTSPCs for loans held by lenders and its issuance of guaranteed securities retained by lenders in exchange for the related securitized loans result in lower regulatory capital requirements for the lenders and reduced borrower or commodity concentration exposure for some lenders, thereby expanding their lending capacity. By increasing the efficiency and competitiveness of rural finance, the secondary market provided by Farmer Mac has the potential to lower the interest rates paid on loans by rural borrowers.

The current economic and regulatory environment presents Farmer Mac with opportunities to market a mix of products to rural lenders in need of capital, liquidity, portfolio diversification, and access to a wide variety of loan products including those with long-term fixed rates. As part of its outreach strategy, Farmer Mac engages with current and prospective rural lenders to identify their specific needs, with an emphasis on individual lender meetings, lender road shows, and face-to-face contact at state and national banking conferences. Farmer Mac has also increased its focus on wholesale financing for institutional investors in agricultural assets that qualify as eligible collateral under Farmer Mac's charter. For these potential issuers, Farmer Mac directs its outreach efforts through its business relationships within the agricultural community and through executive outreach to institutions whose profile presents opportunity to benefit from wholesale financing. Farmer Mac seeks to maximize the use of technology to support these business development efforts.

Lines of Business

Farmer Mac conducts its secondary market activities through four lines of business – Farm & Ranch, USDA Guarantees, Rural Utilities, and Institutional Credit. The loans (and participation interests in those loans) eligible for the secondary market provided by Farmer Mac include:

- mortgage loans secured by first liens on agricultural real estate, including part-time farms and rural housing (comprising the assets eligible for the Farm & Ranch line of business);

agricultural and rural development loans guaranteed by the United States Department of Agriculture ("USDA") (comprising the assets eligible for the USDA Guarantees line of business); and loans by lenders organized as cooperatives to finance electrification and telecommunications systems in rural areas (comprising the assets eligible for the Rural Utilities line of business).

Farmer Mac also guarantees and purchases general obligations of lenders that are secured by pools of these types of eligible loans (comprising the assets eligible for the Institutional Credit line of business). As of December 31, 2018, the total outstanding business volume in all of Farmer Mac's lines of business was \$19.7 billion.

Farm & Ranch

Under the Farm & Ranch line of business, Farmer Mac purchases eligible mortgage loans (and related participation interests) secured by first liens on agricultural real estate, which includes part-time farms and rural housing ("Farm & Ranch loans"). Farmer Mac also guarantees securities representing interests in pools of eligible Farm & Ranch loans and participation interests ("Farm & Ranch Guaranteed Securities"). Farmer Mac also commits to purchase, subject to the applicable LTSPC agreement, eligible Farm & Ranch loans and participation interests. To be eligible, Farm & Ranch loans must meet Farmer Mac's credit underwriting, collateral valuation, documentation, and other specified standards described in "Business—Farmer Mac's Lines of Business—Farm & Ranch." As of December 31, 2018, outstanding Farm & Ranch loans held by Farmer Mac and loans that either backed off-balance sheet Farm & Ranch Guaranteed Securities or were subject to LTSPCs totaled \$7.2 billion.

USDA Guarantees

Under the USDA Guarantees line of business, Farmer Mac II LLC, a subsidiary of Farmer Mac, purchases the portions of agricultural, rural development, business and industry, and community facilities loans guaranteed by the USDA under the Consolidated Farm and Rural Development Act (7 U.S.C. §§ 1921 et seq.). Farmer Mac refers to these USDA-guaranteed portions of loans as "USDA Securities." Farmer Mac II LLC also purchases USDA Securities in exchange for issuing securities to third parties backed by those USDA Securities, which are then also guaranteed by Farmer Mac ("Farmer Mac Guaranteed USDA Securities"). As of December 31, 2018, outstanding USDA Securities and Farmer Mac Guaranteed USDA Securities totaled \$2.5 billion, of which \$395.1 million were Farmer Mac Guaranteed USDA Securities.

Rural Utilities

Under the Rural Utilities line of business, Farmer Mac's authorized activities are similar to those conducted under the Farm & Ranch line of business – purchases of, guarantees of securities backed by, and issuances of LTSPCs for eligible rural utilities loans and related participation interests ("Rural Utilities loans"). To be eligible, Rural Utilities loans must meet Farmer Mac's credit underwriting and other specified standards described in "Business—Farmer Mac's Lines of Business—Rural Utilities." As of December 31, 2018, the aggregate outstanding principal balance of Rural Utilities loans held by Farmer Mac or that were subject to LTSPCs totaled \$1.6 billion. There currently are no guaranteed securities issued under the Rural Utilities line of business, although the Institutional Credit line of business includes some AgVantage securities that are secured by Rural Utilities loans.

Institutional Credit

Under the Institutional Credit line of business, Farmer Mac guarantees and purchases general obligations of lenders that are secured by pools of the types of loans eligible for purchase under Farmer Mac's Farm & Ranch, USDA Guarantees, or Rural Utilities lines of business. AgVantage® is a registered trademark of Farmer Mac used to designate Farmer Mac's guarantees of securities related to these general obligations of lenders that are secured by pools of eligible loans and that comprise the Institutional Credit line of business. Farm & Ranch Guaranteed Securities, Farmer Mac Guaranteed USDA Securities, and AgVantage Securities are sometimes collectively referred to as "Farmer Mac Guaranteed Securities." For more information on the products currently offered under Farmer Mac's Institutional Credit line of business, see "Business—Farmer Mac's Lines of Business—Institutional Credit." As of December 31, 2018, outstanding securities held or guaranteed by Farmer Mac in its Institutional Credit line of business totaled \$8.4 billion.

Competition

Farmer Mac is the only Congressionally-chartered corporation established to provide a secondary market for agricultural mortgage loans, rural utilities loans, and USDA Securities. But Farmer Mac does face indirect competition from many sources. These sources include other financial institutions and other types of financial entities that purchase, retain, securitize, or provide financing for the types of assets eligible for Farmer Mac's secondary market activities, including commercial and investment banks, insurance companies, other FCS institutions, and financial funds. Farmer Mac also competes indirectly with originators of eligible loans who would prefer to retain the loans they originate rather than sell them into the secondary market. Farmer Mac is able to compete to acquire eligible loans due to the variety of products it offers and its ability to offer low-cost funding to its customers. This enables Farmer Mac to offer flexible financing options and products designed to meet the varied needs of lending institutions related to capital requirements, liquidity, credit risk, and management of sector and geographic concentrations and borrower exposure limits. However, the relative competitiveness of Farmer Mac's loan rates is affected by the ability of other lending institutions to subsidize their rates on the loan products that compete with Farmer Mac by price averaging with other types of loans or by accepting a lower return on equity. Farmer Mac's ability to develop business with lending institutions is also affected by changes in the levels of available capital and liquidity of those institutions, the existence of alternative sources of funding and credit enhancement for those institutions, the rate of growth in the market for eligible loans, and demand for Farmer Mac's products.

Farmer Mac's competitive position is also affected by the willingness of originators to offer eligible loans for sale in the secondary market, as well as the types and variety of products offered by Farmer Mac's competitors to meet the needs of Farmer Mac's customer base. Farmer Mac's limits on borrower exposure and loan size, as well as the types of loans that are eligible for Farmer Mac's lines of business, also affect Farmer Mac's competitive position. Farmer Mac's ability to obtain low-cost funding in the debt markets is essential to its ability to maintain its competitive position with its customers. As a result, competition for debt investors with other debt-issuing institutions, such as the FCS, Federal Home Loan Banks, Fannie Mae, Freddie Mac, and highly-rated financial institutions, can affect the price and volume at which Farmer Mac issues debt and therefore its ability to offer savings to customers in the form of competitive products.

Capital and Corporate Governance

Farmer Mac's charter prescribes the company's basic capital and corporate governance structure. The charter authorizes Farmer Mac to issue two classes of voting common stock, each of which elects one-third of Farmer Mac's 15-person board of directors. The charter also authorizes Farmer Mac to issue non-voting common stock. The classes of Farmer Mac's outstanding common stock and their relationship to Farmer Mac's board of directors are described below.

Class A voting common stock. The charter restricts ownership of Farmer Mac's Class A voting common stock to banks, insurance companies, and other financial institutions or similar entities that are not institutions of the FCS. The charter also provides that five members of Farmer Mac's 15-member board of directors are elected by a plurality of the votes of the Class A stockholders each year. The charter limits the amount of Class A voting common stock that any one holder may own to no more than 33% of the outstanding shares of Class A voting common stock. Farmer Mac is not aware of any regulation applicable to non-FCS financial institutions that requires a minimum investment in Farmer Mac's Class A voting common stock or that prescribes a maximum investment amount lower than the 33% limit set forth in the charter. Farmer Mac's Class A voting common stock is listed on the New York Stock Exchange under the symbol AGM.A.

Class B voting common stock. The charter restricts ownership of Farmer Mac's Class B voting common stock to FCS institutions and also provides that five members of Farmer Mac's 15-member board of directors are elected by a plurality of the votes of the Class B stockholders each year. The charter contains no restrictions on the maximum number or percentage of outstanding shares of Class B voting common stock that any one holder may own, and Farmer Mac is not aware of any regulation applicable to FCS institutions that requires a minimum investment in its Class B voting common stock or that prescribes a maximum amount. Farmer Mac's Class B voting common stock, which has a limited market and trades infrequently, is not listed or quoted on any exchange or other quotation system, and Farmer Mac is not aware of any publicly available quotations or prices for this class of common stock.

Class C non-voting common stock. The charter does not impose any ownership restrictions on Farmer Mac's Class C non-voting common stock, and shares of this class are freely transferable. Holders of the Class C common stock do not vote on the election of directors or any other matter. Farmer Mac's Class C non-voting common stock is listed on the New York Stock Exchange under the symbol AGM.

Presidential director appointments. The remaining five members of Farmer Mac's board of directors are individuals who meet the qualifications specified in the charter and are appointed by the President of the United States with the advice and consent of the United States Senate. These appointed directors serve at the pleasure of the President of the United States.

The ownership of Farmer Mac's two classes of voting common stock is currently concentrated in a small number of institutions. Approximately 44% of the Class A voting common stock is held by three financial institutions, with 31% held by one institution. Approximately 97% of the Class B voting common stock is held by five FCS institutions (two of which are related to each other through a parent-subsidary relationship). We believe that the concentration in the Class A voting common stock is a by-product of trading activity in the stock over time and is not by design under the charter or any regulatory mandate. We believe that the concentration in such a small number of holders of Class B voting common stock is a

by-product of the limited number of eligible holders of that stock and the structure of the FCS, the number of institutions of which has decreased over time as a result of mergers and consolidations.

The dividend and liquidation rights of all three classes of Farmer Mac's common stock are the same. Dividends may be paid on Farmer Mac's common stock only when, as, and if declared by Farmer Mac's board of directors in its sole discretion, subject to compliance with applicable capital requirements and the payment of dividends on any outstanding preferred stock issued by Farmer Mac. Upon liquidation, dissolution, or winding up of the business of Farmer Mac, after payment and provision for payment of outstanding debt of Farmer Mac, the holders of shares of Farmer Mac's currently outstanding 5.875% Non-Cumulative Preferred Stock, Series A ("Series A Preferred Stock"), 6.875% Non-Cumulative Preferred Stock, Series B ("Series B Preferred Stock"), 6.000% Fixed-to-Floating Rate Non-Cumulative Preferred Stock, Series C ("Series C Preferred Stock"), and any other preferred stock then outstanding, would be paid at par value out of assets available for distribution, plus all declared and unpaid dividends, before the holders of shares of common stock received any payment. See also "Market for Registrant's Common Equity, Related Stockholder Matters, and Issuer Purchases of Equity Securities" for more information about Farmer Mac's common stock, and "Business—Financing—Equity Issuance" for more information about Farmer Mac's common stock and preferred stock.

Unlike some other GSEs such as other FCS institutions and the Federal Home Loan Banks, Farmer Mac is not structured as a cooperative owned exclusively by member institutions and established to provide services exclusively to its members. Rather, Farmer Mac, as a publicly-traded corporation, has a broader base of stockholders, including those who do not directly participate in the secondary market provided by Farmer Mac. Farmer Mac therefore seeks to fulfill its mission of serving the financing needs of rural America in a way that is consistent with providing a return on the investment of its stockholders.

Farmer Mac generally requires financial institutions to own a requisite amount of Farmer Mac common stock, based on the size and type of institution, to participate in the Farm & Ranch line of business. As a result of this requirement, coupled with the ability of holders of Class A and Class B voting common stock to elect two-thirds of Farmer Mac's board of directors, Farmer Mac regularly conducts business with "related parties," including institutions affiliated with members of Farmer Mac's board of directors and institutions that own large amounts of Farmer Mac's voting common stock. Farmer Mac has adopted a Code of Business Conduct and Ethics and related corporate policies that govern any conflicts of interest that may arise in these transactions. Farmer Mac also requires that any transactions with related parties be conducted in the ordinary course of business, with terms and conditions comparable to those available to any other counterparty not related to Farmer Mac. For more information about related party transactions, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Related Party Transactions" and Note 3 to the consolidated financial statements.

Regulatory Oversight

Farmer Mac's charter assigns to FCA, acting through the separate Office of Secondary Market Oversight ("OSMO") within FCA, the responsibility for the examination of Farmer Mac and the general supervision of the safe and sound performance of the powers, functions, and duties vested in Farmer Mac by the charter. The charter also authorizes FCA, acting through OSMO, to apply its general enforcement powers to Farmer Mac. Farmer Mac's charter requires an annual examination of the financial transactions of Farmer Mac and authorizes FCA to assess Farmer Mac for the cost of FCA's regulatory activities, including the cost of any examination. Farmer Mac is also required to file quarterly reports of condition with OSMO. As a publicly-traded corporation, Farmer Mac also must comply with the periodic reporting

requirements of the SEC. For a more detailed discussion of Farmer Mac's regulatory and governmental relationships, see "Business—Government Regulation of Farmer Mac."

Capital

Farmer Mac's charter establishes three capital standards for Farmer Mac – minimum capital, critical capital, and risk-based capital. Farmer Mac must comply with the higher of the minimum capital requirement and the risk-based capital requirement. Also, in accordance with the FCA regulation on capital planning, Farmer Mac's board of directors oversees a policy that requires Farmer Mac to maintain a sufficient level of Tier 1 capital and restricts dividends and bonus payments if Farmer Mac's Tier 1 capital falls below specified thresholds. For a discussion of Farmer Mac's capital requirements and its actual capital levels, as well as FCA's role in the establishment and monitoring of those requirements and levels, see "Business—Government Regulation of Farmer Mac—Capital Standards," "Management's Discussion and Analysis of Financial Condition and Results of Operations—Balance Sheet Review—Equity," and "Management's Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources—Capital Requirements."

Employees and Property

As of December 31, 2018, Farmer Mac employed 103 people, located primarily at its office at 1999 K Street, N.W., 4th Floor, Washington, D.C. 20006. Farmer Mac also maintains offices at: (1) 9169 Northpark Drive, Johnston, Iowa 50322; (2) 5200 N. Palm Avenue, Suite 306, Fresno, California 93704; and (3) 1065 E. Winding Creek Drive, Suite 200, Eagle, Idaho 83616. Farmer Mac's main telephone number is (202) 872-7700.

Available Information

Farmer Mac makes available free of charge, through the "Investors" section of its internet website at www.farmermac.com, copies of materials it files with, or furnishes to, the SEC, including its Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, proxy statements, and any amendments to those filings, as soon as reasonably practicable after electronically filing those materials with, or furnishing those materials to, the SEC. All references to www.farmermac.com in this report are inactive textual references only. The information contained on Farmer Mac's website is not incorporated by reference into this report.

FARMER MAC'S LINES OF BUSINESS

The following tables present the outstanding balances, new business volume, and net growth or decrease after maturities, principal paydowns, and sales under Farmer Mac's four lines of business – Farm & Ranch, USDA Guarantees, Rural Utilities, and Institutional Credit:

Lines of Business - Outstanding Business Volume

	As of December 31, 2018 (in thousands)	As of December 31, 2017
On-balance sheet:		
Farm & Ranch:		
Loans	\$3,071,222	\$2,798,906
Loans held in trusts:		
Beneficial interests owned by third party investors	1,517,101	1,399,827
USDA Guarantees:		
USDA Securities	2,120,553	2,068,017
Farmer Mac Guaranteed USDA Securities	27,383	29,980
Rural Utilities:		
Loans	938,843	1,076,291
Institutional Credit:		
AgVantage securities	8,072,919	7,593,322
Total on-balance sheet	\$15,748,021	\$14,966,343
Off-balance sheet:		
Farm & Ranch:		
LTSPCs ⁽¹⁾	\$2,509,787	\$2,335,342
Guaranteed Securities ⁽¹⁾	135,862	333,511
USDA Guarantees:		
Farmer Mac Guaranteed USDA Securities	367,684	254,217
Rural Utilities:		
LTSPCs ⁽²⁾	653,272	806,342
Institutional Credit:		
AgVantage securities	9,898	11,556
Revolving floating rate AgVantage facility ⁽³⁾	300,000	300,000
Total off-balance sheet	\$3,976,503	\$4,040,968
Total	\$19,724,524	\$19,007,311

During fourth quarter 2018, Farmer Mac repurchased the 100% participation interests in loans underlying a pool of \$134.1 million in Farm & Ranch Guaranteed Securities at par, thereby redeeming the corresponding Farm & Ranch Guaranteed Securities from their sole security holder. Farmer Mac repurchased these participation interests at the request of the sole security holder in exchange for the termination of the participation interests and the reconveyance of all beneficial interest in the loans to the sole security holder that owned the loans in which the participation interests had been issued. The resulting pool of Farm & Ranch loans was concurrently added under LTSPCs. The commitment fee Farmer Mac receives on these loans added under LTSPCs is the same as the guarantee fee Farmer Mac had been earning on the Farm & Ranch Guaranteed Securities.

⁽¹⁾ Includes \$17.0 million and \$20.0 million related to one-year loan purchase commitments on which Farmer Mac receives a nominal unused commitment fee as of December 31, 2018 and December 31, 2017, respectively.

⁽²⁾ Includes \$17.0 million and \$20.0 million related to one-year loan purchase commitments on which Farmer Mac receives a nominal unused commitment fee as of December 31, 2018 and December 31, 2017, respectively.

⁽³⁾ During both 2018 and 2017, \$100.0 million of this facility was drawn and later repaid. Farmer Mac receives a fixed fee based on the full dollar amount of the facility. If the counterparty draws on the facility, the amounts drawn will

be in the form of AgVantage securities, and Farmer Mac will earn interest income on those securities.

New Business Volume – Farmer Mac Loan Purchases, Guarantees, LTSPCs, and AgVantage Securities

	For the Year Ended December 31,					
	2018		2017		2016	
	Gross volume (in thousands)	Net growth/(decrease)	Gross volume (in thousands)	Net growth/(decrease)	Gross Volume	Net growth/(decrease)
Farm & Ranch:						
Loans	\$960,848	\$ 389,589	\$1,129,545	\$ 684,279	\$966,023	\$ 556,479
LTSPCs	430,071	(23,204)	554,743	44,003	399,095	(142,474)
USDA Guarantees:						
USDA Securities	332,270	52,537	369,759	113,217	375,203	78,349
Farmer Mac Guaranteed USDA Securities	127,851	110,870	161,925	144,622	106,054	97,749
Rural Utilities:						
Loans	11,645	(137,448)	137,341	76,779	50,491	(8,614)
LTSPCs	—	(153,069)	—	(72,256)	441,404	355,734
Institutional Credit:						
AgVantage securities	3,010,307	477,939	2,383,912	617,192	2,098,852	563,432
AgVantage revolving line of credit facility	300,000	—	—	—	—	—
Total purchases, guarantees, LTSPCs, and AgVantage securities	\$5,172,992	\$ 717,214	\$4,737,225	\$ 1,607,836	\$4,437,122	\$ 1,500,655

Farm & Ranch

Under the Farm & Ranch line of business, Farmer Mac provides a secondary market for mortgage loans (and related participation interests) secured by first liens on agricultural real estate (including part-time farms and rural housing) by (1) purchasing and retaining eligible mortgage loans, (2) securitizing eligible mortgage loans and guaranteeing the timely payment of principal and interest on the resulting securities that represent interests in, or obligations secured by, pools of those loans, or (3) issuing LTSPCs for designated eligible mortgage loans, subject to the applicable LTSPC agreement. Farmer Mac is compensated for these activities through net effective spread on loans and Farmer Mac Guaranteed Securities held on balance sheet, guarantee fees earned on Farmer Mac Guaranteed Securities, and commitment fees earned on loans in LTSPCs.

Loan Eligibility

To be eligible for the Farm & Ranch line of business, a loan must:

- be secured by a fee simple mortgage or a long-term leasehold mortgage, with status as a first lien on agricultural real estate (including part-time farms and rural housing) located within the United States;
- be an obligation of a citizen or national of the United States, an alien lawfully admitted for permanent residence in the United States, or a private corporation or partnership that is majority-owned by U.S. citizens, nationals, or legal resident aliens;
- be an obligation of a person, corporation, or partnership having training or farming experience that is sufficient to ensure a reasonable likelihood that the loan will be repaid according to its terms; and

meet the credit underwriting, collateral valuation, documentation, and other specified standards for the Farm & Ranch line of business. See "—Underwriting and Collateral Valuation (Appraisal) Standards" and "—Approved Lenders" for a description of these standards.

Eligible agricultural real estate consists of one or more parcels of land, which may be improved by permanently affixed buildings or other structures, that:

- is used for the production of one or more agricultural commodities or products; and
- either consists of a minimum of five acres or generates minimum annual receipts of \$5,000.

Pending the effectiveness of new legislation described below, Farmer Mac's charter authorizes a maximum loan size (adjusted annually for inflation) for an eligible Farm & Ranch loan secured by more than 1,000 acres of agricultural real estate. That maximum loan size was \$13.1 million as of December 31, 2018.

The charter does not prescribe a maximum loan size or a total borrower exposure for an eligible Farm & Ranch loan secured by 1,000 acres or less of agricultural real estate, but Farmer Mac does limit the size of those loans. For these loans, Farmer Mac generally does not assume more than \$50.0 million in cumulative direct credit exposure (e.g., loan purchases, LTSPCs, and non-AgVantage Farm & Ranch Guaranteed Securities, which are not backed by a general obligation of a lender) to any one borrower or group of related borrowers. An internal policy approved by Farmer Mac's board of directors limits the cumulative direct credit exposure to any one borrower or group of related borrowers on these loans to 10% of Farmer Mac's Tier 1 capital (\$72.8 million as of December 31, 2018). That internal policy also sets a limit of \$75.0 million in cumulative exposure through a single lender to any one borrower or related borrowers for AgVantage transactions, with the amount of any direct borrower exposure described above not counting toward the \$75.0 million limit. AgVantage transactions involve the general obligation of a lender that is in turn secured by eligible loans, resulting in indirect exposure to credit risk on those loans. See "Business—Farmer Mac's Lines of Business—Institutional Credit.

In December 2018, Congress amended Farmer Mac's charter under the Agricultural Improvement Act of 2018 to increase the acreage limitation referred to above from 1,000 acres to 2,000 acres of agricultural real estate, subject to FCA's assessment about the feasibility of such a change. FCA is required to submit a report on its assessment of this change to Congress by no later than June 18, 2019. If FCA's assessment indicates that it is feasible to increase the acreage limitation to 2,000 acres or more of agricultural real estate, the change to Farmer Mac's charter will become effective one year after the date that FCA submits its report to Congress. If this amendment becomes effective, the maximum loan size of \$13.1 million (adjusted annually for inflation) will apply to eligible Farm & Ranch loans secured by more than 2,000 acres of agricultural real estate. Farmer Mac may change the exposure limitations set forth above for eligible Farm & Ranch loans secured by 2,000 acres or less of agricultural real estate if the amendment becomes effective. If FCA's assessment determines that it is not feasible to increase the acreage limitation, then the current limitation will remain in place.

Farmer Mac includes its part-time farm loans and rural housing loans in the Farm & Ranch line of business. Farmer Mac defines a "part-time farm" as agricultural real estate meeting the eligibility requirements described above that includes a primary residence whose value is at least 30% of the property's aggregate value at origination. When analyzing borrower repayment capacity for part-time farm loans, Farmer Mac typically considers off-farm income as a more important factor than for Farm & Ranch loans that are not part-time farm loans. Farmer Mac had \$504.1 million of part-time farm loans in its portfolio as of December 31, 2018.

For the rural housing portion of this line of business, an eligible loan must be secured by a mortgage on a one- to four-family, owner-occupied, moderately priced principal residence located in a community with a population of 2,500 or fewer. Farmer Mac uses the All-Transaction Housing Price Index ("HPI"), as published by the Federal Housing Finance Agency, to index the value of a moderately priced rural housing dwelling. Based on the most recent publication of the HPI, Farmer Mac increased the maximum purchase price or current appraised value for a dwelling that secures a rural housing loan (excluding the land to which the dwelling is affixed) to \$320,000 effective December 14, 2018. The prior limit was \$300,000. Besides the dwelling itself, an eligible rural housing loan can be secured by land associated with the dwelling having an appraised value of no more than 50% of the total appraised value of the combined property. Rural housing loans do not represent a significant part of Farmer Mac's business, with \$5.1 million of those loans in Farmer Mac's portfolio as of December 31, 2018.

Summary of Farm & Ranch Transactions

During the year ended December 31, 2018, Farmer Mac added \$1.4 billion of gross new business volume under the Farm & Ranch line of business. That gross new business volume was partially offset by repayments on existing assets (principal paydowns, maturities, and sales) during the year, resulting in \$7.2 billion of total outstanding business volume in this line of business as of December 31, 2018, compared to \$6.9 billion as of December 31, 2017. As of December 31, 2018, Farmer Mac had direct credit exposure on 12,518 loans in the Farm & Ranch line of business across 48 states.

During 2018, Farmer Mac purchased eligible loans from 149 entities (the top ten institutions generated 67% of the purchase volume) and placed loans under LTSPCs with 19 entities in the Farm & Ranch line of business. During 2017, Farmer Mac purchased eligible loans from 174 entities (the top ten institutions generated 59% of the purchase volume) and placed loans under LTSPCs with 25 entities. During 2016, Farmer Mac purchased eligible loans from 169 entities (the top ten institutions generated 59% of the purchase volume) and placed loans under LTSPCs with 25 entities.

The following table summarizes loans purchased or placed under LTSPCs under the Farm & Ranch line of business for each of the years ended December 31, 2018, 2017, and 2016. The table also sets forth the amount of net growth or decrease in Farm & Ranch loans held and loans underlying LTSPCs, after maturities, principal paydowns, and sales:

	For the Year Ended December 31,		2017		2016	
	2018		Gross	Net	Gross	Net
	volume	growth/(decrease)	volume	growth/(decrease)	volume	growth/(decrease)
	(in thousands)					
Loans	\$960,848	\$ 389,589	\$1,129,545	\$ 684,279	\$966,023	\$ 556,479
LTSPCs	430,071	(23,204)	554,743	44,003	399,095	(142,474)
Total	\$1,390,919	\$ 366,385	\$1,684,288	\$ 728,282	\$1,365,118	\$ 414,005

The following table presents the outstanding balances of Farm & Ranch loans held and loans underlying Farm & Ranch Guaranteed Securities and LTSPCs as of the dates indicated:

	As of December 31,	
	2018	2017
	(in thousands)	
On-balance sheet:		
Loans	\$3,071,222	\$2,798,906
Loans held in trusts:		
Beneficial interests owned by third party investors	1,517,101	1,399,827
Total on-balance sheet	\$4,588,323	\$4,198,733
Off-balance sheet:		
LTSPCs ⁽¹⁾	2,509,787	2,335,342
Guaranteed Securities ⁽¹⁾	135,862	333,511
Total off-balance sheet	\$2,645,649	\$2,668,853
Total	\$7,233,972	\$6,867,586

During fourth quarter 2018, Farmer Mac repurchased the 100% participation interests in loans underlying a pool of \$134.1 million in Farm & Ranch Guaranteed Securities at par, thereby redeeming the corresponding Farm & Ranch Guaranteed Securities from their sole security holder. Farmer Mac repurchased these participation interests at the request of the sole security holder in exchange for the termination of the participation interests and the reconveyance of all beneficial interest in the loans to the sole security holder that owned the loans in which the participation interests had been issued. The resulting pool of Farm & Ranch loans was concurrently added under LTSPCs. The commitment fee Farmer Mac receives on these loans added under LTSPCs is the same as the guarantee fee Farmer Mac had been earning on the Farm & Ranch Guaranteed Securities.

Loan Purchases

Farmer Mac offers loan products designed to increase the secondary market liquidity of agricultural real estate mortgage loans and the lending capacity of financial institutions that originate those loans. Farmer Mac enters into mandatory delivery commitments to purchase loans and offers rates for those commitments daily. Farmer Mac also purchases portfolios of non-delinquent loans on a negotiated basis. Farmer Mac purchases both fixed and adjustable rate loans that have a variety of maturities and often include balloon payments. Of the \$1.0 billion of loans purchased in the Farm & Ranch line of business during 2018, 64% included balloon payments. By comparison, of the \$1.1 billion of loans purchased in the Farm & Ranch line of business during 2017, 70% included balloon payments.

During 2018, Farmer Mac purchased 2,171 Farm & Ranch term loans and revolving line of credit draws. These purchases consisted of 910 term loans with an average unpaid principal balance of \$910,000 and

1,261 revolving line of credit draws with an average unpaid principal balance of \$127,000. In 2017 Farmer Mac purchased 2,129 Farm & Ranch term loans and revolving line of credit draws. These purchases consisted of 1,037 term loans with an average unpaid principal balance of \$979,000 and 1,092 revolving line of credit draws with an average unpaid principal balance of \$107,000.

Guarantees and Commitments

Farmer Mac offers two credit enhancement alternatives to direct loan purchases through the Farm & Ranch line of business that allow approved lenders the ability to retain the cash flow benefits of their loans and increase their liquidity and lending capacity: (1) LTSPCs; and (2) Farm & Ranch Guaranteed Securities. LTSPCs and securitization trusts where Farmer Mac is not the primary beneficiary create off-balance sheet obligations for Farmer Mac. Historically, the only securitization trusts where Farmer Mac was not the primary beneficiary have been trusts containing 100% participation interests in loans that comprised an LTSPC pool before securitization, and in which the participating institution is not a related party to Farmer Mac. In performing Farmer Mac's purchase and guarantee obligations related to LTSPCs and Farm & Ranch Guaranteed Securities, payments made on the underlying loans or participation interests and liquidation of the related collateral (in the event of default under the terms of those assets) are intended to protect Farmer Mac against losses.

Both LTSPC and Farm & Ranch Guaranteed Securities transactions permit a lender to nominate from its portfolio an identified pool of loans, subject to review by Farmer Mac for conformity with its eligibility standards for Farm & Ranch loans. In Farm & Ranch Guaranteed Securities and LTSPC transactions, the lender effectively transfers the credit risk on those eligible loans because, through Farmer Mac's guarantee or commitment to purchase, Farmer Mac assumes the ultimate credit risk of borrower defaults on the underlying loans. This type of risk transfer reduces a lender's credit and concentration risk exposures and therefore its regulatory capital requirements and loss reserve requirements. The loans and participation interests underlying LTSPCs and Farm & Ranch Guaranteed Securities may include those with payment, maturity, and interest rate characteristics that differ from the loan products that Farmer Mac offers for purchase each day, but all are subject to the applicable standards described in "—Underwriting and Collateral Valuation (Appraisal) Standards." See also "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Credit Risk – Loans and Guarantees."

LTSPCs. An LTSPC commits Farmer Mac, subject to the applicable LTSPC agreement, to a future purchase of one or more loans from an identified pool of eligible loans that met Farmer Mac's standards when the transaction was entered into and Farmer Mac assumed the credit risk on the loans. The LTSPC structure, which is not a guarantee of loans or securities, permits the lender to retain the loan pool in its portfolio until such time, if ever, as the lender elects to deliver some or all of the loans in the pool to Farmer Mac for purchase under the LTSPC agreement. As consideration for its assumption of the credit risk on loans underlying an LTSPC, Farmer Mac receives commitment fees payable monthly in arrears. Farmer Mac offers different options under LTSPC arrangements to meet the credit and liquidity needs of its counterparties. Some LTSPCs provide that the underlying loans can be converted into Farm & Ranch Guaranteed Securities at the option of the counterparty with no conversion fee paid to Farmer Mac. Some LTSPCs contain risk sharing arrangements that provide for the counterparty to absorb up to a specified amount (typically between one and five percent of the original principal balance of the loan pool) of any losses incurred on the loans in the pool. As of December 31, 2018 and 2017, approximately 6.8% and 7.2%, respectively, of total LTSPCs and Farm & Ranch Guaranteed Securities, including those consolidated as loans on Farmer Mac's balance sheet, contained risk sharing arrangements.

At a lender's request, Farmer Mac purchases loans subject to an LTSPC at:

par if the loans become delinquent for either 90 days or 120 days (depending on the agreement) or are in material non-monetary default, with accrued and unpaid interest on the defaulted loans payable out of any future loan payments or liquidation proceeds; or

fair value or in exchange for Farm & Ranch Guaranteed Securities (if the loans are not delinquent), in accordance with the applicable agreement.

In 2018, Farmer Mac entered into \$430.1 million of LTSPCs, compared to \$554.7 million in 2017, in the Farm & Ranch line of business. In 2018, LTSPCs were the preferred credit enhancement alternative for new credit protection transactions, and they continue to be a significant portion of the Farm & Ranch line of business. During 2018 and 2017, there were no conversions of LTSPCs into Farm & Ranch Guaranteed Securities. As of December 31, 2018, the aggregate principal balance of the loans underlying LTSPCs in Farmer Mac's Farm & Ranch line of business was \$2.5 billion. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Business Volume."

Farm & Ranch Guaranteed Securities. In Farm & Ranch Guaranteed Securities transactions, Farmer Mac guarantees securities representing interests in eligible Farm & Ranch loans or participation interests in those loans held by a trust or other entity. Farmer Mac guarantees the timely payment of interest and principal on these securities, which are either retained by Farmer Mac or sold to third parties. For those securities sold to third parties, the eligible loans or participation interests are often acquired by Farmer Mac from lenders in exchange for the Farm & Ranch Guaranteed Securities backed by those assets. As consideration for its assumption of the credit risk on the assets underlying the Farm & Ranch Guaranteed Securities, Farmer Mac receives guarantee fees based on the outstanding principal balance of the related securities.

Farmer Mac is obligated under its guarantee on the securities to make timely payments to investors of principal (including balloon payments) and interest based on the scheduled payments on the underlying loans, regardless of whether Farmer Mac or the related trust has actually received those scheduled payments. Farmer Mac's guarantee fees typically are collected out of installment payments made on the underlying loans until those loans have been repaid, purchased out of the trust, or otherwise liquidated (generally as a result of default). The aggregate amount of guarantee fees received on Farm & Ranch Guaranteed Securities depends on the amount of those securities outstanding and on the applicable guarantee fee rate, which Farmer Mac's charter caps at 50 basis points (0.50%) per year. The amount of Farm & Ranch Guaranteed Securities outstanding is influenced by the repayment rates on the underlying loans and by the rate at which Farmer Mac issues new Farm & Ranch Guaranteed Securities, including as a result of conversions from LTSPCs. In general, when the level of interest rates declines significantly below the interest rates on loans underlying Farm & Ranch Guaranteed Securities, the rate of prepayments is likely to increase. Conversely, when interest rates rise above the interest rates on the loans underlying Farm & Ranch Guaranteed Securities, the rate of prepayments is likely to decrease. In addition to changes in interest rates, the timing of principal payments on Farm & Ranch Guaranteed Securities also is influenced by a variety of economic, demographic, and other considerations.

Of the \$19.7 billion outstanding principal balance of assets in Farmer Mac's four lines of business as of December 31, 2018, \$1.7 billion were in the form of Farm & Ranch Guaranteed Securities created from the deposit of eligible loan assets into securitization trusts that issue "pass-through" certificates

representing interests in the underlying assets. This type of securitization structure may involve the deposit of either whole loans or loan participation interests into the trusts.

As of December 31, 2018, Farmer Mac had outstanding Farm & Ranch Guaranteed Securities of \$1.5 billion that represent interests in whole loans and \$135.9 million that represent interests in loan participations as a result of conversions from LTSPCs. Both types of transactions involve the deposit of eligible assets into securitization trusts along with all of the rights under related agreements that provide for, among other things, remedies for any breaches of representations and warranties made by the lender and the servicing of the underlying assets. In each of these transactions, the related trust has issued securities that represent interests in the assets of the trust and that Farmer Mac guarantees as to the timely payment of principal and interest.

For Farm & Ranch Guaranteed Securities that result from the conversion of LTSPCs, a 100% participation in the cash flows associated with each loan formerly subject to the LTSPC, rather than the whole loan, is deposited into the securitization trust. These transactions involve loan participations for reasons unique to the counterparties that have elected these conversions, all of whom are members of the FCS. Loans made by FCS institutions to farmers and ranchers have, by statute, specified loan and collateral actions to which borrowers are entitled, known as "borrower rights." Farmer Mac does not have the ability to offer all of the prescribed borrower rights without the involvement of another FCS counterparty. In recognition of this and Farmer Mac's desire not to disrupt the borrower's relationship with the originating FCS lender and expectations about how the loan will be serviced, Farmer Mac developed the participation interest securitization structure for FCS loans with borrower rights. The deposit of participation interests into securitization trusts permits the legal ownership of the related loan to remain with the FCS counterparty, together with the servicing and borrower rights related to the loan. Farmer Mac, in its role as trustee, generally has the right to give or withhold consent to the exercise of remedies as to each related loan. The FCS servicers in these transactions are also the holders of the related Farm & Ranch Guaranteed Securities, which have the same economic benefit to the holder from a cash flow perspective as a securitization of whole loans. See "—Servicing" for more information about the servicing of loans underlying Farm & Ranch Guaranteed Securities.

For the years ended December 31, 2018 and 2017, Farmer Mac sold Farm & Ranch Guaranteed Securities in the amounts of \$255.1 million and \$363.5 million, respectively. No gains or losses resulted from these sales in either 2018 or 2017. During 2018 and 2017, there were no conversions of LTSPCs into Farm & Ranch Guaranteed Securities. During fourth quarter 2018, Farmer Mac repurchased the 100% participation interests in loans underlying a pool of \$134.1 million in Farm & Ranch Guaranteed Securities at par, thereby redeeming the corresponding Farm & Ranch Guaranteed Securities from their sole security holder. Farmer Mac repurchased these participation interests at the request of the sole security holder in exchange for the termination of the participation interests and the reconveyance of all beneficial interest in the loans to the sole security holder that owned the loans in which the participation interests had been issued. The resulting pool of Farm & Ranch loans was concurrently added under LTSPCs. The commitment fee Farmer Mac receives on these loans added under LTSPCs is the same as the guarantee fee Farmer Mac had been earning on the Farm & Ranch Guaranteed Securities.

As of December 31, 2018, the aggregate principal balance of the loans that backed Farmer Mac's Farm & Ranch Guaranteed Securities, which may or may not be consolidated on-balance sheet depending on the primary beneficiary determination described above, was \$1.7 billion. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Business Volume."

Underwriting and Collateral Valuation (Appraisal) Standards

As required by Farmer Mac's charter, Farmer Mac has established underwriting, security appraisal, and repayment standards for eligible loans considering the nature, risk profile, and other differences between different categories of eligible loans. The charter prescribes that the following minimum standards must be applied to agricultural real estate mortgage loans in the Farm & Ranch line of business:

- provide that no loan with a loan-to-value ratio ("LTV") more than 80% may be eligible;
- require each borrower to demonstrate sufficient cash flow to adequately service the loan;
- require sufficient documentation standards;
- protect the integrity of the appraisal process for any loan; and
- confirm that the borrower is or will be actively engaged in agricultural production.

In addition to these minimum standards, agricultural mortgage loans on which Farmer Mac assumes direct credit exposure (such as loans purchased or underlying LTSPCs or Farm & Ranch Guaranteed Securities) are also typically required to meet more specific underwriting standards established by Farmer Mac, as described below.

Farmer Mac relies on the combined expertise of experienced internal agricultural credit underwriters and loan servicers, along with external agricultural loan servicing and collateral valuation contractors, to perform the necessary underwriting, servicing, and collateral valuation functions on Farm & Ranch loans.

Underwriting. To manage Farmer Mac's credit risk and to provide guidance for the management, administration, and conduct of underwriting to all participating and potential Farm & Ranch lenders, Farmer Mac has adopted credit underwriting standards that vary by loan type and loan product. Farmer Mac developed these standards based on industry practices for similar mortgage loans and designed them to assess the creditworthiness of the borrower, as well as the risk to Farmer Mac for having assumed the credit risk on those loans. Farmer Mac also requires Farm & Ranch lenders to make representations and warranties about the conformity of eligible mortgage loans to these standards and any other requirements that Farmer Mac may impose from time to time. Farmer Mac has the ability to require repurchase of the loan upon a material breach of these representations and warranties. The underwriting standards described in this section apply to Farmer Mac's Farm & Ranch loans other than part-time farm and rural housing loans, whose underwriting standards more closely resemble generally accepted industry standards for residential lending, including fully verified repayment capacity and use of credit scores.

Farmer Mac's credit underwriting standards for Farm & Ranch loans generally require that the original LTV of any loan not exceed 70%. Farmer Mac may require lower original LTV thresholds for some categories of loans, such as loans secured by property located in certain geographic regions, unseasoned loans, single purpose facility loans, and loans exceeding certain dollar thresholds. Farmer Mac, from time to time, allows higher LTV thresholds for loans secured by swine and poultry facilities that are supported by a strong production contract with a reputable processor (up to 75% original LTV) and rural housing and part-time farm loans secured primarily by owner-occupied residences (up to 80% original LTV). The original LTV of a loan is calculated by dividing the loan's principal balance at the time of guarantee, purchase, or commitment by the lower of the appraised value or the purchase price at the date of loan origination or, when available, updated appraised value at the time of guarantee, purchase, or commitment.

For newly originated Farm & Ranch loans, Farmer Mac's credit underwriting standards include:

- pro forma total debt service coverage ratio supported by historical profitability, including farm and non-farm income, of 1.25 or higher;
- pro forma debt-to-asset ratio of 50% or less; and
- pro forma ratio of current assets to current liabilities of 1.25 or higher.

Farmer Mac evaluates these standards on an ongoing basis based on current and anticipated market conditions, and adjusts these standards as Farmer Mac determines is necessary. Farmer Mac also uses an interest rate shock test for adjustable rate Farm & Ranch loans with initial reset periods of less than five years.

Farmer Mac includes its facility loans, such as dairy and processing facilities, in its Farm & Ranch line of business. Farmer Mac defines a facility loan as a loan secured by agricultural real estate with building improvements (other than a residence) that contribute more than 60% of the appraised value of the property. The credit underwriting standards for facility loans are the same as for other Farm & Ranch loans except that certain facility loans are required to have a more stringent total debt service coverage ratio, including farm and non-farm income, of 1.35 or higher.

Loans not exceeding \$1.5 million that are secured by eligible collateral with original LTVs not greater than 55% made to borrowers with high consumer credit scores and adequate financial resources may be accepted without further underwriting tests being applied.

Loans not exceeding \$750,000 that are secured by eligible collateral with original LTVs not greater than 55% made to borrowers that meet certain criteria under a scoring model referencing consumer and commercial financial data used by Farmer Mac may be accepted without further underwriting tests being applied.

Farmer Mac's underwriting standards provide for the acceptance of a loan that, in the judgment of the Farmer Mac underwriter, is a sound loan with a high probability of repayment in accordance with its terms even though the loan does not meet one or more of the underwriting ratios usually required for loans of that type. In those cases, Farmer Mac permits approval of a loan if it:

- has compensating strengths, which means it exceeds minimum requirements for one or more of the underwriting standards to a degree that compensates for noncompliance with one or more other standards; and
- is made to a producer of particular agricultural commodities or products in a segment of agriculture in which the compensating strengths are typical of the financial condition of sound borrowers in that segment.

Although underwriting approvals may be made based on compensating strengths, no loan will be approved if it does not at least meet all of the minimum standards prescribed by Farmer Mac's charter.

Farmer Mac's use of compensating strengths is not intended to provide a basis for waiving or lessening the requirement that eligible mortgage loans under the Farm & Ranch line of business be of consistently high quality. Loans approved based on compensating strengths are fully underwritten and have experienced cumulative rates of loss following default no different than loans approved based on conformity with all applicable underwriting ratios.

For a seasoned loan, Farmer Mac considers sustained historical performance to be a reliable alternative indicator of a borrower's ability to pay the loan according to its terms. In the Farm & Ranch line of business, a seasoned loan generally will be eligible if:

- it has been outstanding for at least five years and has an LTV of 60% or less;
- there have been no payments more than 30 days past due during the three-year period before the date the loan is either purchased by Farmer Mac or made subject to an LTSPC; and
- there have been no material restructurings or modifications for credit reasons during the previous five years.

A seasoned loan that has been outstanding for more than one year but less than five years must substantially comply with the applicable underwriting standards for newly originated loans as of the date the loan was originated by the lender.

Farmer Mac performs due diligence before purchasing, guaranteeing securities backed by, or committing to purchase seasoned loans, including:

- evaluating loan database information to determine conformity to the criteria set forth in the preceding paragraphs;
- confirming that loan file data conform to database information;
- validating supporting credit information in the loan files; and
- reviewing loan documentation and collateral valuations.

Farmer Mac performs these and other due diligence procedures using methods that consider the size, age, leverage, industry sector, and nature of the collateral for the loans.

Required documentation for all loans in the Farm & Ranch line of business includes a first lien mortgage or deed of trust, a written promissory note, and assurance of Farmer Mac's lien position through either a title insurance policy or title opinion from an experienced real estate attorney in any geographic area where title insurance is not the industry practice.

As Farmer Mac develops new credit products, it establishes underwriting guidelines for them. Those guidelines result in industry-specific measures that meet or exceed the minimum underwriting standards contained in Farmer Mac's charter and provide Farmer Mac with the flexibility to deliver the benefits of a secondary market to farmers, ranchers, and rural homeowners in diverse sectors of the rural economy. Farmer Mac does not require that each loan's compliance with the applicable underwriting standards be re-evaluated after Farmer Mac purchases the loan or approves it for inclusion in a pool that backs Farm & Ranch Guaranteed Securities or an LTSPC pool.

Collateral Valuation Standards. Farmer Mac has adopted collateral valuation standards for newly originated loans purchased or underlying Farm & Ranch Guaranteed Securities or LTSPCs. Those standards require, among other things, that a current valuation be performed, or have been performed within the preceding 12 months, independently of the credit decision-making process. Farmer Mac generally requires appraisals to conform to the Uniform Standards of Professional Appraisal Practice ("USPAP") promulgated by the Appraisal Standards Board.

Farmer Mac's collateral valuation standards require that the valuation function be conducted or administered by an individual who meets specific qualification and competence criteria and who:

is not associated, except by the engagement for the collateral valuation, with the credit underwriters making the loan decision, though the appraiser or evaluator and the credit underwriter may be directly or indirectly employed by a common employer;

receives no financial or professional benefit of any kind by virtue of the report content, valuation, or credit decision made, or based on the valuation report; and

has no present or contemplated future direct or indirect interest in the property serving or to serve as collateral.

Farmer Mac's collateral valuation standards require uniform reporting of reliable and credible opinions of the market value based on analyses of comparable property sales, including consideration of the property's income-producing capacity and, if relevant, the market's response to the cost of improvements, as well as information about market trends. For seasoned loans, Farmer Mac obtains collateral valuation updates as considered necessary in its assessment of collateral risk determined in the due diligence process. If a current or updated collateral valuation is required for a seasoned loan, the collateral valuation standards described above would apply.

Portfolio Diversification

It is Farmer Mac's policy to diversify its portfolio of loans held and loans underlying Farm & Ranch Guaranteed Securities and LTSPCs, both geographically and by agricultural commodity or product. Farmer Mac directs its marketing efforts toward agricultural lenders throughout the nation to achieve commodity or product and geographic diversification in its exposure to credit risk. Farmer Mac evaluates its credit exposure in particular geographic regions and commodities or products relative to the total principal amount of all outstanding loans held and loans underlying LTSPCs and Farm & Ranch Guaranteed Securities.

Farmer Mac is not obligated to assume credit risk on every loan that meets its underwriting and collateral valuation standards submitted by an eligible participant. Farmer Mac may consider other factors, such as its overall portfolio diversification, commodity and farming forecasts, and risk management objectives, in deciding whether to accept a loan as part of the Farm & Ranch line of business. For example, if industry forecasts indicate possible weakness in a geographic area or agricultural commodity or product, Farmer Mac may decide not to purchase or commit to purchase an affected loan as part of managing Farmer Mac's overall portfolio exposure to areas of possible heightened risk exposure. Because Farmer Mac effectively assumes the credit risk on all loans underlying an LTSPC, Farmer Mac's commodity or product and geographic diversification disclosures reflect all loans underlying LTSPCs and any loans purchased out of LTSPC pools. For information about the diversification of Farmer Mac's existing portfolio, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Credit Risk – Loans and Guarantees" and Note 8 to the consolidated financial statements.

Approved Lenders

As of December 31, 2018, Farmer Mac had 705 approved lenders eligible to participate in Farmer Mac's Farm & Ranch line of business, ranging from single-office to multi-branch institutions, spanning community banks, FCS institutions, mortgage companies, mortgage funds, commercial banks, and insurance companies, compared to 680 eligible approved lenders as of December 31, 2017. Besides participating directly in the Farm & Ranch line of business, some approved lenders facilitate indirect

participation by other lenders by managing correspondent networks of lenders from which the approved lenders purchase loans to sell to Farmer Mac. As of December 31, 2018, of the 705 approved lenders eligible to participate, 165 lenders had been active participants in the Farm & Ranch line of business during the previous 12 months by either selling at least one loan to Farmer Mac or entering into an LTSPC transaction with Farmer Mac, compared to 196 out of 680 approved lenders as of December 31, 2017.

To be considered for approval as a participant in the Farm & Ranch line of business, a lender must meet criteria that Farmer Mac establishes. Those criteria include these requirements:

- own a requisite amount of Farmer Mac common stock according to a schedule prescribed for the size and type of institution;
- have, in the judgment of Farmer Mac, the ability and experience to make or purchase and sell loans eligible for Farmer Mac's Farm & Ranch line of business and service those loans in accordance with Farmer Mac's requirements either through the lender's own staff or through contractors and originators;
- maintain a minimum adjusted net worth; and
- enter into a Seller/Servicer Agreement, which requires compliance with the terms of Farmer Mac's Seller/Servicer Guide, including providing representations and warranties about the eligibility of the loans and accuracy of loan data provided to Farmer Mac.

Servicing

Farmer Mac generally does not directly service the loans in the Farm & Ranch line of business, although in some cases Farmer Mac may assume direct servicing for defaulted loans. Farmer Mac serves in the role of master servicer for Farm & Ranch loans held by Farmer Mac and for whole loans underlying Farm & Ranch Guaranteed Securities. In that capacity, Farmer Mac contracts with other institutions, known as central servicers, to undertake most of the servicing responsibilities for the loans in accordance with Farmer Mac's specified servicing requirements. For these loans, the central servicer may or may not be the same entity as the lender that sold the loans to Farmer Mac, and the originating lenders may retain some direct borrower contacts, referred to as "field servicing" functions. Field servicers may enter into contracts with Farmer Mac's central servicers that specify the retained servicing functions.

Loans related to the participation interests underlying Farm & Ranch Guaranteed Securities that result from the conversion of LTSPCs are serviced for the benefit of Farmer Mac, as trustee and guarantor, by the FCS institution that participated in the conversion of the loans to Farmer Mac. The servicer of those loans is usually also the holder of the related Farm & Ranch Guaranteed Securities. In those transactions, the FCS servicer is required to service the loans related to the securitized participation interests in a commercially reasonable manner and in substantial compliance with Farmer Mac's servicing requirements for Farm & Ranch loans. Those servicers are also required to give effect to all statutory borrower rights applicable to the loans and have shared power with Farmer Mac for some servicing actions to ensure this. The loans related to the Farm & Ranch Guaranteed Securities that result from the conversion of loans formerly subject to an LTSPC are the only loans in the Farm & Ranch line of business that are subject to a shared power servicing provision.

Loans underlying LTSPCs are serviced by the holders of those loans in accordance with those lenders' servicing procedures, which Farmer Mac reviews before entering into those transactions.

In summary, the substance of all servicing for loans in the Farm & Ranch line of business is performed in a manner consistent with Farmer Mac's servicing requirements, with some special servicing for the assets underlying Farm & Ranch Guaranteed Securities resulting from LTSPC conversions to accommodate the borrower rights regime unique to loans originated by FCS institutions.

USDA Guarantees

General

Farmer Mac started its USDA Guarantees line of business in 1991 after Congress revised Farmer Mac's charter to provide that:

USDA-guaranteed portions of loans (which Farmer Mac refers to as "USDA Securities") guaranteed under the Consolidated Farm and Rural Development Act (7 U.S.C. § 1921 et seq.) are statutorily included in the definition of loans eligible for the secondary market programs provided by Farmer Mac;

USDA Securities are exempted from the credit underwriting, collateral valuation, documentation, and other standards that other loans must meet to be eligible for the secondary market provided by Farmer Mac, and are exempted from any diversification and internal credit enhancement that may be required of pools of other eligible loans; and Farmer Mac is authorized to pool and issue Farmer Mac Guaranteed Securities backed by USDA Securities.

Since January 2010, nearly all purchases of USDA Securities have been made by Farmer Mac II LLC, a subsidiary of Farmer Mac that operates substantially all of the business related to the USDA Guarantees line of business. Farmer Mac operates only that part of the business that involves issuing Farmer Mac Guaranteed USDA Securities to investors other than Farmer Mac or Farmer Mac II LLC. Although Farmer Mac II LLC may issue securities in these transactions, Farmer Mac II LLC does not guarantee any USDA Securities it holds or any Farmer Mac Guaranteed USDA Securities issued by Farmer Mac or Farmer Mac II LLC.

Summary of USDA Guarantees Transactions

Farmer Mac guarantees the timely payment of principal and interest on Farmer Mac Guaranteed USDA Securities backed by USDA Securities. Farmer Mac does not guarantee the repayment of the USDA Securities themselves. During 2018, 2017, and 2016, Farmer Mac and Farmer Mac II LLC conducted USDA Guarantees transactions with 224, 222, and 222 entities, respectively.

The following table presents purchase activity in the USDA Guarantees line of business for each of the years indicated, including the amounts retained by Farmer Mac and securitized and sold to lenders or other investors in the form of Farmer Mac Guaranteed USDA Securities. The table also sets forth the amount of net growth or decrease in each of these categories, after maturities, principal paydowns, and sales:

	For the Year Ended December 31,		2017		2016	
	Gross volume	Net growth/(decrease)	Gross volume	Net growth/(decrease)	Gross volume	Net growth/(decrease)
	(in thousands)					
Purchased and retained	\$332,270	\$ 52,537	\$375,715	\$ 113,217	\$383,303	\$ 78,349
Purchased and sold	127,851	110,870	155,969	144,622	97,954	97,749
Total	\$460,121	\$ 163,407	\$531,684	\$ 257,839	\$481,257	\$ 176,098

In addition to the purchases of USDA Securities made by Farmer Mac II LLC in 2017, Farmer Mac purchased for its liquidity investment portfolio \$45.0 million of USDA Securities that were not eligible for Farmer Mac's USDA Guarantees line of business because the related USDA guarantees were issued under authority other than the Consolidated Farm and Rural Development Act. Farmer Mac did not make a similar purchase in 2018 or 2016.

The following table presents the outstanding balance of USDA Securities and Farmer Mac Guaranteed USDA Securities as of the dates indicated:

	As of December 31,	
	2018	2017
	(in thousands)	
On-balance sheet:		
USDA Securities	\$2,120,553	\$2,068,017
Farmer Mac Guaranteed USDA Securities	27,383	29,980
Off-balance sheet:		
Farmer Mac Guaranteed USDA Securities	367,684	254,217
Total	\$2,515,620	\$2,352,214

United States Department of Agriculture Guaranteed Loan Programs

The USDA, acting through its agencies, currently administers the federal rural credit programs first developed in the mid-1930s. The USDA makes direct loans and guarantees portions of loans made and serviced by USDA-qualified lenders for various purposes. The USDA's guarantee is supported by the full faith and credit of the United States. The USDA guarantees up to 95% of the principal amount of guaranteed loans. Through its USDA Guarantees line of business, Farmer Mac is one of several competing purchasers of USDA Securities representing the USDA-guaranteed portions of farm ownership loans, farm operating loans, business and industry loans, community facilities loans, and other loans. The guaranteed portions of these loans are fully guaranteed as to principal and interest by the USDA.

USDA Guarantees. Each USDA guarantee is a full faith and credit obligation of the United States and becomes enforceable if a lender fails to repurchase the portion of the loan that is guaranteed by the USDA from its holder within 30 days after written demand from the holder when:

the borrower under the guaranteed loan is in default at least 60 days in the payment of any principal or interest due on the USDA-guaranteed portion of the loan; or

the lender has failed to remit to the holder the payment made by the borrower on the USDA-guaranteed portion of the loan or any related loan subsidy within 30 days after the lender's receipt of the payment.

If the lender does not repurchase the USDA-guaranteed portion as provided above, the USDA is required to purchase the unpaid principal balance of the USDA-guaranteed portion together with accrued interest (including any loan subsidy) to the date of purchase, less the lender's servicing fee, within 60 days after written demand upon the USDA by the holder. While the USDA guarantee will not cover the note interest to the holder on USDA-guaranteed portions accruing after 90 days from the date of the original demand letter of the holder to the lender requesting repurchase, Farmer Mac has established procedures to require prompt demand on the USDA to purchase USDA-guaranteed portions that have not been repurchased by the lender.

If, in the opinion of the lender (with the concurrence of the USDA) or in the opinion of the USDA, repurchase of the USDA-guaranteed portion is necessary to service the related guaranteed loan adequately, the holder is required to sell the USDA-guaranteed portion to the lender or USDA for an amount equal to the unpaid principal balance and accrued interest on such USDA-guaranteed portion less the lender's servicing fee. Federal regulations prohibit the lender from repurchasing USDA-guaranteed portions for arbitrage purposes.

Lenders. Any lender authorized by the USDA to obtain a USDA guarantee on a loan may participate in Farmer Mac's USDA Guarantees line of business. During the years ended 2018 and 2017, 224 and 222 lenders, respectively, consisting mostly of community and regional banks, sold USDA Securities to Farmer Mac.

Loan Servicing. The lender on each USDA guaranteed loan is required by regulation to retain the unguaranteed portion of the guaranteed loan, to service the entire underlying guaranteed loan, including the USDA-guaranteed portion, and to remain mortgagee and/or secured party of record. The USDA-guaranteed portion and the unguaranteed portion of the loan are to be secured by the same collateral with equal lien priority. The USDA-guaranteed portion of a loan cannot be paid later than, or in any way be subordinated to, the related unguaranteed portion.

Rural Utilities

General

Farmer Mac's charter authorizes the purchase of, and guarantee of securities backed by, loans (including participation interests in loans) for electric or telephone facilities by lenders organized as cooperatives to borrowers that have received or are eligible to receive loans under the Rural Electrification Act of 1936 ("REA"). The REA is administered by the Rural Utilities Service ("RUS"), an agency of the USDA. All of Farmer Mac's business to date under the Rural Utilities line of business has involved loans made to electric distribution cooperatives or electric generation and transmission ("G&T") cooperatives and none of it to date has involved telecommunications loans. Farmer Mac's Rural Utilities line of business encompasses purchases of eligible rural utilities loans and guarantees of securities backed by those loans, as well as LTSPCs for pools of eligible rural utilities loans.

Summary of Rural Utilities Transactions

The following table summarizes business activity in the Rural Utilities line of business for each of the years ended December 31, 2018, 2017, and 2016. The table also sets forth the amount of net growth or decrease in Rural Utilities loans held and loans underlying LTSPCs, after maturities, principal paydowns, and draws:

	For the Year Ended December 31,					
	2018		2017		2016	
	Gross volume	Net growth/(decrease)	Gross volume	Net growth/(decrease)	Gross volume	Net growth/(decrease)
	(in thousands)					
Loans	\$11,645	\$ (137,448)	\$137,341	\$ 76,779	\$50,491	\$ (8,614)
LTSPCs—		(153,069)	—	(72,256)	441,404	355,734
Total	\$11,645	\$ (290,517)	\$137,341	\$ 4,523	\$491,895	\$ 347,120

The following table presents the outstanding balances of Rural Utilities loans held as of the dates indicated:

	As of December 31,	
	2018	2017
	(in thousands)	
On-balance sheet:		
Loans	\$938,843	\$1,076,291
Off-balance sheet:		
LTSPCs ⁽¹⁾	653,272	806,342
Total	\$1,592,115	\$1,882,633

(1) Includes \$17.0 million and \$20.0 million related to one-year loan purchase commitments on which Farmer Mac receives a nominal unused commitment fee as of December 31, 2018 and 2017, respectively.

Loan Eligibility

To be eligible for Farmer Mac's Rural Utilities line of business, a Rural Utilities loan (or a participation interest in a loan) must:

- be for an electric or telephone facility by a lender organized as a cooperative to a borrower that has received or is eligible to receive a loan under the REA;
- be performing and not more than 30 days delinquent; and
- meet Farmer Mac's underwriting standards described in more detail below.

Underwriting

Farmer Mac's charter does not specify minimum underwriting criteria for eligible Rural Utilities loans under the Rural Utilities line of business. To manage Farmer Mac's credit risk, to mitigate the risk of loss from borrower defaults, and to provide guidance for the management, administration, and conduct of underwriting to participants in the Rural Utilities line of business, Farmer Mac has adopted credit underwriting standards that vary by loan product and by loan type, based on whether loans are made to electric distribution cooperatives or G&T cooperatives. These standards are based on industry practices for similar Rural Utilities loans and are designed to assess the creditworthiness of the borrower, as well as

the risk to Farmer Mac. Farmer Mac reviews lenders' credit submissions and analyzes borrowers' audited financial statements and financial and operating reports typically filed with RUS and the Federal Energy Regulatory Commission to confirm that loans meet Farmer Mac's underwriting standards for Rural Utilities loans. In most cases, Farmer Mac also requires sellers of rural utilities loans to make representations and warranties about the conformity of eligible loans to these standards and any other requirements that Farmer Mac may impose from time to time. Farmer Mac has the ability to require repurchase of the loan upon a material breach of these representations and warranties.

In addition to the loan eligibility criteria described above for Rural Utilities loans, Farmer Mac has developed different underwriting standards for loans that depend on whether the borrower is an electric distribution cooperative or a G&T cooperative. Farmer Mac's credit underwriting standards for all rural utilities loans on which it assumes direct credit exposure (i.e., with no general obligation of a lender involved in the transaction) require:

- each borrower to demonstrate sufficient cash flow to adequately service the loan; and
- each borrower's leverage position to be adequate based on industry standards.

For a newly originated loan to a distribution cooperative on which Farmer Mac assumes direct credit exposure, the borrower typically must, among other criteria set forth in Farmer Mac's credit underwriting standards, meet the following ratios (based on the average of the most recent three years):

- the ratio of long-term debt to "net utility plant" does not exceed 90%;
- the modified debt service coverage ratio (the cooperative's available cash plus patronage capital credits allocated to the cooperative, relative to debt expense) equals or exceeds 1.35; and
- the ratio of equity to total assets equals or exceeds 20%.

The "net utility plant" means the real and tangible personal property of a rural utilities borrower constituting the long-term assets of property, plant, and equipment (PPE), less depreciation, computed in accordance with applicable accounting requirements.

For a newly originated loan to a G&T cooperative on which Farmer Mac assumes direct credit exposure, the borrower typically must, among other criteria set forth in Farmer Mac's credit underwriting standards, meet the following ratios (based on the average of the most recent three years):

- the equity to total assets ratio equals or exceeds 10%;
- the modified debt service coverage ratio equals or exceeds 1.10;
- the debt to EBITDA (earnings before interest, taxes, depreciation, and amortization) ratio does not exceed 12; and
- the aggregate members' equity to total capitalization ratio equals or exceeds 25%.

The due diligence Farmer Mac performs before purchasing, or guaranteeing securities backed by, Rural Utilities loans includes:

- evaluating loan database information to determine conformity to Farmer Mac's underwriting standards;
- confirming that loan file data conforms to database information;
- validating supporting credit information in the loan files; and
- reviewing loan documentation.

Farmer Mac is not obligated to assume credit risk on every rural utilities loan submitted to Farmer Mac that meets its underwriting and collateral valuation standards. Farmer Mac may consider other factors, such as portfolio diversification, in deciding whether to accept the loans. Farmer Mac may also accept loans that do not meet all underwriting standards if the loan has compensating strengths.

Collateral

It is customary in loans to distribution cooperatives and G&T cooperatives for the lender or lender group to take a security interest in substantially all of the borrower's assets. When Farmer Mac purchases a Rural Utilities loan with a pledge of all assets and a lender also has a lien on all assets, Farmer Mac verifies that a lien accommodation results in either a shared first lien or a first lien in favor of Farmer Mac. When debt indentures are used, Farmer Mac determines if available collateral is adequate to support the loan program and Farmer Mac's investment. As of December 31, 2018, substantially all of the Rural Utilities loans held by Farmer Mac consisted of loans with a pledge of all assets. Farmer Mac sometimes purchases unsecured Rural Utilities loans that meet stricter underwriting standards than those described above under "—Underwriting." In accordance with Farmer Mac's internal policies, the total outstanding balance of unsecured Rural Utilities loans may not exceed \$100 million. As of December 31, 2018, Farmer Mac held \$3.2 million of unsecured Rural Utilities loans.

Servicing

Farmer Mac generally does not directly service the Rural Utilities loans held in its portfolio. Those loans are serviced by a servicer designated by Farmer Mac. As of December 31, 2018, National Rural Utilities Cooperative Finance Corporation ("CFC") serviced all of the Rural Utilities loans in Farmer Mac's portfolio. CFC is a related party to Farmer Mac because of its stock ownership in Farmer Mac. As of December 31, 2018, CFC held approximately 8% of Farmer Mac's outstanding Class A voting common stock (or approximately 5% of total voting shares). See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Related Party Transactions."

Approved Lenders

Farmer Mac's charter requires eligible rural utilities loans to be by a lender organized as a cooperative. Currently, the primary rural utilities lenders that are cooperatives are CFC and CoBank, ACB and its affiliate CoBank, FCB (collectively, "CoBank"), institutions of the FCS. As of December 31, 2018, CFC was the only lender to have participated in Farmer Mac's Rural Utilities line of business. On February 19, 2019, we purchased a \$546 million portfolio of participations in seasoned Rural Utilities loans from CoBank under a master loan participation agreement entered into on February 13, 2019. CoBank is a related party to Farmer Mac because of its stock ownership in Farmer Mac. For more information, please refer to the Current Report on Form 8-K that we filed with the SEC on February 20, 2019.

Portfolio Diversification

Rural utilities loans are made throughout the entire United States. Farmer Mac analyzes the geographic distribution of loans to cooperatives and considers regional concentration levels as part of its business activities under the Rural Utilities line of business. As of December 31, 2018, Farmer Mac had direct credit exposure on 1,135 loans to electric cooperatives constituting \$1.6 billion across 39 states.

Farmer Mac's charter does not prescribe a maximum loan size for an eligible rural utilities loan. For these loans, Farmer Mac generally does not assume more than \$50.0 million in cumulative direct credit exposure (e.g., loan purchases, LTSPCs, and non-AgVantage Rural Utilities Guaranteed Securities) to any one borrower or group of related borrowers. An internal policy approved by Farmer Mac's board of directors limits the cumulative direct credit exposure to any one borrower or group of related borrowers on rural utilities loans to 10% of Farmer Mac's Tier 1 capital (\$72.8 million as of December 31, 2018). That internal policy also sets a limit of \$75.0 million for cumulative loan exposure to any one borrower or related borrowers for indirect credit exposures on rural utilities loans (e.g., AgVantage transactions), with the amount of any direct exposure to a borrower not counting toward the \$75.0 million limit. See "Business—Farmer Mac's Lines of Business—Institutional Credit." As of December 31, 2018, Farmer Mac's direct credit exposure to rural utilities loans consisted of \$1.2 billion in loans to distribution cooperatives and \$0.4 billion in loans to G&T cooperatives.

Institutional Credit

Under the Institutional Credit line of business, Farmer Mac provides advances against eligible loans by guaranteeing and purchasing general obligations of institutions, including financial funds, approved by Farmer Mac, which obligations are also secured by the types of loans eligible for one of Farmer Mac's other lines of business. Farmer Mac refers to these obligations as AgVantage® securities. Farmer Mac guarantees the timely payment of principal and interest on AgVantage securities and may retain AgVantage securities in its portfolio or sell them to third parties in the capital markets as Farmer Mac Guaranteed Securities.

Farmer Mac has direct credit exposure to the general credit of the issuers of AgVantage securities and assumes the ultimate credit risk of an issuer default on the AgVantage securities. Before approving an institution as an issuer in an AgVantage transaction, Farmer Mac assesses the issuer's creditworthiness as well as the credit quality and performance of the issuer's loan portfolio. Farmer Mac continues to monitor the counterparty risk assessment on an ongoing basis after the AgVantage security is issued. In addition to being a general obligation of the issuer, AgVantage securities must be secured by eligible loans or guaranteed securities in an amount at least equal to the outstanding principal amount of the security. As a result, Farmer Mac has indirect credit exposure to the loans or guaranteed securities that are pledged to secure the AgVantage securities, which would be available to Farmer Mac in the event of a default by the issuer.

Loans pledged under AgVantage securities are serviced by the issuers of the securities (or their affiliated servicing institutions) in accordance with that institution's servicing procedures. Farmer Mac reviews these servicing procedures before entering into those transactions. In AgVantage transactions, the issuer is required to remove from the pool of pledged collateral any loan that becomes more than 30 days delinquent in the payment of principal or interest and to replace the delinquent loan with another eligible loan that is current in payment to maintain the minimum required collateralization level.

For AgVantage securities secured by loans eligible for Farmer Mac's Farm & Ranch line of business, Farmer Mac currently requires the general obligation to be over-collateralized, either by more eligible loans or any of the following types of assets:

- cash;
- securities issued by the U.S. Treasury or guaranteed by an agency or instrumentality of the United States;
- other highly-rated securities; or

• other instruments approved by Farmer Mac.

The required collateralization level for the AgVantage securities secured by Farm & Ranch loans currently ranges from 103% to 125%. Within this range, Farmer Mac generally requires higher collateralization levels for securities issued by institutions without long-term debt ratings from a nationally recognized statistical rating organization ("NRSRO"). The required collateralization level is established when the AgVantage facility is entered into with the counterparty and does not change during the life of the AgVantage securities issued under the facility unless mutually agreed by Farmer Mac and the counterparty.

For AgVantage securities that are secured by Farm & Ranch loans, Farmer Mac requires that the loans meet the minimum standards set forth in the charter for those types of loans and that the value is supported by either appraisals that conform to USPAP or similar collateral valuation methods based on Farmer Mac's evaluation of the issuer's collateral valuation protocols and history. Although the charter does not prescribe a maximum loan size or a total borrower exposure for an eligible Farm & Ranch loan secured by 1,000 acres or less of agricultural real estate, for AgVantage transactions Farmer Mac currently limits the size of those loans to \$75.0 million in cumulative exposure through a single lender to any one borrower or related borrowers (with the amount of any direct borrower exposure not counting toward the \$75.0 million limit).

Farmer Mac has tailored a version of its AgVantage product to focus on institutional investors in agricultural assets that qualify as collateral for the types of loans eligible for the Farm & Ranch line of business. Farmer Mac refers to this product variation as the Farm Equity AgVantage[®] product. This product has similar requirements for AgVantage securities secured by Farm & Ranch loans described above, but Farmer Mac also requires that Farm Equity AgVantage transactions and AgVantage transactions with smaller financial funds or entities (1) generally maintain a higher collateralization level, through lower loan-to-value ratio thresholds and higher overcollateralization requirements, and (2) generally contain specified financial covenants for the life of the related AgVantage security to avoid default. As of December 31, 2018, Farmer Mac had \$279.8 million of outstanding Farm Equity AgVantage securities.

For AgVantage securities secured by loans eligible for Farmer Mac's Rural Utilities line of business, Farmer Mac requires:

- the counterparty issuing the general obligation to have a credit rating from an NRSRO that is at least investment grade, or be of comparable creditworthiness as determined through Farmer Mac's analysis;
- the collateral to be comprised of loans, or interests in loans, for electric or telephone facilities by a lender organized as a cooperative to a borrower that has received or is eligible to receive a loan under the REA;
- the collateral to be classified as performing and not in payment default beyond the applicable cure period; and
- the collateralization (consisting of current, performing loans) to be maintained at the contractually prescribed level, in an amount at least equal to the outstanding principal amount of the security.

Although Farmer Mac has only indirect credit exposure on the Rural Utilities loans pledged to secure AgVantage securities, the same underwriting standards that apply to loans made to distribution cooperatives on which Farmer Mac assumes direct credit exposure also apply to loans made to distribution cooperatives that secure the general obligation of the lender in AgVantage transactions. See "Business—

Farmer Mac's Lines of Business—Rural Utilities—Underwriting." For loans made to G&T cooperatives that secure the general obligation of the issuer in AgVantage transactions, the G&T cooperative must either (1) have a rating from an NRSRO of BBB- (or equivalent rating) or better or (2) meet the following underwriting standards (based on the average of the most recent three years):

- the aggregate members' equity to total capitalization ratio equals or exceeds 25%;
- the modified debt service coverage ratio equals or exceeds 1.10; and
- the equity to total assets ratio equals or exceeds 10%.

Farmer Mac's charter does not prescribe a maximum loan size or a total borrower exposure for an eligible Rural Utilities loan, but Farmer Mac's current limit for AgVantage transactions is \$75.0 million for cumulative loan exposure to any one borrower or related borrowers (with the amount of any direct exposure to a borrower not counting towards the \$75.0 million limit). Farmer Mac also permits up to 20% of Rural Utilities loans pledged to secure AgVantage securities to be unsecured or secured by less than all of the borrower's assets. As of December 31, 2018, all AgVantage securities secured by eligible Rural Utilities loans were issued by CFC, which is a related party to Farmer Mac because of CFC's stock ownership in Farmer Mac. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Related Party Transactions."

As of December 31, 2018, Farmer Mac had not experienced any credit losses, nor had it been called upon to make a guarantee payment to third parties, on any of its AgVantage securities. For more information on Farmer Mac's AgVantage securities, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Credit Risk – Institutional."

Summary of Institutional Credit Transactions

During the year ended December 31, 2018, Farmer Mac added \$3.3 billion of gross new business volume under the Institutional Credit line of business. That gross new business volume was partially offset by repayments on existing assets (principal paydowns and maturities) during the year, resulting in \$8.4 billion of total outstanding business volume in this line of business as of December 31, 2018, compared to \$7.9 billion as of December 31, 2017. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Business Volume" and "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Credit Risk – Institutional." The following table summarizes activity in the Institutional Credit line of business for each of the years ended December 31, 2018, 2017, and 2016. The table also sets forth the amount of net growth in the purchases of AgVantage securities, after maturities, principal paydowns, and draws:

	For the Year Ended December 31,					
	2018		2017		2016	
	Gross volume	Net growth	Gross volume	Net growth	Gross volume	Net growth
	(in thousands)					
AgVantage Securities	\$3,010,307	\$477,939	\$2,383,912	\$617,192	\$2,098,852	\$563,432
Revolving floating rate AgVantage facility	300,000	—	—	—	—	—
	\$3,310,307	\$477,939	\$2,383,912	\$617,192	\$2,098,852	\$563,432

The following table presents the outstanding principal amount of AgVantage securities held by Farmer Mac and off-balance sheet AgVantage securities as of the dates indicated:

	As of December 31,	
	2018	2017
	(in thousands)	
On-balance sheet:		
AgVantage Securities	\$8,072,919	\$7,593,322
Off-balance sheet:		
AgVantage Securities	\$9,898	\$11,556
Revolving floating rate AgVantage facility ⁽¹⁾	300,000	300,000
Total off-balance sheet	\$309,898	\$311,556
Total	\$8,382,817	\$7,904,878

During both 2018 and 2017, \$100.0 million of this facility was drawn and later repaid. Farmer Mac receives a fixed fee based on the full dollar amount of the facility. If the counterparty draws on the facility, the amounts drawn will be in the form of AgVantage Securities, and Farmer Mac will earn interest income on those securities.

(1)

FUNDING OF GUARANTEE AND LTSPC OBLIGATIONS

The main sources of funding for the payment of Farmer Mac's obligations under its guarantees and LTSPCs are the fees Farmer Mac receives for its guarantees and commitments, net effective spread, proceeds of debt issuances, loan repayments, and maturities of AgVantage securities. Farmer Mac satisfies its obligations under LTSPCs and its guarantees by purchasing defaulted loans out of LTSPCs and from the related trusts for Farmer Mac Guaranteed Securities. Farmer Mac typically recovers a significant portion of the value of defaulted loans purchased either through borrower payments, loan payoffs, payments by third parties, or foreclosure and sale of the property securing the loans. Net credit losses/(gains) arising from Farmer Mac's guarantees and commitments include charge-offs/(recoveries) against its allowance for losses, gains and losses on the sale of real estate owned ("REO"), which consists of real estate acquired through foreclosure, and fair value adjustments of REOs held. During 2018, Farmer Mac had net credit losses of \$40,000, compared to net credit gains of \$1.4 million during 2017. The net credit losses during 2018 included \$7,000 of net losses on the sale of REO compared to \$1.7 million of net gains during 2017.

Farmer Mac's charter requires Farmer Mac to maintain in its accounts a portion of the guarantee fees it receives from its guarantee activities as a reserve against losses. As of December 31, 2018, this reserve against losses arising from Farmer Mac's guarantee activities was \$80.8 million. Farmer Mac calculates the amount of this statutorily required reserve against losses arising from its guarantee activities based on the credit risk component of guarantee fees received on all Farmer Mac Guaranteed Securities, including AgVantage securities. This amount does not represent either anticipated credit losses or estimated probable credit losses and does not directly relate to either the allowance for loan losses or the reserve for losses in Farmer Mac's consolidated balance sheets. Rather, this is the amount of capital that must be exhausted before Farmer Mac may issue obligations to the U.S. Treasury against the \$1.5 billion that Farmer Mac is statutorily authorized to borrow from the U.S. Treasury to fulfill its guarantee obligations. That borrowing authority is not intended to be a routine funding source and has never been used. For a more detailed discussion of Farmer Mac's borrowing authority from the U.S. Treasury, see "Business—Farmer Mac's Authority to Borrow from the U.S. Treasury."

Farmer Mac's total outstanding guarantees and LTSPCs exceed the total of: (1) the amount held as an allowance for losses, (2) the amount maintained as a reserve against losses arising from guarantee

activities, and (3) the amount Farmer Mac may borrow from the U.S. Treasury. However, Farmer Mac does not expect its future payment obligations under its guarantees and LTSPCs to exceed amounts available to satisfy those obligations, including access to the underlying collateral in the event of default. For information about Farmer Mac's allowance for losses, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Credit Risk – Loans and Guarantees" and Note 2(j) and Note 8 to the consolidated financial statements.

FINANCING

Debt Issuance

Farmer Mac's charter authorizes Farmer Mac to issue debt obligations to purchase eligible loans, USDA Securities, and Farmer Mac Guaranteed Securities, and to maintain reasonable amounts for business operations, including adequate liquidity. Farmer Mac funds its purchases of eligible loan assets and liquidity investment assets primarily by issuing debt obligations of various maturities in the public capital markets. Farmer Mac also issues debt obligations to obtain funds to finance its transaction costs and its obligations under guarantees and LTSPCs. Farmer Mac's debt obligations include discount notes and fixed and floating rate medium-term notes, including callable notes, all of which are unsecured general obligations of Farmer Mac. Discount notes have original maturities of 1 year or less. Medium-term notes generally have maturities of 6 months to 15 years.

The interest and principal on Farmer Mac's debt obligations are not guaranteed by, and do not constitute debts or obligations of, FCA, the United States, or any agency or instrumentality of the United States other than Farmer Mac. Farmer Mac is an institution of the FCS but is not liable for any debt or obligation of any other institution of the FCS. Likewise, neither the FCS nor any other individual institution of the FCS is liable for any debt or obligation of Farmer Mac. Income to the purchaser of a Farmer Mac discount note or medium-term note is not exempt under federal law from federal, state, or local taxation. Farmer Mac's discount notes and medium-term notes are not currently rated by an NRSRO.

Farmer Mac's board of directors has authorized the issuance of up to \$20.0 billion of discount notes and medium-term notes (of which \$16.2 billion was outstanding as of December 31, 2018), subject to periodic review of the adequacy of that level relative to Farmer Mac's borrowing needs. Farmer Mac invests the proceeds of its debt issuances in loan purchases, Farmer Mac Guaranteed Securities, and liquidity investment assets in accordance with policies established by its board of directors that comply with FCA's Liquidity and Investment Regulations, which establish limitations on asset class, dollar amount, issuer concentration, and credit quality. Farmer Mac's regular debt issuance supports its access to the capital markets, and Farmer Mac's liquidity investment assets provide an alternative source of funds should market conditions be unfavorable. Farmer Mac's current policies authorize liquidity investments in:

- obligations of or fully guaranteed by the United States or a U.S. government agency;
- obligations of or fully guaranteed by GSEs;
- municipal securities;
- international and multilateral development bank obligations;
- money market instruments;
- diversified investment funds;
- asset-backed securities;
- corporate debt securities; and
- mortgage-backed securities.

For more information about the Liquidity and Investment Regulations, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Credit Risk – Other Investments." For more information about Farmer Mac's outstanding investments and indebtedness, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Balance Sheet Review" and Note 4 and Note 7 to the consolidated financial statements.

Equity Issuance

Farmer Mac's charter authorizes Farmer Mac to issue voting common stock, non-voting common stock, and non-voting preferred stock. Farmer Mac may obtain additional capital from future issuances of voting and non-voting common stock and non-voting preferred stock.

Common Stock

Only banks, other financial entities, insurance companies, and institutions of the FCS may hold voting common stock. No holder of Class A voting common stock may directly or indirectly be a beneficial owner of more than 33% of the outstanding shares of Class A voting common stock. There are no restrictions on the maximum number or percentage of outstanding shares of Class B voting common stock that may be held by an eligible stockholder. No ownership restrictions apply to Class C non-voting common stock, and those securities are freely transferable.

The dividend rights of all three classes of Farmer Mac's common stock are the same, and dividends may be paid on common stock only when, as, and if declared by Farmer Mac's board of directors in its sole discretion, subject to compliance with applicable capital requirements and the payment of dividends on outstanding preferred stock. Upon liquidation, dissolution, or winding up of the business of Farmer Mac, after payment and provision for payment of outstanding debt of Farmer Mac, the holders of shares of preferred stock would be paid at par value out of assets available for distribution, plus all declared and unpaid dividends, before the holders of shares of common stock received any payment.

As of December 31, 2018, the following shares of Farmer Mac common stock were outstanding:

- 1,030,780 shares of Class A voting common stock;
- 500,301 shares of Class B voting common stock; and
- 9,137,550 shares of Class C non-voting common stock.

Farmer Mac's board of directors approved a share repurchase program during third quarter 2015 authorizing Farmer Mac to repurchase up to \$25.0 million of its outstanding Class C non-voting common stock for two years. In August 2017, Farmer Mac's board of directors approved the continuation of the share repurchase program on its existing terms through August 2019 for the repurchase of up to \$5.4 million of Farmer Mac's outstanding Class C non-voting common stock. This is the amount that was remaining under the share repurchase program that Farmer Mac's board of directors originally authorized in third quarter 2015 for the repurchase of up to \$25 million of outstanding Class C non-voting common stock. Farmer Mac did not repurchase any shares during 2018 or 2017 under this program. As of December 31, 2018 and December 31, 2017, Farmer Mac had repurchased approximately 668,000 shares of Class C non-voting common stock at a cost of approximately \$19.6 million under the share repurchase program.

The following table presents the dividends declared on Farmer Mac's common stock during and after 2018:

Date Dividend Declared	Per Share Amount	For Holders Of Record As Of	Date Paid
February 28, 2018	\$0.58	March 19, 2018	March 30, 2018
May 2, 2018	\$0.58	June 15, 2018	June 29, 2018
August 2, 2018	\$0.58	September 14, 2018	September 28, 2018
October 31, 2018	\$0.58	December 14, 2018	December 31, 2018
February 19, 2019	\$0.70	March 15, 2019	*

* The dividend declared on February 19, 2019 is scheduled to be paid on March 29, 2019.

Farmer Mac's ability to declare and pay common stock dividends could be restricted if it were to fail to comply with applicable capital requirements. See Note 9 to the consolidated financial statements and "Business—Government Regulation of Farmer Mac—Capital Standards."

Preferred Stock

No ownership restrictions apply to any preferred stock issued by Farmer Mac, and those securities are freely transferable. As of December 31, 2018, the following shares of Farmer Mac preferred stock were outstanding:

- 2,400,000 shares of Series A Preferred Stock, all of which were issued on January 17, 2013;
- 3,000,000 shares of Series B Preferred Stock, all of which were issued on March 25, 2014; and
- 3,000,000 shares of Series C Preferred Stock, all of which were issued on June 20, 2014.

The Series A Preferred Stock, Series B Preferred Stock, and Series C Preferred Stock (collectively referred to as the "Outstanding Preferred Stock") each has a par value of \$25.00 per share and an initial liquidation preference of \$25.00 per share. Farmer Mac incurred direct costs of \$1.7 million related to the issuance of the Series A Preferred Stock, direct costs of \$1.9 million related to the issuance of the Series B Preferred Stock, and direct costs of \$1.6 million related to the issuance of the Series C Preferred Stock. Since each of their respective issuances, Farmer Mac has not issued any additional shares of any series of Outstanding Preferred Stock. Each series of Outstanding Preferred Stock ranks senior to Farmer Mac's outstanding Class A voting common stock, Class B voting common stock, Class C non-voting common stock, and any other common stock of Farmer Mac issues in the future.

The Series A Preferred Stock and the Series B Preferred Stock pay an annual dividend rate fixed at 5.875% and 6.875%, respectively, for the life of the securities. The Series C Preferred Stock pays an annual dividend rate of 6.000% from the date of issuance to and including the quarterly payment date on July 17, 2024 and thereafter at a floating rate equal to three-month LIBOR plus 3.260%. Dividends on all series of Outstanding Preferred Stock are non-cumulative, so if the board of directors has not declared a dividend before the applicable dividend payment date for any dividend period, the dividend will not be paid or cumulate, and Farmer Mac will not be obligated to pay dividends for that dividend period, whether or not dividends on any series of Outstanding Preferred Stock are declared for any future dividend period. Farmer Mac may pay dividends on the Outstanding Preferred Stock without paying dividends on any class or series of stock Farmer Mac may issue in the future that ranks junior to the Outstanding Preferred Stock.

The Series A Preferred Stock, Series B Preferred Stock, and Series C Preferred Stock rank equally with each other and will rank equally with any other class or series of stock Farmer Mac may issue in the future of equal priority as to dividends and upon liquidation. Farmer Mac has the right, but not the obligation, to redeem some or all of the issued and outstanding shares of Series A Preferred Stock on and any time after January 17, 2018, the Series B Preferred Stock on and any time after April 17, 2019, and the Series C Preferred Stock on and any time after July 18, 2024, all at a price equal to the then-applicable liquidation preference. The Outstanding Preferred Stock is considered Tier 1 capital for Farmer Mac. For more information on Farmer Mac's capital requirements, see "Business—Government Regulation of Farmer Mac—Capital Standards."

The following table presents the dividends declared and paid on Series A Preferred Stock during and after 2018:

Date Dividend Declared	Per Share Amount	For Period Beginning	For Period Ending	Date Paid
February 28, 2018	\$0.3672	January 18, 2018	April 17, 2018	April 17, 2018
May 2, 2018	\$0.3672	April 18, 2018	July 17, 2018	July 17, 2018
August 2, 2018	\$0.3672	July 18, 2018	October 17, 2018	October 17, 2018
October 31, 2018	\$0.3672	October 18, 2018	January 17, 2019	January 17, 2019
February 19, 2019	\$0.3672	January 18, 2019	April 17, 2019	*

* The dividend declared on February 19, 2019 is scheduled to be paid on April 17, 2019.

The following table presents the dividends declared and paid on Series B Preferred Stock during and after 2018:

Date Dividend Declared	Per Share Amount	For Period Beginning	For Period Ending	Date Paid
February 28, 2018	\$0.4297	January 18, 2018	April 17, 2018	April 17, 2018
May 2, 2018	\$0.4297	April 18, 2018	July 17, 2018	July 17, 2018
August 2, 2018	\$0.4297	July 18, 2018	October 17, 2018	October 17, 2018
October 31, 2018	\$0.4297	October 18, 2018	January 17, 2019	January 17, 2019
February 19, 2019	\$0.4297	January 18, 2019	April 17, 2019	*

* The dividend declared on February 19, 2019 is scheduled to be paid on April 17, 2019.

The following table presents the dividends declared and paid on Series C Preferred Stock during and after 2018:

Date Dividend Declared	Per Share Amount	For Period Beginning	For Period Ending	Date Paid
February 28, 2018	\$0.3750	January 18, 2018	April 17, 2018	April 17, 2018
May 2, 2018	\$0.3750	April 18, 2018	July 17, 2018	July 17, 2018
August 2, 2018	\$0.3750	July 18, 2018	October 17, 2018	October 17, 2018
October 31, 2018	\$0.3750	October 18, 2018	January 17, 2019	January 17, 2019
February 19, 2019	\$0.3750	January 18, 2019	April 17, 2019	*

* The dividend declared on February 19, 2019 is scheduled to be paid on April 17, 2019.

FARMER MAC'S AUTHORITY TO BORROW FROM THE U.S. TREASURY

Farmer Mac is authorized to borrow up to \$1.5 billion from the U.S. Treasury through the issuance of debt obligations to the U.S. Treasury. Any funds borrowed from the U.S. Treasury may be used solely for the purpose of fulfilling Farmer Mac's guarantee obligations. Farmer Mac's charter provides that the U.S. Treasury is required to purchase Farmer Mac's debt obligations up to the authorized limit if Farmer Mac certifies that:

a portion of the guarantee fees assessed by Farmer Mac has been set aside as a reserve against losses arising out of Farmer Mac's guarantee activities in an amount determined by Farmer Mac's board of directors to be necessary and such reserve has been exhausted (that amount was \$80.8 million as of December 31, 2018); and
the proceeds of such obligations are needed to fulfill Farmer Mac's guarantee obligations.

Any debt obligations issued by Farmer Mac under this authority would bear interest at a rate determined by the U.S. Treasury, taking into consideration the average rate on outstanding marketable obligations of the United States as of the last day of the last calendar month ending before the date of the purchase of the obligations from Farmer Mac. Farmer Mac would be required to repurchase any of its debt obligations held by the U.S. Treasury within a "reasonable time." As of December 31, 2018, Farmer Mac had not used this borrowing authority and does not expect to use this borrowing authority in the future.

The United States government does not guarantee payments due on Farmer Mac Guaranteed Securities, funds invested in the equity or debt securities of Farmer Mac, any dividend payments on shares of Farmer Mac stock, or the profitability of Farmer Mac.

GOVERNMENT REGULATION OF FARMER MAC

General

Farmer Mac was created by federal statute in 1988 in the aftermath of the collapse of the agricultural credit delivery system. Farmer Mac's primary committees of jurisdiction in Congress – the Committee on Agriculture of the U.S. House of Representatives and the U.S. Senate Committee on Agriculture, Nutrition and Forestry – added requirements for Farmer Mac that had not been included in any of the other statutes establishing other GSEs. Unlike the other existing GSEs at the time, Farmer Mac was required to be regulated by an independent regulator, FCA, which has the authority to regulate Farmer Mac's safety and soundness. The statute creating Farmer Mac expressly requires that eligible Farm & Ranch loans meet minimum credit and appraisal standards that represent sound loans to profitable businesses. The enabling legislation also did not contain a specific federal securities law exemption as had been given to the housing GSEs, which had the effect of requiring Farmer Mac to comply with the periodic reporting requirements of the SEC, including filing annual and quarterly reports on the financial status of Farmer Mac and current reports when there are significant developments. Farmer Mac's charter also requires offerings of Farmer Mac Guaranteed Securities to be registered under the Securities Act of 1933 and related regulations (collectively, the "Securities Act"), unless an exemption for an offering is available that is not based on Farmer Mac's status as an instrumentality of the United States.

Since Farmer Mac's creation, Congress has amended Farmer Mac's charter five times:

- in 1990 to create the USDA Guarantees line of business;
- in 1991 to clarify Farmer Mac's authority to purchase its guaranteed securities, establish OSMO as Farmer Mac's financial regulator, and set minimum regulatory capital requirements for Farmer Mac;
- in 1996 to remove certain barriers to and restrictions on Farmer Mac's operations to be more competitive (e.g., allowing Farmer Mac to buy loans directly from lenders and issue guaranteed securities representing 100% of the principal of the purchased loans and modifying capital requirements);
- in 2008 to authorize Farmer Mac to purchase, and guarantee securities backed by, loans or interests in loans by lenders organized as cooperatives to borrowers to finance electrification and telecommunications systems in rural areas; and
- in 2018 to expand the acreage exception to the Farm & Ranch loan amount limitation from 1,000 acres to 2,000 acres, subject to FCA's feasibility assessment, and to repeal obsolete provisions and make technical corrections.

Farmer Mac's authorities and regulatory structure were not revised by legislation adopted in 2008 to regulate other GSEs.

Office of Secondary Market Oversight (OSMO)

As an institution of the FCS, Farmer Mac (including its subsidiaries) is subject to the regulatory authority of FCA. Farmer Mac's charter assigns to FCA, acting through OSMO within FCA, the responsibility for the examination of Farmer Mac and the general supervision of the safe and sound performance of the powers, functions, and duties vested in Farmer Mac by its charter. The charter also authorizes FCA, acting through OSMO, to apply its general enforcement powers to Farmer Mac. Farmer Mac (including its subsidiaries) is the only entity regulated by OSMO, which was created as a separate office in recognition of the different role that Farmer Mac plays in providing a secondary market, as compared to the roles of other FCS institutions as primary lenders. The Director of OSMO is selected by and reports to the FCA board.

Farmer Mac's charter requires an annual examination of the financial transactions of Farmer Mac and authorizes FCA to assess Farmer Mac for the cost of its regulatory activities, including the cost of any examination. Each year, OSMO conducts an examination of Farmer Mac to evaluate its safety and soundness, compliance with applicable laws and regulations, and mission achievement. The examination includes a review of Farmer Mac's capital adequacy, asset quality, management performance, earnings, liquidity, and sensitivity to interest rate risk. OSMO may also conduct additional oversight and examination activities unrelated to its annual examination of Farmer Mac at any other time it determines necessary. Farmer Mac is also required to file quarterly reports of condition with FCA.

Capital Standards

General Requirements. Farmer Mac's charter establishes three capital standards for Farmer Mac:

Statutory minimum capital requirement. Farmer Mac's minimum capital level is an amount of core capital (stockholders' equity less accumulated other comprehensive income) equal to the sum of 2.75% of Farmer Mac's aggregate on-balance sheet assets, as calculated for regulatory purposes, plus 0.75% of Farmer Mac's aggregate off-balance sheet obligations, specifically including:

the unpaid principal balance of outstanding Farmer Mac Guaranteed Securities;
instruments issued or guaranteed by Farmer Mac that are substantially equivalent to Farmer Mac Guaranteed Securities, including LTSPCs; and
other off-balance sheet obligations of Farmer Mac.

Statutory critical capital requirement. Farmer Mac's critical capital level is an amount of core capital equal to 50% of the total minimum capital requirement at that time.

Risk-based capital. The charter directs FCA to establish a risk-based capital stress test for Farmer Mac, using specified stress-test parameters.

Farmer Mac must comply with the higher of the minimum capital requirement and the risk-based capital requirement.

The risk-based capital stress test promulgated by FCA is intended to determine the amount of regulatory capital (core capital plus the allowance for losses) that Farmer Mac would need to maintain positive capital during a ten-year period in which:

annual losses occur at a rate of default and severity "reasonably related" to the rates of the highest sequential two years in a limited U.S. geographic area; and
interest rates are shocked by the lesser of 600 basis points or 50% of the ten-year U.S. Treasury rate, and interest rates remain at such level for the remainder of the period.

The risk-based capital stress test then adds an additional 30% to the resulting capital requirement for management and operational risk.

As of December 31, 2018, Farmer Mac's statutory minimum and critical capital requirements were \$545.0 million and \$272.5 million, respectively, and its actual core capital level was \$727.6 million, which is \$182.6 million above the statutory minimum capital requirement and \$455.1 million above the statutory critical capital requirement. Based on the risk-based capital stress test, Farmer Mac's risk-based capital requirement as of December 31, 2018 was \$119.0 million and Farmer Mac's regulatory capital of \$736.8 million exceeded that amount by approximately \$617.8 million. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources—Capital Requirements" for a presentation of Farmer Mac's current regulatory capital position.

Enforcement Levels. Farmer Mac's charter directs FCA to classify Farmer Mac within one of four enforcement levels to determine compliance with the capital standards established by Farmer Mac's charter. As of December 31, 2018, Farmer Mac was classified as within level I – the highest compliance level.

Failure to comply with the applicable required capital level in the charter would result in Farmer Mac being classified as within level II (below the applicable risk-based capital level, but above the minimum capital level), level III (below the minimum capital level, but above the critical capital level) or level IV (below the critical capital level). If Farmer Mac were classified as within level II, III or IV, the charter requires the Director of OSMO to take specified mandatory supervisory measures and provides the Director with discretionary authority to take various optional supervisory measures depending on the level in which Farmer Mac is classified. The mandatory measures applicable to level II and level III include:

- requiring Farmer Mac to submit and comply with a capital restoration plan;
 - prohibiting the payment of dividends if the payment would result in Farmer Mac being reclassified as within a lower level and requiring the pre-approval of any dividend payment even if the payment would not result in reclassification as within level IV; and
- reclassifying Farmer Mac as within one level lower if it does not submit a capital restoration plan that is approved by the Director, or the Director determines that Farmer Mac has failed to make, in good faith, reasonable efforts to comply with such a plan and fulfill the schedule for the plan approved by the Director.

If Farmer Mac were classified as within level III, then, in addition to the mandatory supervisory measures described above, the Director of OSMO could take any of the following discretionary supervisory measures:

- imposing limits on any increase in, or ordering the reduction of, any obligations of Farmer Mac, including off-balance sheet obligations;
- limiting or prohibiting asset growth or requiring the reduction of assets;
- requiring the acquisition of new capital in an amount sufficient to provide for reclassification as within a higher level;
- terminating, reducing, or modifying any activity the Director determines creates excessive risk to Farmer Mac; or
- appointing a conservator or a receiver for Farmer Mac.

Farmer Mac's charter does not specify any supervisory measures, either mandatory or discretionary, to be taken by the Director if Farmer Mac were classified as within level IV.

The Director of OSMO has the discretionary authority to reclassify Farmer Mac to a level that is one level below its then current level (for example, from level I to level II) if the Director determines that Farmer Mac is engaging in any action not approved by the Director that could result in a rapid depletion of core capital or if the value of property subject to mortgages backing Farmer Mac Guaranteed Securities has decreased significantly.

Capital Adequacy Requirements. Under FCA's rule on capital planning, Farmer Mac must develop and submit to OSMO for approval annually a plan for capital that considers the sources and uses of Farmer Mac's capital, addresses capital projections under stress scenarios, assesses Farmer Mac's overall capital adequacy, and incorporates a Farmer Mac board-approved policy on capital adequacy. In accordance with this regulation, Farmer Mac's board of directors oversees a policy that requires Farmer Mac to maintain an adequate level of "Tier 1" capital, consisting of retained earnings, paid-in-capital, common stock, qualifying preferred stock, and accumulated other comprehensive income allocable to "non-program" investments that are not included in the Farm & Ranch, USDA Guarantees, Rural Utilities, and

Institutional Credit lines of business. Under this policy, Farmer Mac must maintain at all times a Tier 1 capital ratio of at least 7.0% of risk-weighted assets, calculated using an advanced internal ratings based ("AIRB") asset risk weighting regime that is consistent with current Basel-based principles.

The policy also requires Farmer Mac to maintain a "capital conservation buffer" of additional Tier 1 capital of more than 2.5% of risk-weighted assets. If the capital conservation buffer drops to various levels at or below 2.5%, as shown in the table below, the policy requires Farmer Mac to restrict distributions of current quarter Tier 1-eligible dividends and any discretionary bonus payments to an amount not to exceed the corresponding payout percentage specified in the table below, which represents the percentage of the cumulative core earnings for the four quarters immediately preceding the distribution date:

Capital Conservation Buffer (percentage of risk-weighted assets)	Payout Percentage (percentage of four quarters' accumulated core earnings)
greater than 2.5%	No limitation
greater than 1.875% to and including 2.5%	60%
greater than 1.25% to and including 1.875%	40%
greater than 0.625% to and including 1.25%	20%
equal to or less than 0.625%	0% (no payout permitted)

These distribution restrictions will remain for so long as the Tier 1 capital conservation buffer remains at or below the minimum level of 2.5%, and Farmer Mac's board of directors may consider other factors, such as earnings presented in accordance with generally accepted accounting principles in the United States ("GAAP") and other regulatory requirements, in determining whether to restrict capital distributions, including dividends and bonus payments. As of December 31, 2018, Farmer Mac's Tier 1 capital ratio was 13.4%. The calculation of Farmer Mac's Tier 1 capital ratio does not include certain interest rate risk components of the risk weighting of assets, which reflects the fact that Farmer Mac pursues a match-funding approach to funding its assets and therefore does not bear material interest rate risk in its portfolio. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources—Capital Requirements" for more information on Farmer Mac's Tier 1 capital ratio. Farmer Mac does not expect its compliance on an ongoing basis with FCA's rule on capital planning, including Farmer Mac's policy on Tier 1 capital, to materially affect Farmer Mac's operations or financial condition.

Item 1A. Risk Factors

Farmer Mac's business activities, financial performance, and results of operations are, by their nature, subject to risks and uncertainties, including those related to the agricultural industry, the rural utilities industry, access to the capital markets, the regulatory environment, and the level of prevailing interest rates and overall market conditions. The following risk factors should be considered in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Item 7 of this Annual Report on Form 10-K, including the risks and uncertainties described in the "Forward-Looking Statements" section. Because new risk factors likely will emerge from time to time, management can neither predict all potential risk factors nor assess the effects of those factors on Farmer Mac's business, operating results, and financial condition or how much any factor, or combination of factors,

may affect Farmer Mac's actual results and financial condition. If any of the following risks materialize, Farmer Mac's business, financial condition, and/or results of operations could be materially and adversely affected. Farmer Mac undertakes no obligation to update or revise this risk factor discussion, except as required by law.

Credit Risk

Many factors that are outside of Farmer Mac's or borrowers' control affecting the agricultural industry or the rural utilities industry may negatively affect borrowers' profitability and, as a result, their ability to repay their loans on which Farmer Mac has assumed credit risk, and any widespread repayment shortfalls on these eligible loan assets could have a material adverse effect on Farmer Mac's financial condition, results of operations, liquidity, or capital levels.

External factors or variables beyond Farmer Mac's or borrowers' control that could negatively affect borrowers' profitability, and therefore their repayment capacity, could cause Farmer Mac to experience increased delinquency rates, default rates, and credit losses within its loan portfolio, including, but not limited to:

- severe protracted or sudden adverse weather conditions, natural or environmental disasters or similar or other catastrophic events, wildfires, animal and plant disease outbreaks, restrictions on water supply or changes to sustainable groundwater management practices, limited access to transportation to move agricultural products to markets, or other conditions affecting particular geographic regions or industries;
- volatility in revenues or production expenses as a result of changes in commodity or fuel prices or labor costs or availability within any particular industry;
- fluctuations in currency exchange markets, modifications to U.S. or global trade policies, the imposition of trade sanctions or protectionist measures, customs duties, or tariffs, or changes in the global economy that would reduce export demand for U.S. agricultural products;
- slow or negative domestic or international economic growth, which could reduce demand for U.S. agricultural products;
- adverse changes in interest rates, agricultural land values, or other factors that may affect delinquency levels and credit losses on agricultural real estate mortgage loans;
- legislative or regulatory developments or actions adversely affecting the agricultural industry or the rural utilities industry;
- changes in the general economy that could affect the availability of off-farm sources of income and prices of real estate for borrowers; and
- economic conditions or technological advances that may negatively affect the market for electricity in rural areas and therefore limit the ability of rural electric cooperatives to provide electricity or raise rates to achieve profitable levels.

Farmer Mac's earnings depend significantly on the performance of its loan assets and the spread between the interest, guarantee fees, and commitment fees earned on those assets and interest paid on Farmer Mac's obligations and liabilities. The repayment of loans typically depends on the success of the related farming or rural utilities operation, which, in turn, depends on many variables and factors over which borrowers may have little or no control, including those described above. Farmer Mac assumes the ultimate credit risk of borrower defaults on the agricultural mortgage and rural utilities loans it holds, as well as the loans underlying LTSPCs and non-AgVantage Farmer Mac Guaranteed Securities. Widespread repayment shortfalls on loans in the Farm & Ranch line of business or Rural Utilities line of business could result in

losses on loans held or require Farmer Mac to pay under its guarantees and LTSPCs, which could have a material adverse effect on Farmer Mac's financial condition, results of operations, liquidity, or capital levels.

Concentration in or exposure to a particular commodity type, geographic region, collateral type, business counterparty, borrower, or loan type in Farmer Mac's Farm & Ranch line of business may expose Farmer Mac to credit risk that could materially and adversely affect its business, operating results, and financial condition.

In its Farm & Ranch line of business, Farmer Mac may be subject to credit risk due to concentration in or exposure to a particular commodity type, geographic region, collateral type, business counterparty, borrower, or loan type. Widespread weakening in the financial conditions of borrowers within a particular geographic region or commodity type could negatively impact Farmer Mac's financial condition, and Farmer Mac's policies on geographic and commodity concentration may not be sufficient. Loans to borrowers in certain commodity groups or geographic regions that have had historically higher delinquency rates or credit losses relative to Farmer Mac's overall portfolio may present a higher risk of delinquency or credit losses in future periods. Also, if Farmer Mac's portfolio is not sufficiently diversified by geographic region or commodity type, then a tightening in trade policies or a prolonged trade dispute adversely affecting the demand and pricing for certain U.S. agricultural exports could negatively impact Farmer Mac's financial condition to the extent that affected borrowers do not receive offsetting relief, cannot access other sources of liquidity for loan repayment, or are unable to adapt operations or switch to commodity groups that are not affected. Farmer Mac's credit risk may also increase as a result of its exposure to loans that are adversely affected by a decline in the sale value of the underlying collateral, which can vary based on several factors, including commodity type, geographic region, and the degree to which the collateral is single-use or highly improved. Specifically, the degree to which the collateral for a commodity group is single-use or highly improved, such as for permanent plantings, agricultural storage or processing facilities, or certain livestock facilities, may be a significant determinant of the probability of ultimate losses on a given loan because producers requiring such highly improved collateral are less able to adapt their operations or switch commodity groups when faced with adverse conditions. For example, as of December 31, 2018, loans to borrowers in the Agricultural Storage and Processing category comprised 1.2% of the Farm & Ranch portfolio, but cumulative net credit losses for this category comprised 47.2% of the cumulative net credit losses for all categories. Widespread deterioration in collateral values, resulting in the undercollateralization of the related loans, could have a material adverse effect on Farmer Mac's financial condition, results of operations, liquidity, or capital levels.

The default of any particular business counterparty could negatively impact Farmer Mac's financial condition, and Farmer Mac's processes to monitor counterparty credit exposure may not be sufficient. Also, while Farmer Mac's Farm & Ranch portfolio consists of loans varying in size and by borrower, the average size of loans purchased by Farmer Mac has increased and includes several large exposures with large borrowers. The default of any one of these borrowers could also negatively impact Farmer Mac's financial condition. Farmer Mac may also be subject to credit risk as a result of its exposure to loans with balloon payments at maturity if the borrower seeks to refinance but is unable to do so. As of December 31, 2018, 65.8% of the loans in the Farm & Ranch line of business included balloon payments. Too much concentration in or exposure to a particular commodity type, geographic region, collateral type, business counterparty, borrower, or loan type could materially and adversely affect Farmer Mac's business, operating results, and financial condition.

The profitability of and repayment by rural utilities operations on loans on which Farmer Mac has assumed credit risk in its Rural Utilities line of business may be adversely affected by a variety of factors, which could have a material adverse effect on Farmer Mac's financial condition, results of operations, liquidity, or capital levels.

In the Rural Utilities line of business, eligible utilities operations include the distribution of electricity, the generation and transmission of electricity, and telecommunications. Repayment of eligible loans in this line of business could be affected by several factors. Although each type of utilities operation has different inherent risks associated with it, all of them could be potentially affected by changes in public and regulatory policies. Electrical distribution and generation cooperatives can also be adversely affected by changes in fuel costs and prices received from consumers, contractual power obligations that do not match up with supply or demand, and technological advances and innovation in the power industry, including a shift towards renewable energy, that negatively alters the supply and demand dynamics for power. Business cash flows can also be disrupted as a result of storms, although distribution cooperatives have in place cost-sharing arrangements with providers in other regions that mitigate this exposure. Historically, natural disasters have often resulted in disaster area declarations and financial aid to utilities providers through the Federal Emergency Management Agency and other conduits, although there can be no assurance that any such aid would be available in the event of any future natural disaster. If Farmer Mac purchases telecommunications loans in the future, the depth and pace of technological change in the telecommunications industry can also provide significant challenges, as the industry requires heavy capital investment and correct judgments about the sustainability of new technologies in an area with many competitors. If any of the factors described above negatively impacts the cash flows or financial condition of utilities operations that are borrowers on loans in Farmer Mac's Rural Utilities portfolio, Farmer Mac's financial condition, results of operations, liquidity, or capital levels could be adversely affected.

Farmer Mac Guaranteed Securities and LTSPCs expose Farmer Mac to significant contingent liabilities, and Farmer Mac's ability to fulfill its obligations under its guarantees and LTSPCs may be limited.

Farmer Mac's guarantee and purchase commitment obligations to third parties, including Farmer Mac Guaranteed Securities and LTSPCs, are obligations of Farmer Mac only and are not backed by the full faith and credit of the United States, FCA, or any other agency or instrumentality of the United States other than Farmer Mac. As of December 31, 2018, Farmer Mac had \$4.0 billion of contingent liabilities related to Farmer Mac Guaranteed Securities and LTSPCs issued to third parties, which represents Farmer Mac's exposure if all loans underlying these guarantees and LTSPCs defaulted and Farmer Mac recovered no value from the related collateral. Farmer Mac's principal sources of funds for payments on all of its liabilities, including claims that may arise under its guarantees and LTSPCs, are the liquid assets held by Farmer Mac (including cash and cash equivalents), guarantee and commitment fees, interest payments on assets held by Farmer Mac, loan repayments, repayment of principal amounts due upon maturity of AgVantage securities, and proceeds from the issuance of debt securities. If all of the loans underlying Farmer Mac's guarantees and LTSPCs defaulted and Farmer Mac recovered no value from the related collateral, the funds for payment on these guarantees and LTSPCs could be substantially less than the aggregate amount of the corresponding liabilities. It is difficult to quantify at any particular time the funds that would be available from interest payments, loan repayments, and maturing AgVantage securities for payment on Farmer Mac's guarantees and LTSPCs, and Farmer Mac's ability to issue debt as a source of repayment would be subject to its ability to access the debt markets and market conditions at that time. As of December 31, 2018, Farmer Mac held cash, cash equivalents, and other investment securities with a fair

value of \$2.7 billion that could be used as a source of funds for payment on its obligations. Although Farmer Mac believes that it remains well-collateralized on the assets underlying its guarantee and purchase commitment obligations to third parties and that the estimated probable losses for these obligations remain low relative to the amount available for payment of claims on these obligations, Farmer Mac's total contingent liabilities for these obligations exceed the amount it may have available for payment of claims on these obligations. See "Management's Discussion and Analysis—Risk Management—Credit Risk – Loans and Guarantees" for more information on Farmer Mac's management of credit risk.

Farmer Mac is exposed to counterparty credit risk on AgVantage securities that could materially and adversely affect its business, operating results, and financial condition.

Farmer Mac is exposed to credit risk from issuers of AgVantage securities. Each AgVantage security is a general obligation of an issuing institution secured by eligible loans in an amount at least equal to the outstanding principal amount of the security and guaranteed by Farmer Mac. Most of Farmer Mac's AgVantage exposure is concentrated in a small number of issuers. As of December 31, 2018, \$7.7 billion of the \$8.4 billion of AgVantage securities outstanding had been issued by three counterparties. A default by any of these counterparties could have a significant adverse effect on Farmer Mac's business, operating results, and financial condition. Farmer Mac seeks to manage its risk to AgVantage counterparties by reviewing each institution for which Farmer Mac has AgVantage exposure and requiring those institutions to meet Farmer Mac's standards for creditworthiness. For AgVantage securities secured by Farm & Ranch loans, Farmer Mac also requires some level of overcollateralization (currently between 103% and 125% of the principal amount of the securities issued) and, in some cases, compliance by the counterparty with specified financial covenants for the life of the related AgVantage securities. Specifically, some issuing institutions and smaller financial counterparties that use Farmer Mac's AgVantage or Farm Equity AgVantage products may not be considered as creditworthy as Farmer Mac's other counterparties issuing AgVantage securities. Therefore, these issuing institutions and smaller financial counterparties are subject to significantly higher overcollateralization requirements (currently between 120% and 125% of the principal amount of the securities issued) and must comply with specified financial covenants for the life of the related AgVantage securities.

Farmer Mac is exposed to counterparty credit risk on its investment securities that could materially and adversely affect its business, operating results, and financial condition.

Farmer Mac maintains an investment portfolio that can be drawn upon for liquidity needs. In addition to cash and cash equivalents (such as U.S. Treasury securities and short-term money market instruments), this portfolio consists of investment securities, including securities guaranteed by U.S. Government agencies and GSEs and asset-backed securities principally backed by U.S. Government-guaranteed student loans, including auction rate certificates. Although some of Farmer Mac's investment securities do not qualify for liquidity purposes under FCA's regulatory requirements, they still may be drawn upon for Farmer Mac's liquidity needs. Farmer Mac regularly reviews concentration limits to ensure that its investments are appropriately diversified and comply with policies approved by Farmer Mac's board of directors and with applicable FCA regulations, but Farmer Mac is still exposed to credit risk from issuers of the investment securities it holds. For example, as of December 31, 2018, Farmer Mac held at fair value, as part of its liquidity investment portfolio, \$32.7 million of asset-backed securities principally backed by U.S. Government-guaranteed student loans (including \$18.7 million of auction-rate certificates) and \$1.0 billion of investment securities guaranteed by GSEs. A default by multiple issuers of investment securities held by Farmer Mac, or by a single issuer of investment securities in which Farmer Mac is more

heavily concentrated, could have an adverse effect on Farmer Mac's business, operating results, and financial condition.

Farmer Mac is exposed to swap counterparty credit risk on both its cleared and non-cleared swaps transactions that could materially and adversely affect its business, operating results, and financial condition.

Farmer Mac relies on interest rate swap contracts and hedging arrangements to effectively manage its interest rate risk. Farmer Mac clears a significant portion of its interest rate swaps through a swap clearinghouse through which centrally-cleared derivatives and futures contracts are traded, and posts initial and variation margin to this clearinghouse. These collateral postings expose Farmer Mac to institutional credit risk if either the clearinghouse or the futures commission merchant that Farmer Mac uses to post collateral to the clearinghouse fails to meet its obligations. Conversely, the use of centrally-cleared derivatives mitigates Farmer Mac's credit risk to individual counterparties because clearinghouses assume the credit risk among counterparties in centrally-cleared derivatives transactions. However, if either the clearinghouse or the futures commission merchant that Farmer Mac uses to post collateral to the clearinghouse fails to meet its obligations, Farmer Mac could face challenges in accessing its posted collateral, which could materially and adversely affect its business, operating results, and financial condition.

A portion of Farmer Mac's interest rate swap contracts are not cleared through swap clearinghouses, which creates swap counterparty credit risk on those non-cleared swaps transactions. In managing this risk, Farmer Mac contracts only with counterparties that have investment grade credit ratings, establishes and maintains minimum threshold collateral requirements that are scaled based on credit ratings (for non-cleared swaps transactions entered into before March 2017), and enters into netting agreements. Also, new rules that became effective in March 2017 establish zero threshold requirements for the exchange of variation margin between Farmer Mac and its swap dealer counterparties in non-cleared swaps transactions entered into following the effective date. However, failure to perform under a non-cleared derivatives contract by one or more of Farmer Mac's counterparties could disrupt Farmer Mac's hedging operations, particularly if Farmer Mac were entitled to a termination payment under the contract that it did not receive, or if Farmer Mac were unable to reposition the swap with a new counterparty. Of the \$9.9 billion combined notional amount of Farmer Mac's interest rate swaps as of December 31, 2018, \$1.4 billion were not cleared through swap clearinghouses. As of December 31, 2018, Farmer Mac's credit exposure to interest rate swap counterparties was \$51.3 million excluding netting arrangements and \$3.1 million including netting arrangements.

Strategic/Business Risk

Farmer Mac's business, operating results, financial condition, and capital levels may be materially and adversely affected by external factors that may affect the price or marketability of Farmer Mac's products or Farmer Mac's ability to offer its products and services.

Farmer Mac's business, operating results, financial condition, and capital levels may be materially and adversely affected by external factors that may affect the price or marketability of Farmer Mac's products and services or Farmer Mac's ability to offer its products and services, including, but not limited to:

disruptions in the capital markets, which could adversely affect the value and performance of Farmer Mac's eligible loan assets and investment securities, liquidity position, and ability to access funding at favorable levels or to raise capital;

- competitive pressures in the purchase of loans eligible for Farmer Mac's lines of business and in the sale of Farmer Mac Guaranteed Securities and debt securities;
- changes in interest rates that may increase the basis risk of Farmer Mac's hedging instruments and thus increase its funding costs;
- the perception of existing or prospective investors or customers of Farmer Mac's reputation in the marketplace; and legislative or regulatory developments or interpretations of Farmer Mac's statutory charter that could adversely affect Farmer Mac or its ability to offer new products, adversely affect the ability or motivation of certain lenders to participate in Farmer Mac's lines of business or the terms of any such participation, or increase the cost of related corporate activities.

An inability to access the equity and debt capital markets could have a material adverse effect on Farmer Mac's business, operating results, financial condition, liquidity, and capital levels.

Farmer Mac's ability to operate its business, meet its obligations, generate asset volume growth, and fulfill its statutory mission depends on Farmer Mac's capacity to remain adequately capitalized through the issuance of equity securities and to issue substantial amounts of debt frequently and at favorable rates. The issuance of equity and debt securities in the U.S. financial markets are the primary sources of Farmer Mac's capitalization and funding for Farmer Mac's purchases of eligible loan assets and liquidity investment assets and for repaying or refinancing existing debt. Moreover, one of the primary sources of Farmer Mac's revenue is the net interest income earned from the difference, or "spread," between the return received on assets held and the related borrowing costs. Farmer Mac's ability to obtain funds through the issuance of equity and debt securities, at favorable rates and terms, depends on many factors, including:

- Farmer Mac's corporate structure established by its charter, including its status as a government-sponsored enterprise, or GSE, and perceptions about the viability of stockholder-owned GSEs in general;
- compliance with applicable statutory, regulatory, and board-approved capital requirements and any measures imposed by Farmer Mac's regulator or board of directors if Farmer Mac failed to comply with those requirements;
- Farmer Mac's financial results and changes in its financial condition;
- public perception of the risks to, and stability and financial prospects of, Farmer Mac's business;
- prevailing conditions in the capital markets;
- lack of a public debt rating may reduce demand for Farmer Mac's debt securities;
- competition from other issuers of GSE equity or debt; and
- legislative or regulatory actions relating to Farmer Mac's business, including any actions that would affect Farmer Mac's GSE status.

Farmer Mac's business development, profitability, and capital depend on the continued growth of the secondary market for agricultural real estate mortgage loans and for rural utilities loans, which may be constrained by many factors.

Continued growth in Farmer Mac's business and future profitability may be constrained by conditions that limit the need or ability for lenders to obtain the benefits of the secondary market provided by Farmer Mac, including, but not limited to:

- reduced growth rates in the eligible agricultural mortgage market caused by prevailing conditions in the overall and agricultural economy;
- an increase in capital levels or the availability of other sources of capital for customers of Farmer Mac;
- a slowdown in the issuance of new guarantees by the USDA under the Consolidated Farm and Rural Development Act;
- increased acceptance by Federal Home Loan Banks of agricultural real estate mortgage loans as collateral;
- the extent to which agricultural lending institutions retain loans in their portfolios rather than sell them into the secondary market;
- the small number of business partners that currently provide a significant portion of Farmer Mac's business volume, resulting in vulnerability as existing business volume pays down or matures and the status of these business partners evolves; and
- expanded funding alternatives available to rural utilities cooperatives.

For example, during the federal government fiscal year 2018, the USDA processed 8,375 guaranteed loans compared to 9,604 loans during the federal government fiscal year 2017, which reflects a year-over-year decrease of 13% in the issuance of new guarantees by the USDA under the Consolidated Farm and Rural Development Act. If this slowdown continues, or if it is further exacerbated by the U.S. federal government shutdown that lasted for several weeks in early 2019 or any future shutdowns, then Farmer Mac could experience a decrease in new business volume in its USDA Guarantees line of business in the future.

The failure of an issuer to pay the outstanding principal amount or to issue new AgVantage securities upon the maturity of outstanding AgVantage securities could negatively affect Farmer Mac's liquidity position and income.

As of December 31, 2018, Farmer Mac had \$8.4 billion of AgVantage securities outstanding, of which \$1.4 billion and \$1.3 billion will be maturing in 2019 and 2020, respectively. Farmer Mac guarantees the timely payment of principal and interest on AgVantage securities and may retain AgVantage securities in its portfolio or sell them to third parties in the capital markets as Farmer Mac Guaranteed Securities. The terms of most AgVantage securities do not require the periodic payment of principal based on amortization schedules and instead have fixed maturity dates when the secured general obligation is due. If the issuer of a maturing AgVantage security defaults and does not pay the outstanding principal amount due upon maturity, Farmer Mac's liquidity position could be negatively affected because Farmer Mac will be required to obtain funds in a significant amount to pay the holder of the AgVantage security or, for AgVantage securities owned by Farmer Mac, to pay off the debt securities used to fund the purchase of the AgVantage securities. Farmer Mac's income could also be adversely affected if the issuer of a maturing AgVantage security does not issue new AgVantage securities to replace the maturing securities and Farmer

Mac does not find alternate sources of business, or if the net interest margin earned by Farmer Mac on new AgVantage securities that replace maturing AgVantage securities is lower than the margin earned on the maturing AgVantage securities.

The loss of business from key business counterparties or customers could adversely affect Farmer Mac's business and result in a decrease in its revenues and profits.

Farmer Mac's business and ability to generate revenues and profits largely depends on its ability to purchase eligible loans or place eligible loans under guarantees or LTSPCs. Farmer Mac conducts a significant portion of its business with a small number of business counterparties. This results in vulnerability as existing assets pay down or mature and the status and needs of Farmer Mac's business partners evolve. In 2018, ten institutions generated approximately 67% of loan purchase volume in the Farm & Ranch line of business. As of December 31, 2018, approximately 91.8% of the \$8.4 billion outstanding principal amount of AgVantage securities under Farmer Mac's Institutional Credit line of business were issued by three institutions. As of December 31, 2018, transactions with CFC represented 100% of business volume under Farmer Mac's Rural Utilities line of business since its inception in 2008. Farmer Mac's ability to maintain the current relationships with its business counterparties or customers and the business generated by those business counterparties or customers is significant to Farmer Mac's business. As a result, the loss of business from any one of Farmer Mac's key business counterparties could negatively impact Farmer Mac's revenues and profitability. Furthermore, Farmer Mac may not be able to replace the loss of business of a key business counterparty or customer with alternate sources of business due to limitations on the types of assets eligible for the secondary market provided by Farmer Mac under its charter, which could adversely affect Farmer Mac's business and result in a decrease in its revenues and profits.

Farmer Mac's efforts to balance fulfilling its Congressional mission with providing a return to its stockholders may result in business transactions that involve lower returns or higher risk, which could adversely affect its business, operating results, or financial condition.

Congress created Farmer Mac to provide for a secondary market for agricultural mortgage loans, loans to rural utilities cooperatives, and the guaranteed portions of USDA-guaranteed loans. In pursuing this mission, Farmer Mac's secondary market activities are designed to:

- increase the availability of credit to rural borrowers at stable interest rates;
- provide greater liquidity and lending capacity in extending credit to rural borrowers; and
- provide an arrangement for new lending by facilitating capital market investments in funding for rural borrowers, including funds at fixed rates of interest.

Although Farmer Mac strives to undertake its mission-related activities in a manner consistent with providing an accretive return to Farmer Mac's stockholders, it is possible that these activities may contribute to a lower return to stockholders than if Farmer Mac's sole purpose were to maximize stockholder value. Also, the entities that regulate Farmer Mac could seek to alter or limit Farmer Mac's mission-related activities in the future or limit the investments that provide liquidity for Farmer Mac's mission-related activities. If this were to happen, and Farmer Mac were required to undertake activities involving greater risk to satisfy its Congressional mission or that generate lower returns or limited in the activities it was allowed to undertake, Farmer Mac's business, operating results, or financial condition could be adversely affected.

A few stockholders who own large amounts of Farmer Mac voting common stock may seek to influence Farmer Mac's business, strategy, or board composition, and the interests of these stockholders may differ from the interests of Farmer Mac or other holders of Farmer Mac's common stock.

The ownership of Farmer Mac's two classes of voting common stock is concentrated in a small number of institutions. Approximately 44% of Farmer Mac's Class A voting common stock is held by three financial institutions, with 31% held by one institution. Approximately 97% of Farmer Mac's Class B voting common stock is held by five FCS institutions (two of which are related to each other through a parent-subsidary relationship).

Many holders of Farmer Mac's voting common stock are rural lenders that may compete directly with each other. At times, some of these voting stockholders may also view Farmer Mac as an indirect competitor because Farmer Mac's secondary market activities often provide attractive funding and effective risk management tools that help many lenders compete in the origination of eligible rural loans. As long as Farmer Mac's Class A and Class B voting common stock is highly concentrated in a small number of institutions, there is the potential that these institutions will seek to influence Farmer Mac's business, strategy, or board composition in a way that may not be in the best interests of either Farmer Mac or all other stockholders. Furthermore, the interests of the holders of Farmer Mac's Class A and Class B voting common stock may not be fully aligned with each other or the interests of Farmer Mac's Class C non-voting common stockholders, and this could lead to a strategy that is not in the best interests of Farmer Mac or all of its stockholders. The holders of Farmer Mac's Class A voting common stock and the holders of Farmer Mac's Class B voting common stock each have the right to elect one-third of the membership of Farmer Mac's board of directors. As a result, each of these stockholder classes could significantly influence Farmer Mac's business, strategy, and board composition in a way that may not be in the best interests of all stockholders.

Changes in Farmer Mac's board of directors could adversely affect its business, operations, and strategy.

Farmer Mac's charter prescribes that its board of directors consist of fifteen members. Five members are elected by holders of Farmer Mac's Class A voting common stock, five members are elected by holders of Farmer Mac's Class B voting common stock, and five members are appointed by the President of the United States with the advice and consent of the United States Senate. The holders of Farmer Mac's Class A voting common stock and of Farmer Mac's Class B voting common stock each elect one-third of the membership of Farmer Mac's board of directors annually. Farmer Mac's Presidentially-appointed members serve at the pleasure of the President of the United States and therefore could be replaced at any time. If, as a result of annual elections or new Presidential appointments to the board, Farmer Mac were to experience a significant turnover in the membership of its board of directors within a short time, Farmer Mac's business, operations, and strategy could be negatively affected. If several newly elected or appointed directors are not able to become proficient quickly in Farmer Mac's business, operations, and strategies, this could adversely affect the effectiveness of Farmer Mac's board of directors in overseeing and managing the business, affairs, strategies, and operations of Farmer Mac.

Operational Risk

The inadequacy or failure of Farmer Mac's operational systems, cybersecurity plan, internal controls or processes, or infrastructure, or those of third parties, or the inability of Farmer Mac to successfully implement enhancements to any of these or migrate to new systems or infrastructure could have a material adverse effect on Farmer Mac's business, liquidity, operating results, reputation, or financial condition.

Farmer Mac is exposed to operational risk due to the complex nature of its business operations and the processes and systems used to fulfill its Congressional mission, maintain operational efficiency and technological relevance, and comply with regulatory requirements. Operational risk refers to the risk of loss to Farmer Mac or damage to its reputation resulting from inadequate or failed internal processes, personnel, systems, cybersecurity plan, or infrastructure, or its inability to successfully implement enhancements to any of these or migrate to new systems or infrastructure, or from external events, including a disruption involving physical site access, cyber incidents, catastrophic events, natural disasters, terrorist activities, or disease pandemics.

Inadequacies or failures in Farmer Mac's internal processes, personnel, systems, cybersecurity plan, or infrastructure could lead to a significant disruption in its business operations, financial and economic loss, errors in its financial statements, impairment of its liquidity, liability or service interruptions to its customers, increased regulatory or legislative scrutiny, or reputational damage. Farmer Mac's financial, accounting, data processing, backup, information technology, or other operating systems and infrastructure may fail to operate as intended or become temporarily unavailable because of events that are wholly or partially beyond Farmer Mac's control, which could adversely affect Farmer Mac's ability to conduct its business in the ordinary course. Farmer Mac relies on business processes that largely depend on people, technology, and the use of complex systems and models to manage its business, process a high volume of daily transactions, and generate the records on which its financial statements are based. This heightened reliance increases the risk that Farmer Mac may be exposed to financial, reputational, or other losses because of errors or inherent design flaws in its processes or systems, the failed execution of these processes or systems, or human error. Farmer Mac's business relies on its ability to process, evaluate, and interpret significant amounts of information, much of which is provided by third parties, and that information may not be correct or Farmer Mac may fail to interpret it appropriately. Also, the internal controls and processes Farmer Mac has in place designed to detect and prevent fraud may not be effective or successful.

The potential for operational risk exposure is not limited to Farmer Mac's internal operational functions and also exists as a result of Farmer Mac's interactions with, and reliance on, third parties. If the financial, accounting, data processing, backup, information technology, or other operating systems and infrastructure of third parties with whom Farmer Mac interacts or upon whom it relies fail to operate properly or are disrupted, then Farmer Mac's operations and its ability to conduct its business in the ordinary course may be adversely affected. Farmer Mac's ability to implement safeguards preventing disruption to third party systems or infrastructure is more limited than for its own systems or infrastructure.

Farmer Mac continues to invest in and enhance its technological capabilities, operational systems, cybersecurity plan, infrastructure, and organizational structure. But more operational risks may arise in implementing these endeavors, including the risk that Farmer Mac may not be able to successfully implement these enhancements or migrate to new systems or infrastructure, which may have a material adverse effect on Farmer Mac's business, operations, or financial condition.

Farmer Mac conducts many of its critical business operations and activities in its main office in Washington, D.C. This concentration of Farmer Mac's personnel, technology, and facilities increases Farmer Mac's risk of financial or other loss. Although Farmer Mac routinely reviews, updates, and tests its business continuity and disaster recovery plans, these plans may not be sufficient to mitigate all potential business continuity risks. Farmer Mac's recovery capabilities or those of third parties with whom it interacts or upon whom it relies could be overwhelmed by a disruption in infrastructure or a catastrophic event such as a natural disaster, terrorist attack, extreme weather event, or disease pandemic. If Farmer Mac is not able to resume business operations or its employees are unable to communicate with each other because of any of these events, Farmer Mac may not be able to successfully implement its continuity and disaster recovery plans, which could have a material adverse effect on Farmer Mac's business, liquidity, operating results, reputation, or financial condition.

Any significant deficiency, failure, interruption, or breach in Farmer Mac's information systems, including the occurrence of successful cyber-attacks or a significant deficiency in Farmer Mac's cybersecurity plan, could result in a loss of business, damage to Farmer Mac's reputation, the disclosure or misuse of confidential or proprietary information, or increased costs or liability to Farmer Mac, which could adversely affect Farmer Mac's business, operating results, or financial condition.

Farmer Mac relies heavily on information systems, including from third parties, to conduct and manage its business operations. These information systems encompass an integrated set of hardware, software, infrastructure, and trained personnel organized to facilitate the planning, control, coordination, and decision-making processes occurring within Farmer Mac. As Farmer Mac's reliance on information systems has increased, so have the risks posed to its systems, including the effect of events that would threaten the confidentiality, integrity, or availability of Farmer Mac's information resources, known as cyber incidents. Like many other financial institutions, Farmer Mac faces regular attempts by third parties to gain unauthorized access to its information systems. Farmer Mac has experienced cyber incidents that have not had a material effect on its business, operating results, or financial condition, but it is not possible to predict the impact on Farmer Mac of any future cyber incidents.

Farmer Mac has undertaken preventive measures and devotes adequate resources to design, manage, monitor, deploy, and assess its information systems and cybersecurity program consistent with industry best practices. Specifically, Farmer Mac's cybersecurity program assesses Farmer Mac's cybersecurity risk profile and seeks to ensure there are sufficient measures and safeguards in place to mitigate the risks identified. However, Farmer Mac may not be able to prevent, address on a timely and adequate basis, or fully mitigate the negative effects associated with a successful cyber-attack on Farmer Mac's or its third-party information systems, which could adversely affect Farmer Mac's business, operating results, reputation, or financial condition. Because the methods used to launch cyber-attacks change often or, in some cases, are not recognized until launched, Farmer Mac also may be unable to implement effective preventive measures or proactively address these methods until they are discovered. A failure or interruption in any of Farmer Mac's information systems could cause a disruption or malfunction of its operations, which could adversely affect Farmer Mac's ability to conduct business with its customers, loan servicers, service providers, or other counterparties, result in financial loss, or damage Farmer Mac's reputation.

The secure transmission, processing, and storage of Farmer Mac's confidential, proprietary, and other information assets through Farmer Mac's or its third-party information systems is instrumental to Farmer Mac's operations. Any action that results in unauthorized access to Farmer Mac's information systems by

third parties, including through viruses, malware, cyber-attacks, or other information system breaches, could disrupt Farmer Mac's operations, corrupt its data, or cause the misappropriation, unauthorized release, loss, or destruction of the confidential, proprietary, or other information assets of its customers, loan servicers, service providers, or other counterparties. Unauthorized access to Farmer Mac's information systems or sensitive information could cause Farmer Mac to experience prolonged operational interruption, damage to its reputation, material loss of business, legal liability, or increased costs from private data exposure, which could adversely affect Farmer Mac's business, operating results, reputation, or financial condition.

Farmer Mac depends on third parties, including loan servicers, information systems providers, and other service providers, to protect confidential information from unauthorized access and dissemination, and these third parties' failure to do so could result in liability for Farmer Mac or damage Farmer Mac's reputation, which could have a negative effect on Farmer Mac's business, operating results, or financial condition.

Farmer Mac relies on third parties, including loan servicers, information systems providers, software-as-a-service (SaaS) providers, cloud computing service providers, and other service providers, to perform various functions for Farmer Mac. In the course of these activities, these third parties collect and have access to a variety of confidential or proprietary information, including, among others, sensitive financial information, information presented to Farmer Mac's board of directors, information provided to Farmer Mac's regulators, information about the lenders that participate in Farmer Mac's lines of business, and personal financial information about the borrowers with loans in one of Farmer Mac's lines of business. Any unauthorized access to or cyber incidents affecting the information systems of one of these third parties, including through viruses, malware, cyber-attacks, or other information system breaches, could result in the misappropriation and inappropriate release of the confidential or proprietary information entrusted to Farmer Mac. Prior instances of unauthorized access to Farmer Mac's third parties' information systems have not resulted in the misappropriation or inappropriate release of the confidential or proprietary information entrusted to Farmer Mac, although it is not possible to predict the consequences of any future instances. Any employees or agents of Farmer Mac's third parties that have authorized access to confidential or proprietary information could also inadvertently or erroneously disseminate the information to unauthorized third parties. Any unauthorized access to or dissemination of confidential or proprietary information could result in liability for Farmer Mac or damage Farmer Mac's reputation, either of which could have a negative effect on Farmer Mac's business, operating results, or financial condition.

If Farmer Mac's management of risk associated with its loan assets and investment securities based on model assumptions and output is not effective, its business, operating results, financial condition, or capital levels could be materially adversely affected.

Farmer Mac continually develops and adapts profitability and risk management models to adequately address a wide range of possible market developments. Farmer Mac's techniques and strategies may not be effective in mitigating its risk exposure in all economic market environments or against all types of risk, including risks that Farmer Mac fails to identify or anticipate. Some of Farmer Mac's qualitative tools and metrics for managing risk are based on its use of observed historical market behavior. Farmer Mac applies statistical and other tools to these observations to quantify its risks. These tools and metrics may fail to predict future or unanticipated risk. These failures could, for example, arise from factors Farmer Mac did not anticipate or correctly evaluate in its models. Farmer Mac's quantified modeling does not consider all risks. Farmer Mac's more qualitative approach to managing those risks not accounted for in its quantitative models could prove insufficient, exposing it to material unanticipated losses. The

inability of Farmer Mac to effectively identify and manage the risks inherent in its business could have a material adverse effect on its business, operating results, financial condition, or capital levels.

Market Risk

Farmer Mac is exposed to interest rate risk that could materially and adversely affect its business, operating results, or financial condition.

Farmer Mac is subject to interest rate risk due to the possible timing differences in the cash flows of the assets it holds and related liabilities. Farmer Mac's primary strategy for managing interest rate risk is to fund asset purchases with liabilities that have similar duration and cash flow characteristics so that they will perform similarly as interest rates change. Through Farmer Mac's issuances of debt securities in the form of discount notes and medium-term notes coupled with interest rate swap contracts that adjust the characteristics of the debt issued, Farmer Mac seeks to match its liabilities closely with the cash flow and duration characteristics of its loans and other assets. However, the ability of borrowers to prepay their loans before the scheduled maturities increases the risk of asset and liability cash flow mismatches. In a changing interest rate environment, these cash flow mismatches affect Farmer Mac's earnings if assets repay sooner than expected and the resulting cash flows must be reinvested in lower-yielding investments, particularly if Farmer Mac's related funding costs cannot be correspondingly repaid. Also, if assets repay more slowly than anticipated and the associated debt issued to fund the assets must be reissued at a higher yield, Farmer Mac's earnings could be adversely affected. As of December 31, 2018, of all the outstanding business volume held on Farmer Mac's balance sheet, \$8.3 billion had a fixed interest rate and \$7.4 billion had an adjustable interest rate.

Farmer Mac is also subject to another type of interest rate risk due to changes in its cost of funds relative to floating rate market indexes (such as the London Interbank Offered Rate, or LIBOR) on some of the floating rate assets it holds, which is referred to as "basis risk." Some of Farmer Mac's floating rate assets reset on rate adjustment dates based on a floating rate market index, while the related debt that Farmer Mac issued to fund those assets until their maturities may be refinanced based on Farmer Mac's cost of funds at a particular time. Basis risk arises from the potential variability between the rates at which those floating rate assets reset and the rates at which Farmer Mac can issue or refinance debt to fund those assets until their maturities. Farmer Mac is also subject to basis risk on some of its fixed rate assets because of its use of pay-fixed interest rate swaps, combined with a series of discount note or medium-term note issuances, as an alternative source of effectively fixed rate funding. This risk arises because the rates at which Farmer Mac refinances its funding for some fixed rate assets through the issuance of discount notes or medium-term notes may vary from the agreed-upon rates based on the floating rate market index received by Farmer Mac on the associated swaps. For example, if the rates on Farmer Mac's discount notes or medium-term notes deteriorate relative to LIBOR during the time between when its indexed floating rate assets were first funded and when Farmer Mac refinances the associated debt or when Farmer Mac uses pay-fixed swaps to fund its fixed rate assets, Farmer Mac is exposed to a commensurate reduction in its net effective spread. Conversely, if the rates on Farmer Mac's discount notes or medium-term notes improve relative to LIBOR during that time or when Farmer Mac uses pay-fixed swaps to fund its fixed rate assets, Farmer Mac would benefit from a commensurate increase in its net effective spread. Although Farmer Mac seeks to issue debt of sufficient maturity to reduce the frequency of required refinancing of that debt over the life of the associated asset, it may not be able to successfully do so, which could adversely impact its business, operating results, and financial condition. As of December 31, 2018, Farmer Mac held \$6.2 billion of floating-rate assets in its lines of business and its liquidity investment portfolio that reset based on floating rate market indexes, primarily one-month and three-month LIBOR.

As of the same date, Farmer Mac also had \$3.8 billion of interest rate swaps outstanding where Farmer Mac pays a fixed rate of interest and receives a floating rate of interest.

Changes in interest rates relative to Farmer Mac's management of interest rate risk through derivatives may cause volatility in financial results and capital levels and may adversely affect net income.

Farmer Mac enters into financial derivatives transactions to hedge interest rate risks inherent in its business and measures its financial derivatives at fair value. Although Farmer Mac's financial derivatives provide effective economic hedges of interest rate risk, changes in the fair values of financial derivatives can cause volatility in net income and in capital, particularly if those financial derivatives are not designated in hedge accounting relationships or if there is any ineffectiveness in a hedge accounting relationship. As interest rates increase or decrease, the fair values of Farmer Mac's derivatives change based on the position Farmer Mac holds relative to the specific characteristics of the derivative. Farmer Mac's core capital available to meet its statutory minimum capital requirement can be affected by changes in the fair values of financial derivatives, as noted above. Adverse changes in the fair values of Farmer Mac's financial derivatives that are not designated in hedge accounting relationships and any hedge ineffectiveness that results in a loss would reduce the amount of core capital available to meet this requirement, which could result in regulatory enforcement action against Farmer Mac if it were unable to meet the requirement. In 2018 and 2017, Farmer Mac recorded gains of \$8.0 million and \$10.2 million, respectively, from changes in the fair values of its financial derivatives as a result of movements in interest rates during those years.

The reform, replacement, or discontinuation of the LIBOR benchmark interest rate could adversely affect Farmer Mac's business, operating results, or financial condition.

In July 2017, the United Kingdom's Financial Conduct Authority, which regulates LIBOR, announced that it will no longer persuade or compel banks to submit rates for the calculation of LIBOR after 2021 and will support the LIBOR indexes through 2021 to allow for a transition to any alternative reference rates. This announcement indicates that the continuation of LIBOR in its current form will not be guaranteed after 2021, and it appears likely that LIBOR will be discontinued or modified by 2021. In response to this development, the Federal Reserve Board and the Federal Reserve Bank of New York convened the Alternative Reference Rates Committee ("ARRC") to identify a set of alternative reference interest rates for possible use as market benchmark interest rates. The ARRC has proposed the Secured Overnight Financing Rate ("SOFR") as its recommended alternative to LIBOR, and the Federal Reserve Bank of New York began publishing SOFR rates beginning in second quarter 2018. SOFR is based on a broad segment of the overnight Treasury repurchase market and is intended to be a broad measure of the cost of borrowing cash overnight collateralized by Treasury securities. The Federal Reserve Bank of New York notes on its publication page for SOFR that use of SOFR is subject to important limitations and disclaimers, including that it may alter the methods of calculation, publication schedule, rate revision practices, or availability of SOFR at any time without notice, or that it may withdraw, modify, or amend the published SOFR rate in its sole discretion and without notice.

Farmer Mac is evaluating the potential effect on its business of the replacement of the LIBOR benchmark interest rate, including the possibility of SOFR as a dominant replacement. As of December 31, 2018, Farmer Mac held \$5.1 billion of floating rate assets in its lines of business and its investment portfolio, \$3.6 billion of floating rate debt, and \$9.8 billion notional amount of interest rate swaps, each of which reset based on LIBOR. In addition, Farmer Mac's Series C Preferred Stock will be indexed to LIBOR after July 17, 2024. The market transition away from LIBOR and towards SOFR, or any other alternative

benchmark interest rate that may be developed, is expected to be complicated and may require the development of term and credit adjustments to accommodate for differences between the benchmark interest rates. The introduction of an alternative reference rate may also introduce additional basis risk for Farmer Mac if an alternative benchmark interest rate index is being used along with LIBOR during a transition period. If LIBOR is discontinued and an alternative benchmark interest rate, including SOFR, does not become widely used or accepted in place of LIBOR, then there may be uncertainty or differences in the calculation of the applicable interest rate or payment amounts depending on the terms of the governing instruments for Farmer Mac's assets and liabilities. If an alternative benchmark interest rate, including SOFR, does become widely used or accepted in place of LIBOR, then significant work may be required to transition to using this alternative rate in Farmer Mac's products. Either of these scenarios could result in different financial performance for previously booked transactions, require different hedging strategies, or require renegotiation of previously booked transactions, and may impact Farmer Mac's existing transaction data, products, systems, operations and pricing processes, which could adversely affect Farmer Mac's business, operating results, or financial condition.

Changes in interest rates as well as certain credit events may trigger collateralization requirements for Farmer Mac under its derivatives contracts, which could adversely affect Farmer Mac's liquidity position or operating results.

Farmer Mac uses derivatives contracts to help manage its interest rate risk. Changes in interest rates have required, and in the future may require, Farmer Mac to post cash or investment securities to its derivative counterparties to reflect the changes in fair market values of Farmer Mac's derivatives as a result of the changes in interest rates. For example, as of December 31, 2018, Farmer Mac posted \$47.0 million of investment securities as collateral for its derivatives in net liability positions. If changes in interest rates were to result in a significant decrease in the fair value of Farmer Mac's derivatives, Farmer Mac would be required to post a significant amount of cash, cash equivalents, or investment securities, possibly within a short period of time, to satisfy its obligations under its derivatives contracts. Farmer Mac is required to fully collateralize its derivatives positions without any minimum threshold for cleared swap transactions, as well as for non-cleared swap transactions entered into after March 1, 2017, the effective date of new rules that established zero threshold requirements for the exchange of variation margin between Farmer Mac and its swap dealer counterparties in such transactions. For non-cleared swaps transactions entered into before March 2017, Farmer Mac's derivatives contracts contain provisions establishing minimum threshold collateral amounts, ranging between \$15 million and \$25 million, below which Farmer Mac is not required to post collateral, though these amounts may be reduced to zero upon the occurrence of specified credit events such as insolvency, receivership, failure to make a payment under the contract when due, or failure to continue as an instrumentality of the United States. Under these contracts, the amount required to be posted would increase if Farmer Mac also experienced a credit event, thereby triggering full collateralization of its derivatives positions without any minimum threshold. If Farmer Mac is required to fully collateralize all of its derivatives positions in an adverse interest rate environment, it could have a material adverse effect on Farmer Mac's liquidity position or operating results.

Financial Risk

Incorrect estimates and assumptions by management, or changes in accounting standards or in applying accounting policies, in preparing financial statements could adversely affect Farmer Mac's business, operating results, reported assets and liabilities, financial condition, reputation, or capital levels.

Farmer Mac's accounting policies and methods are fundamental to how it records and reports its financial condition and results of operations. Some of these policies and methods require management to make certain critical accounting estimates and assumptions in preparing Farmer Mac's consolidated financial statements that could affect the reported amounts of assets and liabilities and the reported amounts of income and expense during the reporting periods. Incorrect estimates and assumptions by management in connection with preparing Farmer Mac's consolidated financial statements could adversely affect the reported amounts of assets and liabilities and the reported amounts of income and expenses. For example, as of December 31, 2018, Farmer Mac's assets and liabilities recorded at fair value included financial instruments valued at \$6.0 billion whose fair values management estimated in the absence of readily observable fair values (in other words, level 3). These financial instruments measured with significant unobservable inputs represented 32% of total assets and 73% of financial instruments measured at fair value as of December 31, 2018. More information about fair value measurement is included in "Management's Discussion and Analysis—Critical Accounting Policies—Fair Value Measurement." If management makes incorrect assumptions or estimates, Farmer Mac may understate or overstate reported financial results, which could materially and adversely affect Farmer Mac's business, operating results, reported assets and liabilities, financial condition, reputation, or capital levels.

Farmer Mac is subject to the requirements of entities that set and interpret the accounting standards governing the preparation of Farmer Mac's consolidated financial statements. These entities, which include the Financial Accounting Standards Board ("FASB"), the SEC, and Farmer Mac's independent registered public accounting firm, may add new accounting standards or change their interpretations of how those standards should be applied. These changes may be difficult to predict and could affect how Farmer Mac records and reports its financial condition and results of operations. In some cases, Farmer Mac could be required to apply a new or revised standard retrospectively, potentially resulting in changes to previously reported financial results. For example, the FASB issued a new accounting standard in 2016, effective for Farmer Mac for fiscal years beginning after December 15, 2019, that will require entities to measure credit losses based on an "expected credit loss" approach rather than an "incurred loss" approach currently required under GAAP. The new approach will require entities to measure all expected credit losses for financial assets, carried at amortized cost, based on historical experience, current conditions, and reasonable forecasts of collectability. If Farmer Mac is required to materially increase its total allowance for losses as a result, that increase could adversely affect Farmer Mac's business, operating results, financial condition, or capital levels. See Note 2(q) to the consolidated financial statements for more information about this new accounting standard.

Changes in the value or composition of Farmer Mac's investment securities could adversely affect Farmer Mac's business, operating results, financial condition, or capital levels.

Deterioration in financial or credit market conditions could reduce the fair value of Farmer Mac's investment securities, particularly those securities that are less liquid and more subject to market variability. Some securities owned by Farmer Mac, including auction-rate certificates, do not have well-established secondary trading markets, making it more difficult to estimate current fair values for those

securities. Adverse financial market conditions may further compound the challenges of estimating fair values for Farmer Mac's securities.

Farmer Mac relies on market observations to determine the fair value of its investment securities, although the market data Farmer Mac relies on may not reflect the actual sale conditions that Farmer Mac would face when selling its investment securities. For example, the market value of some securities owned by Farmer Mac may depend in large part on the amounts and timing of the expected cash flows on these securities, which may be highly uncertain. Therefore, a change in the amounts or timing of cash flows could materially alter the market price of those securities. Later valuations of these and other investment securities, in light of factors then prevailing, may result in significant changes in the value of Farmer Mac's investment securities.

Farmer Mac also relies on internal models to estimate the fair values of its investment securities and to determine whether credit losses exist, which requires Farmer Mac to exercise judgment about estimates and assumptions used in the models. If Farmer Mac uses incorrect estimates or assumptions in the internal models it develops to estimate the fair value of its investment securities, those models could adversely affect reported income during the reporting period.

If Farmer Mac decides to sell securities in its investment portfolio, the price ultimately realized will depend on the demand and liquidity in the market at the time of sale. Farmer Mac's inability to sell the securities in its investment portfolio at or above their estimated fair values could adversely affect Farmer Mac's business, operating results, financial condition, or capital levels.

The trading price for Farmer Mac's Class C non-voting common stock may be volatile due to market influences, trading volume, or the effects of equity awards for Farmer Mac's officers, directors, and employees.

The trading price of Farmer Mac's Class C non-voting common stock has at times experienced substantial price volatility and may continue to be volatile. For example, from January 2018 to December 2018, the closing price of the stock ranged from \$56.54 per share to \$98.52 per share. The trading price may fluctuate in response to various factors, including short sales, hedging, the presence or absence of a share repurchase program, or stock market influences in general that are unrelated to Farmer Mac's operating performance. Farmer Mac typically grants equity awards each year that are based on Farmer Mac's Class C non-voting common stock, including stock appreciation rights and restricted stock that vest over time or upon the achievement of specified performance goals. Sales of stock acquired upon vesting or the exercise of equity awards by Farmer Mac's officers, directors, or employees, whether under an established trading plan or otherwise, could adversely affect the trading price of Farmer Mac's Class C non-voting common stock. These factors may be exacerbated during periods of low trading volume for Farmer Mac's Class C non-voting common stock, which averaged approximately 39,000 shares daily during 2018, and may have a prolonged negative effect on its trading price or increase price volatility.

Regulatory/Compliance Risk

Farmer Mac and many of its business partners are subject to comprehensive government regulation, and changes to the laws and regulations to which Farmer Mac or its business partners are subject could adversely affect Farmer Mac's business, operating results, reputation, or financial condition.

Farmer Mac was established under a statutory charter that is subject to amendment by the U.S. Congress at any time and is regulated by various government agencies, including the FCA and the SEC. As a result, Farmer Mac is exposed to the risk of legal or regulatory penalties, material financial loss including fines, judgments, damages, and/or settlements, or loss of reputation if it fails to comply with applicable laws, regulations, rules, regulatory requests, self-regulatory organization standards, or codes of conduct applicable to its business activities. Future legislative or regulatory actions affecting Farmer Mac's statutory charter or its business activities, including increased regulatory supervision, and any required changes to Farmer Mac's business or operations resulting from such actions, could result in a financial loss for Farmer Mac or otherwise reduce its profitability, impose additional compliance and other costs on Farmer Mac, limit the products offered by Farmer Mac or its ability to pursue business opportunities in which it might otherwise consider engaging, curtail business activities in which it is currently engaged, affect the value of assets that Farmer Mac holds, or otherwise adversely affect Farmer Mac's business, results of operations, reputation, or financial condition.

The financial services industry, in which most of Farmer Mac's business partners and customers operate, is subject to significant legislation and regulations. Specifically, to the extent that current or future legislation or regulations affect the activities of banks, insurance companies, other rural lenders, derivatives counterparties, clearinghouses, securities dealers, or other regulated entities that constitute a large portion of Farmer Mac's business counterparties or customers, Farmer Mac could experience reduced customer demand or profitability, increased compliance costs, disadvantageous business terms in its dealings with counterparties, and unfavorable changes to its business practices or activities. As a result, Farmer Mac's business, operating results, reputation, or financial condition could be adversely affected.

Farmer Mac is subject to capital requirements that are subject to change, and failure to meet those requirements could result in supervisory measures or the inability of Farmer Mac to declare dividends, or otherwise materially and adversely affect Farmer Mac's business, operating results, or financial condition.

Farmer Mac is required by statute and regulation to maintain certain capital levels. Any inability by Farmer Mac to meet these capital requirements could result in supervisory measures by FCA, adversely affect Farmer Mac's ability to declare dividends on its common and preferred stock, or otherwise materially and adversely affect Farmer Mac's business, operating results, or financial condition. Also, as required by an FCA regulation on capital planning, Farmer Mac has adopted a policy to maintain a sufficient level of Tier 1 capital and to restrict paying Tier 1-eligible dividends if Tier 1 capital falls below specified thresholds. For more information about Farmer Mac's capital requirements, including the Tier 1 capital requirement, see "Business—Government Regulation of Farmer Mac—Regulation—Capital Standards." Factors that could adversely affect the adequacy of Farmer Mac's capital levels in the future, and which may be beyond Farmer Mac's control, include:

- credit losses or other-than-temporary impairment charges;
- adverse changes in interest rates or credit spreads;
- the need to increase the level of the allowance for losses on loans;

- legislative or regulatory actions that increase Farmer Mac's capital requirements; and
- changes in U.S. generally accepted accounting principles.

Political Risk

Farmer Mac is a GSE that may be materially and adversely affected by legislative or political developments that may affect the ongoing operations or continued existence of GSEs.

Farmer Mac is a GSE that is governed by a statutory charter, which is subject to amendment by the U.S. Congress at any time, and regulated by government agencies, including the FCA and the SEC. Although Farmer Mac is not aware of any pending legislative proposals that would adversely affect the way Farmer Mac conducts its business or the status of Farmer Mac as a GSE, Farmer Mac's ability to effectively conduct its business is subject to risks and uncertainties related to legislative or political developments that may affect the status or operations of GSEs generally. From time to time, legislative initiatives may commence that, if successful, could result in the enactment of legislation or the promulgation of regulations that could negatively affect the status of Farmer Mac as a GSE or how Farmer Mac operates. Farmer Mac cannot predict whether any legislative proposals related to the housing GSEs would also address the continued GSE status of Farmer Mac or modify the current operating structure or authorities of Farmer Mac in any material way. Implementation of any such proposal could have a material and adverse effect on Farmer Mac's business, operating results, financial condition, or capital levels. See "Business—Government Regulation of Farmer Mac" for more information about the rules and regulations governing Farmer Mac's activities.

Human Capital Risk

Farmer Mac's ability to attract and retain motivated and qualified employees is critical to the success of its business, and failure to do so or a significant disruption in the continuity of Farmer Mac's employees or any significant executive leadership change may materially adversely affect Farmer Mac's business performance, operations, financial condition, or reputation.

Farmer Mac relies on its employees' breadth and depth of knowledge of agricultural and rural utilities lending, financial products, and other areas of expertise to run its business operations successfully. If Farmer Mac is unable to continue to retain and attract motivated and qualified employees or does not have adequate human capital to achieve its business objectives, Farmer Mac's business performance, operations, or financial condition could be materially adversely affected. A significant disruption in the continuity of Farmer Mac's employees or any significant executive leadership change could also:

- create uncertainty or instability;
- require Farmer Mac and its existing employees to divert or expend more resources and attention to replace personnel;
- result in a loss of productivity and disrupt its daily operations;
- affect Farmer Mac's ability to successfully execute its business strategies;
- result in the departure of other executives or key employees; or
- damage the public or market perception of Farmer Mac.

For example, after the termination of employment of Farmer Mac's former President and Chief Executive Officer in 2017, Farmer Mac expended significant resources and attention to identify his successor. Any

of the above factors could materially adversely affect Farmer Mac's performance, operations, financial condition, or reputation.

Any of the risks described in this section could materially and adversely affect Farmer Mac's business, operating results, financial condition, reputation, capital levels, and future earnings. For more information about Farmer Mac's risk management, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management" in Item 7 of this Annual Report on Form 10-K.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Farmer Mac maintains its principal office at 1999 K Street, N.W., 4th Floor, Washington, D.C. 20006, under a sublease that began on October 1, 2011 and ends on August 30, 2024. Farmer Mac also maintains three other office locations: (1) 9169 Northpark Drive, Johnston, Iowa 50322, under a lease that began on October 1, 2017 and ends on June 30, 2023; (2) 5200 N. Palm Avenue, Suite 306, Fresno, California 93704, under a lease that began on January 1, 2017 and ends on February 29, 2020; and (3) 1065 E. Winding Creek Drive, Suite 200, Eagle, Idaho 83616, under a lease that began on October 1, 2016 and ends on November 30, 2019. Farmer Mac believes that its offices are suitable and adequate for its current and anticipated needs for the near future.

Item 3. Legal Proceedings

None.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters, and Issuer Purchases of Equity Securities

(a)Farmer Mac has three classes of common stock outstanding – Class A voting common stock, Class B voting common stock, and Class C non-voting common stock. Ownership of Class A voting common stock is restricted to banks, insurance companies, and other financial institutions or similar entities that are not institutions of the FCS. Ownership of Class B voting common stock is restricted to institutions of the FCS. There are no ownership restrictions on the Class C non-voting common stock. In the original public offering of the Class A and Class B voting common stock, Farmer Mac reserved the right to redeem at book value any shares of either class held by an ineligible holder.

Farmer Mac's Class A voting common stock and Class C non-voting common stock are listed on the New York Stock Exchange under the symbols AGM.A and AGM, respectively. The Class B voting common stock, which has a limited market and trades infrequently, is not listed or quoted on any exchange or other quotation system, and Farmer Mac is not aware of any publicly available quotations or prices for that class of common stock.

As of February 4, 2019, Farmer Mac had 942 registered owners of the Class A voting common stock, 77 registered owners of the Class B voting common stock, and 883 registered owners of the Class C non-voting common stock.

The dividend rights of all three classes of Farmer Mac's common stock are the same, and dividends may be paid on common stock only when, as, and if declared by Farmer Mac's board of directors in its sole discretion, subject to compliance with applicable capital requirements and payment of dividends on any outstanding preferred stock. On March 1, 2017, Farmer Mac's board of directors declared a quarterly dividend of \$0.36 per share on Farmer Mac's common stock payable for first quarter 2017. That dividend was paid quarterly through fourth quarter 2017. On February 28, 2018, Farmer Mac's board of directors declared a quarterly dividend of \$0.58 per share on Farmer Mac's common stock payable for first quarter 2018. That dividend was paid quarterly through fourth quarter 2018. On February 19, 2019, Farmer Mac's board of directors declared a dividend of \$0.70 per share on Farmer Mac's common stock payable for first quarter 2019. See "Business—Financing—Equity Issuance" for more information on Farmer Mac's common stock.

The quarterly dividend of \$0.70 per share on all three classes of common stock represents an increase of \$0.12 per common share, or 21%, over the quarterly dividend payout in 2018 and reflects the board's authorization to increase Farmer Mac's common stock dividend payout target as a percentage of annual core earnings from 30% for 2018 to 35% for 2019 and beyond. In deciding to increase Farmer Mac's common stock dividend and payout target, the board of directors considered our strong capital position and the consistency of and outlook for our earnings, balanced against the need for capital to fund the significant growth objectives identified in our strategic plan and to meet regulatory requirements and metrics established by our board of directors. These actions are also consistent with Farmer Mac's goal of providing a competitive return on its common stockholders' investments through the payment of cash dividends. Our payout ratio of core earnings is also now more in line with those of our financial institution peers within the S&P Financial Index and NASDAQ Bank Index, many of which have significantly increased their common stock dividends during the past two years.

The declaration and payment of future dividends to holders of Farmer Mac's common stock are, however, at the discretion of Farmer Mac's board of directors and depend on many factors, including Farmer Mac's financial condition, actual results of operations and earnings, the capital needs of Farmer Mac's business, regulatory requirements, and other factors that Farmer Mac's board deems relevant. Farmer Mac's ability to pay dividends on its common stock is also subject to the payment of dividends on its outstanding preferred stock. Applicable FCA regulations also require Farmer Mac to provide FCA with 15 days' advance notice of certain capital distributions. Farmer Mac's ability to declare and pay dividends could be restricted if it were to fail to comply with applicable capital requirements. See Note 9 to the consolidated financial statements for more information about Farmer Mac's capital position and see "Business—Government Regulation of Farmer Mac—Regulation—Capital Standards" and "Management's Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources—Capital Requirements" for more information on the capital requirements applicable to Farmer Mac.

Information about securities authorized for issuance under Farmer Mac's equity compensation plans appears under "Equity Compensation Plans" in Farmer Mac's definitive proxy statement to be filed on or about April 1, 2019. That portion of the definitive proxy statement is incorporated by reference into this Annual Report on Form 10-K.

Farmer Mac is a federally chartered instrumentality of the United States, and its common stock is exempt from registration under Section 3(a)(2) of the Securities Act. One type of transaction related to Farmer Mac's common stock occurred during fourth quarter 2018 that was not registered under the Securities Act and not otherwise reported on a Current Report on Form 8-K:

On October 2, 2018, consistent with Farmer Mac's policy that permits directors of Farmer Mac to elect to receive shares of Class C non-voting common stock in lieu of their cash retainers, Farmer Mac issued an aggregate of 50 shares of Class C non-voting common stock to the three directors who elected to receive such stock in lieu of a portion of their cash retainers. The number of shares issued to the directors was calculated based on a price of \$72.18 per share, which was the closing price of the Class C non-voting common stock on September 28, 2018, the last business day of the third quarter, as reported by the New York Stock Exchange.

Performance Graph. The following graph compares the performance of Farmer Mac's Class A voting common stock and Class C non-voting common stock with the performance of the New York Stock Exchange Composite Index (the "NYSE Comp") and the Standard & Poor's 500 Diversified Financials Index (the "S&P 500 Div Fin") over the period from December 31, 2013 to December 31, 2018. The graph assumes that \$100 was invested on December 31, 2013 in each of: Farmer Mac's Class A voting common stock; Farmer Mac's Class C non-voting common stock; the NYSE Composite Index; and the S&P 500 Diversified Financials Index. The graph also assumes that all dividends were reinvested into the same securities throughout the past five years. Farmer Mac obtained the information in the performance graph from S&P Global Market Intelligence.

This performance graph shall not be deemed to be "soliciting material" or to be "filed" with the SEC, and this performance graph shall not be incorporated by reference into any of Farmer Mac's filings under the Securities Act or the Securities Exchange Act of 1934 and related regulations, or any other document, whether made before or after the date of this report and despite any general incorporation language contained in a filing or document (except to the extent Farmer Mac specifically incorporates this section by reference into a filing or document).

(b) Not applicable.

(c) None.

Item 6. Selected Financial Data

The selected consolidated financial data presented below is summarized from Farmer Mac's consolidated balance sheet data as of December 31, 2018 and the five-year period then ended, as well as selected results of operations data for the five-year period then ended. This data should be reviewed in conjunction with the audited consolidated financial statements and related notes and with "Management's Discussion and Analysis of Financial Condition and Results of Operations" in this Annual Report on Form 10-K.

Summary of Financial Condition:	As of December 31,					
	2018	2017	2016	2015	2014	
	(dollars in thousands)					
Cash and cash equivalents	\$425,256	\$302,022	\$265,229	\$1,210,084	\$1,363,387	
Investment securities	2,262,884	2,260,437	2,515,851	2,775,516	1,939,188	
Farmer Mac Guaranteed Securities	8,071,115	7,598,188	6,002,916	5,426,621	5,453,901	
USDA Securities	2,176,173	2,131,365	2,029,613	1,917,319	1,771,532	
Loans, net	5,515,052	5,266,786	4,507,435	3,962,044	3,520,075	
Total assets	18,694,328	17,792,274	15,606,020	15,540,354	14,287,821	
Notes payable:						
Due within one year	7,757,050	8,089,826	8,440,123	9,111,461	7,353,953	
Due after one year	8,486,647	7,432,790	5,222,977	4,967,036	5,471,186	
Total liabilities	17,941,771	17,084,128	14,962,373	14,986,634	13,505,992	
Stockholders' equity	752,557	708,146	643,425	553,517	545,801	
Non-controlling interest ⁽¹⁾	—	—	222	203	236,028	
Capital:						
Statutory minimum capital requirement	\$544,984	\$520,271	\$466,498	\$462,070	\$421,328	
Core capital	727,601	657,061	609,667	564,536	766,296	
Capital in excess of minimum capital requirement	182,617	136,790	143,169	102,466	344,968	
Selected Financial Ratios:						
Return on average assets ⁽²⁾	0.52	% 0.43	% 0.41	% 0.32	% 0.28	%
Return on average common equity ⁽³⁾	19.46	% 16.64	% 16.78	% 13.83	% 12.42	%
Average equity to assets ⁽⁴⁾	4.00	% 4.05	% 3.84	% 3.69	% 3.18	%
Average total equity to assets ⁽⁵⁾	4.00	% 4.05	% 3.84	% 4.48	% 4.91	%
Tier 1 capital ratio ⁽⁶⁾	13.4	% 12.6	% 12.7	% 10.5	% 11.3	%

On May 14, 2014, Farmer Mac purchased \$6.0 million of Farm Asset-Linked Capital Securities ("FALConS"), which represented beneficial ownership interests in shares of Farmer Mac II LLC Preferred Stock, from certain holders. On March 30, 2015, Farmer Mac II LLC redeemed all of the outstanding shares of Farmer Mac II LLC

⁽¹⁾ Preferred Stock which, in turn, triggered the redemption of all of the outstanding FALConS on that same day. The remaining balance relates to AgVisory, Farmer Mac's former majority-owned subsidiary whose principal activity was to appraise agricultural real estate. On May 1, 2017, Farmer Mac transferred its entire 65% ownership interest in AgVisory back to the limited liability company as a company redemption.

⁽²⁾ Calculated as net income attributable to common stockholders divided by the simple average of beginning and ending total assets.

⁽³⁾ Calculated as net income attributable to common stockholders divided by the simple average of beginning and ending stockholders' equity, net of preferred stock, at redemption value and accumulated other comprehensive (loss)/income, net of tax.

⁽⁴⁾ Calculated as the simple average of beginning and ending stockholders' equity divided by the simple average of beginning and ending total assets.

⁽⁵⁾ Calculated as the simple average of beginning and ending stockholders' equity and non-controlling interest divided by the simple average of beginning and ending total assets.

In 2016, Farmer Mac adjusted the calculation of its Tier 1 capital ratio to eliminate certain interest rate risk components of the risk weighting of assets to reflect the fact that Farmer Mac pursues a match-funding approach to funding its assets and therefore does not bear material interest rate risk in its portfolio. These interest rate risk components have not been eliminated in the calculations for the Tier 1 capital ratio for the years ended December 31, 2014 and December 31, 2015. For more information about Farmer Mac's Tier 1 capital ratio, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources—Capital Requirements."

Summary of Operations:	For the Year Ended December 31,				
	2018	2017	2016	2015	2014
	(in thousands, except per share amounts)				
Interest Income:					
Net interest income after provision for loan losses	\$174,198	\$155,939	\$139,209	\$123,419	\$71,308
Non-interest income:					
Guarantee and commitment fees	13,976	14,114	14,868	14,077	14,694
(Losses)/gains on financial derivatives, hedging activities and trading assets	(3,606)	729	3,771	3,751	16,983
Gains/(losses) on asset sales and debt repurchases	—	89	(9)	9	(238)
(Losses)/gains on the sale of real estate owned	(7)	1,748	15	(1)	137
Other income	1,377	832	1,823	2,305	1,714
Non-interest income	11,740	17,512	20,468	20,141	33,290
Non-interest expense	49,916	42,765	40,320	35,482	31,492
Income before income taxes	136,022	130,686	119,357	108,078	73,106
Income tax expense	27,942	46,369	42,057	34,239	2,824
Net income	108,080	84,317	77,300	73,839	70,282
Less: Net loss/(income) attributable to non-controlling interest	—	165	34	(5,139)	(22,192)
Preferred stock dividends	(13,182)	(13,182)	(13,182)	(13,182)	(9,839)
Loss on retirement of preferred stock	—	—	—	(8,147)	—
Net income attributable to common stockholders	\$94,898	\$71,300	\$64,152	\$47,371	\$38,251
Allowance for Losses Activity:					
Provision for/(release of) losses	\$335	\$1,758	\$1,002	\$208	\$(3,166)
Net charge-offs	17	327	130	3,772	41
Ending balance	9,184	8,866	7,435	6,563	10,127
Earnings Per Common Share and Dividends:					
Basic earnings per common share	\$8.91	\$6.73	\$6.12	\$4.33	\$3.50
Diluted earnings per common share	8.83	6.60	5.97	4.19	3.37
Common stock dividends per common share	2.32	1.44	1.04	0.64	0.56

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

Financial information included in this report is consolidated to include the accounts of Farmer Mac and its two subsidiaries – Farmer Mac Mortgage Securities Corporation and Farmer Mac II LLC. The accounts of Contour Valuation Services, LLC (which began doing business as AgVisory during first quarter 2016) ("AgVisory"), Farmer Mac's former majority-owned subsidiary, are also included through June 30, 2017. Farmer Mac redeemed its ownership interest in AgVisory on May 1, 2017. This discussion and analysis of financial condition and results of operations should be read together with Farmer Mac's consolidated financial statements and the related notes to the consolidated financial statements for the fiscal years ended December 31, 2018, 2017, and 2016.

Overview

We increased our outstanding business volume by \$717.2 million, or 3.8%, to \$19.7 billion during 2018. This increase was driven by net growth of \$477.9 million in the Institutional Credit line of business, \$366.4 million in the Farm & Ranch line of business, and \$163.4 million in the USDA Guarantees line of business. The net growth in these lines of business was partially offset by a \$290.5 million net business volume decrease in the Rural Utilities line of business.

Our overall credit quality improved during 2018 compared to 2017. Our total provision for losses recorded in 2018 was \$0.3 million, compared to \$1.8 million in 2017, which reflects a decrease of \$1.5 million. Our 90-day delinquencies decreased both in dollars and as a percentage of the Farm & Ranch portfolio in 2018. Although our substandard assets increased in dollars in 2018, they remained the same as a percentage of the Farm & Ranch portfolio compared to 2017. Farmer Mac's 90-day delinquency rate and substandard asset rate during 2018 each remained below Farmer Mac's historical averages.

On September 26, 2018, Farmer Mac's board of directors appointed Bradford T. Nordholm to serve as Farmer Mac's President and Chief Executive Officer effective October 15, 2018, when Mr. Nordholm replaced Lowell L. Junkins in that role. Mr. Junkins had served as Farmer Mac's Acting President and Chief Executive Officer since December 2017 and continues to serve as Farmer Mac's Chairman of the Board. For more information about Mr. Nordholm, see the Current Report on Form 8-K that Farmer Mac filed with the SEC on October 1, 2018.

Subsequent Events

On February 19, 2019, we purchased a \$546 million portfolio of participations in seasoned Rural Utilities loans from CoBank under a master loan participation agreement entered into on February 13, 2019. CoBank is a related party to Farmer Mac because of its stock ownership in Farmer Mac. For more information, see the Current Report on Form 8-K that we filed with the SEC on February 20, 2019.

On February 19, 2019, Farmer Mac's board of directors declared a quarterly dividend of \$0.70 per share on all three classes of common stock. This is an increase of \$0.12 per common share, or 21%, over the quarterly dividend payout in 2018 and reflects the board's authorization to increase Farmer Mac's common stock dividend payout target as a percentage of annual core earnings from 30% for 2018 to 35% for 2019 and beyond. In deciding to increase Farmer Mac's common stock dividend and our payout target, the board of directors considered our strong capital position and the consistency of and outlook for our earnings, balanced against the need for capital to fund the significant growth objectives identified in our strategic plan and to meet regulatory requirements and metrics established by our board of directors. These actions are also consistent with Farmer Mac's goal of providing a competitive return on its common stockholders' investments through the payment of cash dividends. Our payout ratio of core earnings is also now more in line with those of our financial institution peers within the S&P Financial Index and NASDAQ Bank Index, many of which have significantly increased their common stock dividends during the past two years.

The discussion below of Farmer Mac's financial information includes "non-GAAP measures," which are measures of financial performance that are not presented in accordance with GAAP. For more information about the non-GAAP measures Farmer Mac uses, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Use of Non-GAAP Measures."

Net Income and Core Earnings

Our net income attributable to common stockholders for 2018 was \$94.9 million, compared to \$71.3 million for 2017 and \$64.2 million for 2016.

The \$23.6 million increase in net income attributable to common stockholders for 2018 compared to 2017 was primarily due to: (1) an \$18.4 million decrease in income tax expense due to the reduction in the federal corporate income tax rate resulting from the enactment of new federal tax legislation, referred to as the Tax Cuts and Jobs Act; and (2) a \$13.3 million after-tax increase in net interest income. This year-over-year increase was offset in part by: (1) an increase of \$3.5 million in net after-tax losses on our financial derivatives; (2) an increase in general and administrative ("G&A") expenses of \$3.0 million after-tax; and (3) an increase in compensation and employee benefits expenses of \$2.6 million after-tax. G&A expenses and compensation and employee benefits expenses increased by \$7.0 million, or 17.5%, in 2018 compared to 2017. Farmer Mac previously disclosed its expectation that these expenses would increase by approximately 15%, or \$6.0 million, in 2018 compared to 2017. The incremental \$1.0 million increase in these expenses compared to the original expectation was primarily due to nonrecurring hiring expenses of \$0.6 million, primarily related to the search process for Farmer Mac's current President and Chief Executive Officer and two other key hires.

The \$7.1 million increase in net income attributable to common stockholders for 2017 compared to 2016 was primarily driven by increases of \$11.3 million after-tax in net interest income and a \$1.1 million after-tax increase in net realized gains on the sale of real estate owned properties. The year-over-year increase was offset in part by: (1) a \$2.7 million after-tax decrease in gains in the fair value of financial derivatives and hedged assets; (2) a \$1.6 million after-tax increase in non-interest expense in 2017 primarily due to higher G&A expenses and higher compensation and employee benefits expenses; and (3) the re-measurement of net deferred tax asset due to the enactment of the Tax Cuts and Jobs Act, which resulted in a \$1.4 million increase to income tax expense in 2017.

Our non-GAAP core earnings for 2018 were \$84.0 million, compared to \$65.6 million in 2017 and \$53.5 million in 2016.

The \$18.4 million increase in core earnings for 2018 compared to 2017 was primarily due to a \$16.8 million decrease in income tax expense resulting from the lower federal corporate income tax rate and a \$7.8 million after-tax increase in net effective spread resulting primarily from an increase in outstanding business volume. The increases to core earnings were partially offset by a \$3.0 million after-tax increase in G&A expenses related to continued investments in Farmer Mac's technology and business infrastructure and a \$2.6 million after-tax increase in compensation and employee benefits expenses. A significant factor contributing to the increase in compensation expense in 2018 compared to 2017 was the absence in 2018 of the recoupment of approximately \$1.1 million after-tax in compensation costs related to the forfeiture of unvested equity awards and annual variable incentive compensation resulting from the termination of employment of Farmer Mac's former President and Chief Executive Officer in December 2017.

The \$12.1 million increase in core earnings for 2017 compared to 2016 was primarily due to: (1) an \$11.9 million after-tax increase in net effective spread; (2) a \$1.1 million after-tax increase in net realized gains on the sale of real estate owned properties; and (3) a \$0.8 million after-tax increase in guarantee and commitment fee income. The increase in core earnings in 2017 was offset in part primarily by a \$1.5 million after-tax increase in operating expenses, driven by higher compensation and employee benefits

and G&A expenses. The \$0.9 million after-tax increase in compensation and employee benefits expenses was due primarily to an increase in headcount and employee health insurance costs. The \$0.6 million after-tax increase in G&A expenses was primarily due to: (1) continued investments in technology and business infrastructure; (2) higher legal fees related to general corporate matters, including fees related to the termination of employment of Farmer Mac's former President and Chief Executive Officer in December 2017; (3) an increase in building lease expenses due to new leases for office space entered into during 2017; and (4) expenses related to business development efforts. For more information about net income attributable to common stockholders, the composition of core earnings, and a reconciliation of net income attributable to common stockholders to core earnings, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations." For more information about the non-GAAP measures Farmer Mac uses, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Use of Non-GAAP Measures."

Net Interest Income and Net Effective Spread

Net interest income was \$174.4 million for 2018, compared to \$157.6 million for 2017 and \$140.3 million for 2016. The overall net interest yield was 0.96% for 2018, compared to 0.94% for 2017 and 0.90% for 2016.

The \$16.8 million increase in net interest income for 2018 compared to 2017 was primarily due to net growth in on-balance sheet AgVantage securities, Farm & Ranch loans, and USDA Securities, which contributed to a \$10.1 million increase in net interest income. Another factor contributing to the year-over-year increase in net interest income were the fair value changes on financial derivatives and corresponding financial assets and liabilities in fair value hedge relationships. Effective first quarter 2018, Farmer Mac adopted Accounting Standard Update ("ASU") 2017-12, "Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities." The new accounting guidance requires the changes in the fair value of both the financial derivative designated in a fair value hedge relationship and the corresponding hedged item to be recorded in the same line item in Farmer Mac's consolidated statements of operations. Thus, Farmer Mac recognizes changes in fair value of both the financial derivatives and corresponding hedged items within net interest income in its consolidated statements of operations, which contributed \$4.9 million in net interest income during 2018. Before first quarter 2018, changes in the fair value of financial derivatives designated in a fair value hedge relationship were recognized in "Gains/(losses) on financial derivatives" in Farmer Mac's consolidated statements of operations. Another factor contributing to the year-over-year increase in net interest income was an increase in the amount of cash basis interest income recognized on non-accrual Farm & Ranch loans, which contributed \$1.5 million in net interest income during 2018. The year-over-year increase in net interest income was partially offset by the full amortization of the remaining \$2.0 million in premium of an interest-only security held in Farmer Mac's investment portfolio (the "Interest-Only Amortization") because the issuer called the security upon full prepayment of the underlying mortgage loan that collateralized the security.

The \$17.3 million increase in net interest income for 2017 compared to 2016 was driven by net growth in Farm & Ranch loans, on-balance sheet AgVantage securities, and USDA Securities. Also contributing to the increase was the effect of an increase in short-term interest rates on assets and liabilities indexed to LIBOR due to the Federal Reserve's monetary policy decisions since December 2016 to raise the target range for the federal funds rate. This effect on net interest income occurred because interest expense used to calculate net interest income does not include all the funding expenses related to these assets, specifically the expense on financial derivatives not designated in hedge accounting relationships. This

increase in short-term rates on assets and liabilities indexed to LIBOR did not have a similar effect on net effective spread because net effective spread includes interest expense from all funding related to those assets, including interest expense from financial derivatives not designated in hedge accounting relationships. Also contributing to the year-over-year increase was an increase in the net effect of consolidated trusts resulting from an increase in securitization activity of Farm & Ranch loans throughout 2016 and 2017. Farmer Mac earns the difference between the interest income recognized on loans in consolidated trusts and the related interest expense recognized on debt securities of consolidated trusts held by third parties. The increase in net interest income was offset in part by an increase in net yield adjustments related to amortization of premiums and discounts on assets consolidated at fair value. The 4 basis point increase in net interest yield in 2017 compared to 2016 was primarily due to a reduction in the average balance of lower-earning cash and cash equivalents and investment securities.

Net effective spread, a non-GAAP measure, was \$151.2 million in 2018, compared to \$141.3 million in 2017 and \$123.1 million in 2016. In percentage terms, net effective spread was 0.91% in 2018, compared to 0.91% in 2017 and 0.84% in 2016. Farmer Mac uses net effective spread as an alternative measure to net interest income because management believes it is a useful metric that reflects the economics of the net spread between all the assets owned by Farmer Mac and all related funding, including any associated derivatives, some of which may not be included in net interest income.

The \$9.9 million increase in net effective spread in dollars for 2018 compared to 2017 was primarily due to: (1) growth in outstanding business volume, which increased net effective spread by approximately \$10.1 million; and (2) a \$1.5 million increase in the amount of cash basis interest income received from non-accrual Farm & Ranch loans. This increase in net effective spread was partially offset by the Interest-Only Amortization described above. In percentage terms, net effective spread remained at 0.91% in both 2018 and 2017 primarily because the positive impact of the cash basis interest income was offset by the negative impact of the Interest-Only Amortization.

For 2017 compared to 2016, the \$18.2 million increase in net effective spread in dollars was primarily due to: (1) growth in on-balance sheet AgVantage securities, Farm & Ranch loans, and other business volume, which increased net effective spread by approximately \$15.1 million in 2017; and (2) changes in our funding strategies and improvements in LIBOR-based short-term funding costs for floating rate assets indexed to LIBOR, which added approximately \$4.0 million in 2017. Net effective spread in percentage terms increased 7 basis points in 2017 compared to 2016 primarily due to the decrease in the average balance of lower-earning cash and cash equivalents and investment securities, which added approximately 5 basis points to net effective spread. Also contributing to the increase were the effects of changes in our funding strategy and a favorable LIBOR-based funding market, which added approximately 3 basis points in 2017.

For more information about Farmer Mac's use of net effective spread as a financial measure, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Use of Non-GAAP Measures." For a reconciliation of net interest income to net effective spread, see Table 7 in "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Net Interest Income."

Business Volume

Our outstanding business volume was \$19.7 billion as of December 31, 2018, a net increase of \$717.2 million from December 31, 2017, after taking into account all new business, maturities, and paydowns on

existing assets. This increase was driven by net growth of \$477.9 million in the Institutional Credit line of business, net growth of \$366.4 million in the Farm & Ranch line of business, and net growth of \$163.4 million in the USDA Guarantees line of business. The net growth in these lines of business was partially offset by a \$290.5 million net business volume decrease in the Rural Utilities line of business.

On February 19, 2019, we purchased a \$546 million portfolio of participations in seasoned Rural Utilities loans from CoBank under a master loan participation agreement entered into on February 13, 2019. CoBank is a related party to Farmer Mac because of its stock ownership in Farmer Mac. For more information, see the Current Report on Form 8-K that we filed with the SEC on February 20, 2019.

For more information about Farmer Mac's business volume, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Business Volume."

Capital

As of December 31, 2018, our core capital level was \$727.6 million, which was \$182.6 million above the minimum capital level required by our statutory charter. As of December 31, 2017, our core capital level was \$657.1 million, which was \$136.8 million above the minimum capital requirement. The increase in capital above the minimum capital level was due primarily to an increase in retained earnings.

Credit Quality

Our overall credit quality improved during 2018 compared to 2017. Our total provision for losses and our 90-day delinquencies each decreased year-over-year, while our total allowance for losses and substandard assets as a percent of our Farm & Ranch portfolio each remained the same. While we expect that over time our 90-day delinquency and substandard assets rates will revert closer to Farmer Mac's historical averages, our overall credit quality did not deteriorate in 2018 compared to 2017 because borrowers had sufficient capacity to meet their financial obligations.

As of December 31, 2018, Farmer Mac's allowance for losses was \$9.2 million (0.13% of the Farm & Ranch portfolio), compared to \$8.9 million (0.13% of the Farm & Ranch portfolio) as of December 31, 2017. The \$0.3 million increase in the total allowance for losses in 2018 was primarily due to net growth in our Farm & Ranch loan portfolio, slightly offset by a modest improvement in the portfolio's credit quality.

As of December 31, 2018, Farmer Mac's substandard assets were \$232.7 million (3.2% of the Farm & Ranch portfolio), compared to \$221.3 million (3.2% of the Farm & Ranch portfolio) as of December 31, 2017. The \$11.4 million increase in substandard assets in 2018 compared to 2017 was due to growth in our total Farm & Ranch portfolio, while the proportion of our substandard assets to the overall Farm & Ranch portfolio remained the same as in 2017.

As of December 31, 2018, Farmer Mac's 90-day delinquencies were \$26.9 million (0.37% of the Farm & Ranch portfolio), compared to \$48.4 million (0.71% of the Farm & Ranch portfolio) as of December 31, 2017. The year-over-year decrease is primarily due to two permanent planting loans to one borrower in the aggregate amount of \$15.3 million that became current during 2018.

For more information about Farmer Mac's credit metrics, including 90-day delinquencies, the total allowance for losses, and substandard assets, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Credit Risk – Loans and Guarantees."

Critical Accounting Policies and Estimates

The preparation of Farmer Mac's consolidated financial statements in conformity with GAAP requires the use of estimates and assumptions that affect the amounts reported in the consolidated financial statements and related notes for the periods presented. Actual results could differ from those estimates. Farmer Mac views the allowance for losses and fair value measurement as critical accounting policies. Both policies require complex and subjective judgments, and are important to the presentation of Farmer Mac's financial condition and results of operations.

Allowance for Losses

Farmer Mac maintains an allowance for losses to cover estimated probable losses incurred as of the balance sheet date on loans held for investment ("allowance for loan losses") and loans underlying off-balance sheet Farmer Mac Guaranteed Securities and LTSPCs ("reserve for losses") based on available information. For purposes of this accounting policy, the allowance for loan losses and the reserve for losses are described collectively as the "allowance for losses" because the estimation methodology is identical for loans that are held for investment and for loans underlying off-balance sheet Farmer Mac Guaranteed Securities and LTSPCs. Disaggregation by commodity type is performed, where appropriate, in analyzing the need for an allowance for losses.

The allowance for loan losses increases through periodic provisions for loan losses that are charged against net interest income. The reserve for losses increases through provisions for losses that are charged to non-interest expense. Both the allowance for loan losses and reserve for losses decrease by charge-offs for actual losses, net of recoveries. Charge-offs represent losses on the outstanding principal balance, any interest payments previously accrued or advanced, and expected costs of liquidation. Negative provisions, or releases of allowance for losses, occur when the estimate of probable losses as of the end of a period is lower than the estimate at the beginning of the period.

The total allowance for losses consists of a general allowance for losses and a specific allowance for individually identified impaired loans.

General Allowance for Losses

Farm & Ranch

Farmer Mac's methodology for determining its general allowance for losses incorporates Farmer Mac's automated loan classification system. That system scores loans based on criteria such as historical repayment performance, indicators of current financial condition, loan seasoning, loan size, and loan-to-value ratio. For purposes of the loss allowance methodology, the loans in Farmer Mac's portfolio of loans and loans underlying off-balance sheet Farm & Ranch Guaranteed Securities and LTSPCs have been scored and classified for each calendar quarter since first quarter 2000. The allowance methodology captures the migration of loan scores across concurrent and overlapping three-year time horizons and calculates loss rates separately within each loan classification for (1) loans held for investment and (2) loans underlying off-balance sheet Farm & Ranch Guaranteed Securities and LTSPCs. The calculated

loss rates are applied to the current classification distribution of unimpaired loans in Farmer Mac's portfolio to estimate probable losses, based on the assumption that the historical credit losses and trends used to calculate loss rates will continue in the future. Management evaluates this assumption by considering many relevant factors, including:

- economic conditions;
- geographic and agricultural commodity/product concentrations in the portfolio;
- the credit profile of the portfolio;
- delinquency trends of the portfolio;
- historical charge-off and recovery activities of the portfolio; and
- other factors to capture current portfolio trends and characteristics that differ from historical experience.

Management believes that this methodology produces a reasonable estimate of probable losses, as of the balance sheet date, for all loans included in the Farm & Ranch line of business, including loans held for investment and loans underlying off-balance sheet Farm & Ranch Guaranteed Securities and LTSPCs.

Rural Utilities

Farmer Mac separately evaluates the Rural Utilities loans it holds for investment and loans underlying LTSPCs to estimate any probable losses inherent in those assets. Farmer Mac has not provided an allowance for losses for the portfolio segment related to the Rural Utilities line of business based on the credit quality of the collateral supporting rural utilities assets.

Specific Allowance for Impaired Loans

Farmer Mac individually analyzes certain loans in its portfolio for impairment. Farmer Mac's individually identified impaired loans generally include loans 90 days or more past due, in foreclosure, restructured, in bankruptcy, and certain performing loans that have previously been delinquent or are secured by real estate that produces agricultural commodities or products that have been identified as under stress.

For individually identified impaired loans with an updated appraisal, other updated collateral valuation, or management's estimate of discounted collateral value, this analysis compares the measurement of the fair value of the collateral to the total recorded investment in the loan. The total recorded investment in the loan includes principal, interest, and advances, net of any charge-offs. If an individually analyzed loan's collateral value does not equal or exceed its total recorded investment, Farmer Mac provides a specific allowance for loss in the amount of the difference between the recorded investment and fair value, less estimated costs to liquidate the collateral. Estimated selling costs are based on historical selling costs incurred by Farmer Mac or management's best estimate of selling costs for a particular property. For individually identified impaired loans without updated valuations, this analysis is performed in the aggregate considering similar risk characteristics of the loans and historical statistics. Farmer Mac considers appraisals that are more than two years old as of the reporting date not to be updated for purposes of individually analyzing loans.

Farmer Mac uses a risk-based approach in determining the need to obtain updated appraisals on impaired loans. For example, larger exposures associated with highly improved and specialized collateral will generally receive updated appraisals once the loans are identified as impaired. Also, updated appraisals are always obtained during the foreclosure process. Depending on the risk factors associated with the loan

and underlying collateral, which can vary widely depending on the circumstances of the loan and collateral, this can occur early in the foreclosure process, while in other instances this may occur just before the transfer of title. As part of its routine credit review process, Farmer Mac often will exercise judgment in discounting an appraised value due to local real estate trends or the condition of the property (e.g., following an inspection by Farmer Mac or the servicer).

A property's appraised value may also be discounted based on the market's reaction to Farmer Mac's asking price for the sale of the property.

More information about the allowance for losses is included in "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Credit Risk – Loans and Guarantees" and Note 2(i) to the consolidated financial statements.

Fair Value Measurement

A significant portion of Farmer Mac's assets consists of financial instruments that are measured at fair value in the consolidated balance sheets. For financial instruments that are complex in nature or for which observable inputs are not available, the measurement of fair value requires management to make significant judgments and assumptions. These judgments and assumptions, as well as changes in market conditions, may have a material impact on the consolidated balance sheets and statements of operations.

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date (also referred to as an exit price) and establishes a hierarchy for ranking fair value measurements. In determining fair value, Farmer Mac uses various valuation approaches, including market and income approaches. The fair value hierarchy requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. When available, the fair value of Farmer Mac's financial instruments is based on quoted market prices, valuation techniques that use observable market-based inputs, or unobservable inputs that are corroborated by market data. Pricing information obtained from third parties is internally validated for reasonableness before use in the consolidated financial statements.

When observable market prices are not readily available, Farmer Mac estimates fair value using techniques that rely on alternate market data or internally developed models using significant inputs that are generally less readily observable. Market data includes prices of financial instruments with similar maturities and characteristics, interest rate yield curves, measures of volatility, and prepayment rates. If market data needed to estimate fair value is not available, Farmer Mac estimates fair value using internally-developed models that employ a discounted cash flow approach. Even when market assumptions are not readily available, Farmer Mac's assumptions reflect those that market participants would likely use in pricing the asset or liability at the measurement date.

Farmer Mac's assets and liabilities presented at fair value in the consolidated balance sheets on a recurring basis include investment securities, Farmer Mac Guaranteed Securities, and financial derivatives. The changes in fair value from period to period are recorded either in the consolidated statements of comprehensive income as other comprehensive (loss)/income, net of tax or in the consolidated statements of operations as gains/(losses) on financial derivatives, net interest income, or gains/(losses) on trading assets.

The fair value hierarchy ranks the quality and reliability of the information used to determine fair values. The hierarchy gives highest priority to unadjusted quoted prices in active markets for identical

assets or liabilities and the lowest priority to unobservable inputs. The hierarchy has the following three levels to classify fair value measurements:

- Level 1 Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities.
- Level 2 Quoted prices in markets that are not active or financial instruments for which all significant inputs are observable, either directly or indirectly.
- Level 3 Prices or valuations that require unobservable inputs that are significant to the fair value measurement.

As of December 31, 2018, Farmer Mac's assets and liabilities recorded at fair value included financial instruments valued at \$6.0 billion whose fair values were estimated by management in the absence of readily determinable fair values (i.e., level 3). These financial instruments measured as level 3 represented 32% of total assets and 73% of financial instruments measured at fair value as of December 31, 2018.

See Note 13 to the consolidated financial statements for more information about fair value measurement.

Use of Non-GAAP Measures

In the accompanying analysis of its financial information, Farmer Mac sometimes uses "non-GAAP measures," which are measures of financial performance that are not presented in accordance with GAAP. Specifically, Farmer Mac uses the following non-GAAP measures: "core earnings," "core earnings per share," and "net effective spread." Farmer Mac uses these non-GAAP measures to measure corporate economic performance and develop financial plans because, in management's view, they are useful alternative measures in understanding Farmer Mac's economic performance, transaction economics, and business trends.

The non-GAAP financial measures that Farmer Mac uses may not be comparable to similarly labeled non-GAAP financial measures disclosed by other companies. Farmer Mac's disclosure of these non-GAAP measures is intended to be supplemental in nature and is not meant to be considered in isolation from, as a substitute for, or as more important than, the related financial information prepared in accordance with GAAP.

Core Earnings and Core Earnings Per Share

Core earnings and core earnings per share principally differ from net income attributable to common stockholders and earnings per common share, respectively, by excluding the effects of fair value fluctuations. These fluctuations are not expected to have a cumulative net impact on Farmer Mac's financial condition or results of operations reported in accordance with GAAP if the related financial instruments are held to maturity, as is expected. Among other items, these fair value fluctuations have included unrealized gains or losses on financial derivatives. Specifically, variation margin is exchanged between Farmer Mac and its counterparties on both its cleared and non-cleared derivatives portfolios. Before first quarter 2017, Farmer Mac accounted for variation margin as collateral and associated unrealized gains or losses on its centrally cleared derivative contracts. However, beginning in first quarter 2017, as a result of a change in variation margin rules implemented by the Chicago Mercantile Exchange ("CME"), the central clearinghouse used by Farmer Mac, and confirmed by the U.S. Commodity Futures Trading Commission ("CFTC"), the variation margin amounts exchanged between Farmer Mac and its

counterparties on cleared derivatives are considered as partial settlement of each respective derivatives contract rather than collateral pledged by a counterparty. Therefore, Farmer Mac presents its cleared derivatives portfolio net of variation margin payments on its consolidated balance sheets and recognizes realized gains or losses as a result of these payments on its consolidated statements of operations. We believe that the economic character of these transactions remains the same as they were before the CME rule change. Even though these variation margin amounts are accounted for as realized gains or losses on financial derivatives as a result of the CME rule change and related CFTC interpretation, this is not expected to have a cumulative net impact on Farmer Mac's financial condition or results of operations reported in accordance with GAAP because the related financial instruments are expected to be held to maturity. Therefore, the effects of realized gains or losses resulting from the exchange of variation margin on its cleared derivatives portfolio are excluded in the calculations of core earnings and core earnings per share.

Core earnings and core earnings per share also differ from net income attributable to common stockholders and earnings per common share, respectively, by excluding specified infrequent or unusual transactions that we believe are not indicative of future operating results and that may not reflect the trends and economic financial performance of Farmer Mac's core business. Accordingly, the one-time, non-cash charge to income tax expense due to the re-measurement of the net deferred tax asset was excluded from core earnings and core earnings per share. Farmer Mac re-measured its net deferred tax asset at a lower federal corporate tax rate due to the enactment of new tax legislation on December 22, 2017. This charge is excluded from core earnings and core earnings per share because it is not a frequently occurring transaction, is a non-cash charge, and is not indicative of future operating results. For a reconciliation of Farmer Mac's net income attributable to common stockholders to core earnings and of earnings per common share to core earnings per share, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations."

Net Effective Spread

Farmer Mac uses net effective spread to measure the net spread Farmer Mac earns between its interest-earning assets and the related net funding costs of these assets. Net effective spread differs from net interest income and net interest yield because it excludes: (1) the amortization of premiums and discounts on assets consolidated at fair value that are amortized as adjustments to yield in interest income over the contractual or estimated remaining lives of the underlying assets; (2) interest income and interest expense related to consolidated trusts with beneficial interests owned by third parties, which are presented on Farmer Mac's consolidated balance sheets as "Loans held for investment in consolidated trusts, at amortized cost"; and (3) beginning January 1, 2018, the fair value changes of financial derivatives and the corresponding assets or liabilities designated in a fair value hedge relationship. Farmer Mac excludes from net effective spread the premiums and discounts on assets consolidated at fair value because they either do not reflect actual cash premiums paid for the assets at acquisition or are not expected to have an economic effect on Farmer Mac's financial performance if the assets are held to maturity, as is expected. Farmer Mac also excludes from net effective spread the interest income and interest expense associated with the consolidated trusts and the average balance of the loans underlying these trusts to reflect management's view that the net interest income Farmer Mac earns on the related Farmer Mac Guaranteed Securities owned by third parties is effectively a guarantee fee. Accordingly, the excluded interest income and interest expense associated with consolidated trusts is reclassified to guarantee and commitment fees in determining Farmer Mac's core earnings.

Effective in first quarter 2018, Farmer Mac adopted ASU 2017-12, "Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities." Before first quarter 2018, gains and losses on financial derivatives were included in "(Losses)/gains due to fair value changes" whether or not they were designated in hedge relationships. Beginning in first quarter 2018, gains and losses on financial derivatives in hedge relationships are included in either interest income or interest expense depending on the corresponding hedged financial asset or liability, respectively. Farmer Mac excludes from net effective spread those fair value changes of financial derivatives and the corresponding assets or liabilities designated in fair value hedge relationships because they are not expected to have an economic effect on Farmer Mac's financial performance if the financial derivatives and corresponding hedged items are held to maturity, as is expected.

Net effective spread also principally differs from net interest income and net interest yield because it includes the accrual of income and expense related to the contractual amounts due on financial derivatives that are not designated in hedge relationships ("undesignated financial derivatives"). Farmer Mac uses interest rate swaps to manage its interest rate risk exposure by synthetically modifying the interest rate reset or maturity characteristics of certain assets and liabilities. The accrual of the contractual amounts due on interest rate swaps designated in hedge relationships is included as an adjustment to the yield or cost of the hedged item and is included in net interest income. For undesignated financial derivatives, Farmer Mac records the income or expense related to the accrual of the contractual amounts due in "(Losses)/gains on financial derivatives" on the consolidated statements of operations. However, the accrual of the contractual amounts due for undesignated financial derivatives are included in Farmer Mac's calculation of net effective spread.

Effective in fourth quarter 2017, Farmer Mac revised its methodology for calculating net effective spread to also include the net effects of terminations or net settlements on financial derivatives. The inclusion of these items in net effective spread, along with the accrual of contractual amounts due for undesignated financial derivatives described above, is intended to reflect management's view of the complete net spread between an asset and all of its related funding, including any associated derivatives, whether or not they are designated in a hedge accounting relationship. Specifically, these net effects of terminations or net settlements on financial derivatives include:

1. The net effects of cash settlements on agency forward contracts on the debt of other GSEs. These agency forward contracts are used as short-term economic hedges of the issuance of debt to manage interest rate risk on loans that Farmer Mac has committed to acquire but has not yet purchased. Farmer Mac records the realized gains or losses on settlements of agency forward contracts used as short-term economic hedges of the issuance of debt in the consolidated statements of operations in the period in which they occur. Under the revised methodology, for net effective spread purposes, these realized gains or losses are deferred and amortized as net yield adjustments over the term of the related debt, which generally ranges from 3 to 15 years. Previously, for core earnings purposes, these amounts had been deferred and amortized and were included within the "Other" item that is part of the "Revenues" component of core earnings.
2. The net effects of cash settlements on futures contracts involving U.S. Treasury securities. Similar to the net effects of cash settlements on agency forward contracts, the net effects of cash settlements on futures contracts involving U.S. Treasury securities are used as short-term economic hedges of the issuance of debt and are reported in the consolidated statements of operations in the period in which they occur. Under the revised methodology, for net effective spread purposes, these realized gains or losses are deferred and amortized as net yield adjustments over the term of the related debt, which generally ranges from 3 to 15 years. Previously, for core earnings

purposes, these realized gains and losses had been recognized in the period in which they occurred within the "Other" item that is part of the "Revenues" component of core earnings.

3. The net effects of initial cash payments that Farmer Mac receives upon the inception of certain swaps. When there is no direct payment arrangement between a swap dealer counterparty and a debt dealer issuing Farmer Mac's medium-term notes for a particular transaction, Farmer Mac may receive an initial cash payment from the swap dealer at the inception of the swap to offset dollar-for-dollar the amount of the discount on the associated hedged debt. For GAAP purposes, changes in fair value of these swaps are recognized in "Gains on financial derivatives," whereas the offsetting discount on the associated hedged debt is amortized over the term of the debt as an adjustment to its yield. This results in a timing difference between the recognition of "Gains on financial derivatives" and the recognition of the discount in "Total interest expense." Also, the initial cash payments included in "Gains on financial derivatives" had been excluded from net effective spread, whereas the amortization of the discount included in interest expense had been a component of net effective spread. The initial cash payments received by Farmer Mac vary depending upon the number of the aforementioned type of swaps it executes during a quarter. Under the revised methodology, for net effective spread purposes, these initial cash payments are deferred and amortized as net yield adjustments over the term of the related debt, which generally ranges from 3 to 15 years, and offset the amortization of the discount on the associated hedged debt. Previously, for core earnings purposes, these initial cash payments had been recognized in the period in which they were received within the "Other" item that is part of the "Revenues" component of core earnings. For a reconciliation of net interest income and net interest yield to net effective spread, see Table 6 in "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Net Interest Income."

Results of Operations

Farmer Mac's net income attributable to common stockholders for 2018 was \$94.9 million (\$8.83 per diluted common share), compared to \$71.3 million (\$6.60 per diluted common share) for 2017, and \$64.2 million (\$5.97 per diluted common share) for 2016. Farmer Mac's non-GAAP core earnings for 2018 were \$84.0 million (\$7.82 per diluted common share), compared to \$65.6 million (\$6.08 per diluted common share) for 2017 and \$53.5 million (\$4.98 per diluted common share) for 2016. For more information about the changes in net income attributable to common stockholders and core earnings, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Overview—Net Income and Core Earnings."

Reconciliations of Farmer Mac's net income attributable to common stockholders to core earnings and core earnings per share are presented in the following tables along with information about the composition of core earnings:

Table 1

Reconciliation of Net Income Attributable to Common Stockholders to Core Earnings

	For the Year Ended December 31,		
	2018	2017	2016
	(in thousands, except per share amounts)		
Net income attributable to common stockholders	\$94,898	\$71,300	64,152
Less reconciling items:			
Gains on undesignated financial derivatives due to fair value changes (see Table 8)	7,959	10,218	8,585
Gains/(losses) on hedging activities due to fair value changes	4,449	(719)	5,043
Unrealized gains/(losses) on trading securities	81	(24)	1,460
Amortization of premiums/discounts and deferred gains on assets consolidated at fair value	(461)	(1,327)	(849)
Net effects of terminations or net settlements on financial derivatives(1)	1,708	2,674	2,178
Re-measurement of net deferred tax asset due to enactment of new tax legislation	—	(1,365)	—
Income tax effect related to reconciling items	(2,885)	(3,788)	(5,746)
Sub-total	10,851	5,669	10,671
Core earnings	\$84,047	\$65,631	\$53,481
Composition of Core Earnings:			
Revenues:			
Net effective spread ⁽²⁾	\$151,195	\$141,303	123,072
Guarantee and commitment fees ⁽³⁾	20,733	20,350	19,170
Other ⁽⁴⁾	520	935	2,070
Total revenues	172,448	162,588	144,312
Credit related expense (GAAP):			
Provision for losses	335	1,758	1,002
REO operating expenses	16	23	39
Loss/(gain) on sale of REO	7	(1,748)	(15)
Total credit related expense	358	33	1,026
Operating expenses (GAAP):			
Compensation and employee benefits	27,534	24,233	22,772
General and administrative	19,707	15,959	15,109
Regulatory fees	2,562	2,500	2,463
Total operating expenses	49,803	42,692	40,344
Net earnings	122,287	119,863	102,942
Income tax expense ⁽⁵⁾	25,058	41,215	36,313
Net loss attributable to non-controlling interest (GAAP)	—	(165)	(34)
Preferred stock dividends (GAAP)	13,182	13,182	13,182
Core earnings	\$84,047	\$65,631	\$53,481
Core earnings per share:			
Basic	\$7.89	\$6.20	\$5.10
Diluted	7.82	6.08	4.98
Weighted-average shares:			

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Basic	10,654	10,594	10,477
Diluted	10,746	10,803	10,746

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Effective in fourth quarter 2017, Farmer Mac revised its methodology for calculating net effective spread, which is a component of core earnings, to also include the net effects of terminations or net settlements on financial derivatives. All prior period information has been recast to reflect the revised methodology. For more information, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Use of Non-GAAP Measures—Net Effective Spread" and the information set forth below.

Net effective spread is a non-GAAP measure. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Use of Non-GAAP Measures—Net Effective Spread" for an explanation of net effective spread. See Table 6 for a reconciliation of net interest income to net effective spread.

Includes interest income and interest expense related to consolidated trusts owned by third parties reclassified from net interest income to guarantee and commitment fees to reflect management's view that the net interest income Farmer Mac earns is effectively a guarantee fee on the consolidated Farmer Mac Guaranteed Securities.

Reflects reconciling adjustments for the reclassification to exclude expenses related to interest rate swaps not designated as hedges and terminations or net settlements on financial derivatives, and reconciling adjustments to exclude fair value adjustments on financial derivatives and trading assets and the recognition of deferred gains over the estimated lives of certain Farmer Mac Guaranteed Securities and USDA Securities.

Includes the tax impact of non-GAAP reconciling items between net income attributable to common stockholders and core earnings.

Table 2

Reconciliation of GAAP Basic Earnings Per Share to Core Earnings - Basic Earnings Per Share

	For the Year Ended December 31,		
	2018	2017	2016
	(in thousands, except per share amounts)		
GAAP - Basic EPS	\$8.91	\$6.73	\$6.12
Less reconciling items:			
Gains on undesignated financial derivatives due to fair value changes (see Table 8)	0.75	0.97	0.82
Gains/(losses) on hedging activities due to fair value changes	0.41	(0.07)	0.48
Unrealized gains/(losses) on trading securities	0.01	—	0.14
Amortization of premiums/discounts and deferred gains on assets consolidated at fair value	(0.04)	(0.13)	(0.08)
Net effects of terminations or net settlements on financial derivatives	0.16	0.25	0.21
Re-measurement of net deferred tax asset due to enactment of new tax legislation	—	(0.13)	—
Income tax effect related to reconciling items	(0.27)	(0.36)	(0.55)
Sub-total	1.02	0.53	1.02
Core Earnings - Basic EPS	\$7.89	\$6.20	\$5.10
Shares used in per share calculation (GAAP and Core Earnings)	10,654	10,594	10,477

Reconciliation of GAAP Diluted Earnings Per Share to Core Earnings - Diluted Earnings Per Share	For the Year Ended		
	December 31,		
	2018	2017	2016
	(in thousands, except per share amounts)		
GAAP - Diluted EPS	\$8.83	\$6.60	\$5.97
Less reconciling items:			
Gains on undesignated financial derivatives due to fair value changes (see Table 8)	0.74	0.94	0.80
Gains/(losses) on hedging activities due to fair value changes	0.41	(0.07)	0.46
Unrealized gains/(losses) on trading securities	0.01	—	0.14
Amortization of premiums/discounts and deferred gains on assets consolidated at fair value	(0.04)	(0.12)	(0.08)
Net effects of terminations or net settlements on financial derivatives	0.16	0.25	0.20
Re-measurement of net deferred tax asset due to enactment of new tax legislation	—	(0.13)	—
Income tax effect related to reconciling items	(0.27)	(0.35)	(0.53)
Sub-total	1.01	0.52	0.99
Core Earnings - Diluted EPS	\$7.82	\$6.08	\$4.98
Shares used in per share calculation (GAAP and Core Earnings)	10,746	10,803	10,746

The non-GAAP reconciling items between net income attributable to common stockholders and core earnings are:

1. Gains/(losses) on financial derivatives due to fair value changes are presented by two reconciling items in Table 1 above: (1) Gains on undesignated financial derivatives due to fair value changes; and (2) Gains/(losses) on hedging activities due to fair value changes. The table below calculates the non-GAAP reconciling item for gains/(losses) on hedging activities due to fair value changes:

Table 3

Non-GAAP Reconciling Items for Gains/(Losses) on Hedging Activities due to Fair Value Changes

	For the Year Ended		
	December 31,		
	2018	2017	2016
	(in thousands)		
Gains/(losses) due to fair value changes (see Table 6.2)	4,941	(719)	5,043
Initial cash payment received at inception of swap ⁽¹⁾	(492)	—	—
Gains/(losses) on hedging activities due to fair value changes	\$4,449	\$(719)	\$5,043

Relates to initial cash payments received at the inception of a swap designated in a fair value hedge. These initial cash payments were previously recognized in "(Losses)/gains on financial derivatives" in the statement of operations. Upon adoption of ASU 2017-12, "Derivatives and Hedging (Topic 815): Targeted Improvements to

(1) Accounting for Hedging Activities," for financial derivatives designated in fair value hedge relationships, the changes in the fair values of the derivative and the associated hedged item are recorded within net interest income. For core earnings purposes, these initial cash payments are deferred and amortized as net yield adjustments over the term of the related debt.

2. Unrealized gains/(losses) on trading securities. The unrealized gains/(losses) on trading securities are reported on Farmer Mac's consolidated statements of operations, which represent changes during the period in fair values for

trading assets remaining on Farmer Mac's balance sheet as of the end of the reporting period.

3. Amortization of premiums/discounts and deferred gains on assets consolidated at fair value. The amount of this non-GAAP reconciling item is the recorded amount of premium, discount, or deferred gain

amortization during the reporting period on those assets for which the premium, discount, or deferred gain was based on the application of an accounting principle (e.g., consolidation of variable interest entities) rather than on a cash transaction (e.g., a purchase price premium or discount).

4. The net effects of terminations or net settlements on financial derivatives. These terminations or net settlements relate to:

Forward contracts on the debt of other GSEs and futures contracts on U.S. Treasury securities. These contracts are used as a short-term economic hedge of the issuance of debt. For GAAP purposes, realized gains or losses on settlements of these contracts are reported in the consolidated statements of operations in the period in which they occur. For core earnings purposes, these realized gains or losses are deferred and amortized as net yield adjustments over the term of the related debt, which generally ranges from 3 to 15 years.

Initial cash payments received by Farmer Mac upon the inception of certain swaps. When there is no direct payment arrangement between a swap dealer counterparty and a debt dealer issuing Farmer Mac's medium-term notes for a particular transaction, Farmer Mac may receive an initial cash payment from the swap dealer at the inception of the swap to offset dollar-for-dollar the amount of the discount on the associated hedged debt. For GAAP purposes, changes in fair value of the swaps are recognized in "Gains on financial derivatives," while the economically offsetting discount on the associated hedged debt is amortized over the term of the debt as an adjustment to its yield. For core earnings purposes, these initial cash payments are deferred and amortized as net yield adjustments over the term of the related debt, which generally ranges from 3 to 15 years.

5. Re-measurement of net deferred tax asset due to enactment of new tax legislation. This non-recurring, non-cash charge to income tax expense in fourth quarter 2017 was the result of a re-measurement by Farmer Mac of its net deferred tax asset at a lower federal corporate tax rate due to enactment of the Tax Cuts and Jobs Act on December 22, 2017. This charge has been excluded from core earnings because it is not the result of frequently occurring transactions, is not indicative of future operating results, and is a non-cash charge. Farmer Mac re-measured its net deferred tax asset at the newly-enacted 21% corporate tax rate which will be applied when temporary differences that gave rise to the net deferred tax asset will be realized or settled.

The following sections provide more detail about specific components of Farmer Mac's results of operations.

Net Interest Income. The following table provides information about interest-earning assets and funding for the years ended December 31, 2018 and 2017. The average balance of non-accruing loans is included in the average balance of loans, Farmer Mac Guaranteed Securities, and USDA Securities presented, though the related income is accounted for on a cash basis. Therefore, as the average balance of non-accruing loans and the income received increases or decreases, the net interest income and yield will fluctuate accordingly. The average balance of loans in consolidated trusts with beneficial interests owned by third parties is disclosed in the net effect of consolidated trusts and is not included in the average balances of interest-earning assets and interest-bearing liabilities. The interest income and expense associated with these trusts are shown in the net effect of consolidated trusts.

Table 4

	For the Year Ended		December 31, 2017			December 31, 2016			
	Average Balance	Income/ Expense	Average Rate	Average Balance	Income/ Expense	Average Rate	Average Balance	Income/ Expense	Average Rate
(dollars in thousands)									
Interest-earning assets:									
Cash and investments	\$2,723,136	\$55,179	2.03 %	\$2,703,306	\$34,586	1.28 %	\$3,572,018	\$27,042	0.76 %
Loans, Farmer Mac Guaranteed Securities and USDA Securities ⁽¹⁾	13,917,222	434,585	3.12 %	12,763,456	320,932	2.51 %	11,058,332	252,406	2.28 %
Total interest-earning assets	16,640,358	489,764	2.94 %	15,466,762	355,518	2.30 %	14,630,350	279,448	1.91 %
Funding:									
Notes payable due within one year	3,412,019	62,447	1.83 %	5,148,548	49,318	0.96 %	7,304,519	37,648	0.52 %
Notes payable due after one year ⁽²⁾	12,501,093	259,638	2.08 %	9,683,124	154,789	1.60 %	6,882,357	105,828	1.54 %
Total interest-bearing liabilities ⁽³⁾	15,913,112	322,085	2.02 %	14,831,672	204,107	1.38 %	14,186,876	143,476	1.01 %
Net non-interest-bearing funding	727,246	—		635,090	—		443,474		
Total funding	16,640,358	322,085	1.94 %	15,466,762	204,107	1.32 %	14,630,350	143,476	0.98 %
Net interest income/yield prior to consolidation of certain trusts	16,640,358	167,679	1.01 %	15,466,762	151,411	0.98 %	14,630,350	135,972	0.93 %
Net effect of consolidated trusts ⁽⁴⁾	1,443,394	6,757	0.47 %	1,251,048	6,236	0.50 %	905,005	4,302	0.48 %
Net interest income/yield	\$18,083,752	\$174,436	0.96 %	\$16,717,810	\$157,647	0.94 %	\$15,535,355	\$140,274	0.90 %

(1) Excludes interest income of \$54.5 million, \$45.0 million, and \$32.5 million in 2018, 2017, and 2016, respectively, related to consolidated trusts with beneficial interests owned by third parties.

- (2) Includes current portion of long-term notes.
- (3) Excludes interest expense of \$47.8 million, \$38.8 million, and \$28.2 million in 2018, 2017, and 2016, respectively, related to consolidated trusts with beneficial interests owned by third parties.
- (4) Includes the effect of consolidated trusts with beneficial interests owned by third parties.

The \$16.8 million increase in net interest income for 2018 compared to 2017 was driven by net growth in on-balance sheet AgVantage securities, Farm & Ranch loans, and USDA Securities, which contributed to a \$10.1 million increase in net interest income. Another factor contributing to the increase were the fair value changes on financial derivatives and corresponding financial assets and liabilities in fair value hedge relationships, which contributed \$4.9 million in net interest income during 2018. Also contributing to the year-over-year increase in net interest income was an increase in the amount of cash basis interest income recognized on non-accrual Farm & Ranch loans, which contributed \$1.5 million in net interest income during 2018. The increase was offset in part by the \$2.0 million negative impact of the Interest-Only Amortization during 2018. The 2 basis point year-over-year increase in net interest yield was primarily driven by an increase in the aforementioned fair value changes on financial derivatives and corresponding financial assets and liabilities in fair value hedge relationships, offset in part by the impact of the Interest-Only Amortization.

The \$17.3 million increase in net interest income for 2017 compared to 2016 was driven by net growth in Farm & Ranch loans, on-balance sheet AgVantage securities, and USDA Securities. Another factor contributing to the increase was the effect of an increase in short-term interest rates on assets and liabilities indexed to LIBOR due to the Federal Reserve's decisions since December 2016 to raise the target range for the federal funds rate. This effect on net interest income occurred because interest expense used to calculate net interest income does not include all the funding expenses related to these assets, specifically the expense on financial derivatives not designated in hedge accounting relationships. This increase in short-term rates on assets and liabilities indexed to LIBOR did not have a similar effect on net effective spread because net effective spread includes interest expense from all funding related to those assets, including interest expense from financial derivatives not designated in hedge accounting relationships. Also contributing to the year-over-year increase was an increase in the net effect of consolidated trusts resulting from an increase in securitization of Farm & Ranch loans throughout 2016 and 2017. Farmer Mac earns the difference between the interest income recognized on loans in consolidated trusts and the related interest expense recognized on debt securities of consolidated trusts held by third parties. The increase in net interest income was offset in part by an increase in net yield adjustments related to amortization of premiums and discounts on assets consolidated at fair value. The 4 basis point increase in net interest yield in 2017 compared to 2016 was primarily due to a reduction in the average balance of lower-earning cash and cash equivalents and investment securities.

The following table sets forth information about changes in the components of Farmer Mac's net interest income prior to consolidation of certain trusts for the periods indicated. For each category, information is provided on changes attributable to changes in volume (change in volume multiplied by old rate) and changes in rate (change in rate multiplied by old volume). Combined rate/volume variances, the third element of the calculation, are allocated based on their relative size.

Table 5

	2018 vs. 2017			2017 vs. 2016		
	Increase/(Decrease) Due to Rate	Increase/(Decrease) Due to Volume	Increase/(Decrease) Due to Total	Increase/(Decrease) Due to Rate	Increase/(Decrease) Due to Volume	Increase/(Decrease) Due to Total
Income from interest-earning assets:						
Cash and investments	\$20,338	\$255	\$20,593	\$15,303	\$(7,759)	\$7,544
Loans, Farmer Mac Guaranteed Securities and USDA Securities	82,733	30,920	113,653	27,222	41,304	68,526
Total	103,071	31,175	134,246	42,525	33,545	76,070
Expense from other interest-bearing liabilities	102,156	15,822	117,978	53,847	6,784	60,631
Change in net interest income prior to consolidation of certain trusts ⁽¹⁾	\$915	\$15,353	\$16,268	\$(11,322)	\$26,761	\$15,439

⁽¹⁾ Excludes the effect of debt in consolidated trusts with beneficial interests owned by third parties.

The following table presents a reconciliation of net interest income and net interest yield to net effective spread. Net effective spread is measured by: including (1) expenses related to undesignated financial derivatives, which consists of income or expense related to contractual amounts due on financial derivatives not designated in hedge relationships (the income or expense related to financial derivatives designated in hedge relationships is already included in net interest income), and (2) the amortization of losses due to terminations or net settlements of financial derivatives; and excluding (3) the amortization of premiums and discounts on assets consolidated at fair value, (4) the net effects of consolidated trusts with beneficial interests owned by third parties, and (5) beginning in first quarter of 2018, the fair value changes of financial derivatives and corresponding financial assets or liabilities in fair value hedge

relationships. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Use of Non-GAAP Measures—Net Effective Spread" for more information about the explanation of net effective spread.

Table 6

	For the Year Ended December 31,					
	2018		2017		2016	
	Dollars	Yield	Dollars	Yield	Dollars	Yield
	(dollars in thousands)					
Net interest income/yield	\$174,436	0.96 %	\$157,647	0.94 %	\$140,274	0.90 %
Net effects of consolidated trusts	(6,757)	0.04 %	(6,236)	0.04 %	(4,302)	0.03 %
Expense related to undesignated financial derivatives	(11,685)	(0.07)%	(10,261)	(0.07)%	(11,480)	(0.07)%
Amortization of premiums/discounts on assets consolidated at fair value	417	0.01 %	1,191	0.01 %	610	— %
Amortization of losses due to terminations or net settlements on financial derivatives	(275)	— %	(1,038)	(0.01)%	(2,030)	(0.02)%
Fair value changes on fair value hedge relationships	(4,941)	(0.03)%	—	— %	—	— %
Net effective spread	\$151,195	0.91 %	\$141,303	0.91 %	\$123,072	0.84 %

For 2018 compared to 2017, the \$9.9 million increase in net effective spread in dollars was primarily due to: (1) growth in outstanding business volume, which increased net effective spread by approximately \$10.1 million; and (2) a \$1.5 million increase in the amount of cash basis interest income recognized on nonaccrual Farm & Ranch loans. The increase was offset in part by the \$2.0 million impact of the Interest-Only Amortization. In percentage terms, net effective spread remained at 0.91% in both 2018 and 2017 primarily because the positive impact of the cash basis interest income was offset by the negative impact of the Interest-Only Amortization.

For 2017 compared to 2016, the \$18.2 million increase in net effective spread in dollars was primarily attributable to: (1) growth in on-balance sheet AgVantage securities, Farm & Ranch loans, and other business volume, which increased net effective spread by approximately \$15.1 million in 2017; and (2) changes in Farmer Mac's funding strategies and improvements in LIBOR-based short-term funding costs for floating rate assets indexed to LIBOR, which added approximately \$4.0 million in 2017. Net effective spread in percentage terms increased 7 basis points in 2017 compared to 2016 primarily due to the decrease in the average balance of lower-earning cash and cash equivalents and investment securities, which added approximately 5 basis points to net effective spread. Also contributing to the increase were the effects of changes in Farmer Mac's funding strategy and a favorable LIBOR-based funding market, which added approximately 3 basis points in 2017.

See Note 14 to the consolidated financial statements for more information about net interest income and net effective spread from Farmer Mac's individual business segments. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Supplemental Information" for quarterly net effective spread by line of business.

Provision for and Release of Allowance for Loan Losses and Reserve for Losses. The following table summarizes the components of Farmer Mac's total allowance for losses for each year in the three-year period ended December 31, 2018:

Table 7

	Allowance for Loan Losses	Reserve for Losses	Total Allowance for Losses
	(in thousands)		
Balance as of January 1, 2016	\$4,480	\$ 2,083	\$ 6,563
Provision for/(release of) losses	1,065	(63)	1,002
Charge-offs	(130)	—	(130)
Balance as of December 31, 2016	\$5,415	\$ 2,020	\$ 7,435
Provision for losses	1,708	50	\$ 1,758
Charge-offs	(327)	—	(327)
Balance as of December 31, 2017	\$6,796	\$ 2,070	\$ 8,866
Provision for losses	238	97	335
Charge-offs	(17)	—	(17)
Balance as of December 31, 2018	\$7,017	\$ 2,167	\$ 9,184

The total provision for losses recorded during 2018 decreased by \$1.4 million compared to 2017 primarily due to decreased year-over-year loan growth and modestly improved credit quality in the Farm & Ranch portfolio.

The provision for the allowance for loan losses recorded during 2017 was due to: (1) an increase in the general allowance due to overall net volume growth in on-balance sheet Farm & Ranch loans; and (2) an increase in the specific allowance for certain impaired on-balance sheet crop and permanent planting loans resulting from both an increase in the outstanding balance of such loans and downgrades in risk ratings on some of those loans. The increase in the provision was offset in part by a modest decline in loss rates used to estimate probable losses. The provision for the reserve for losses recorded during 2017 was primarily due to an increase in the general reserve due to downgrades in risk ratings on certain unimpaired Agricultural Storage and Processing loans underlying LTSPCs. The increase in the general reserve for losses was offset in part by a net decrease in the balance of loans underlying LTSPCs and off-balance sheet Farmer Mac Guaranteed Securities. The charge-offs recorded during 2017 were primarily related to two impaired crop loans (with one borrower) that were foreclosed and transitioned to REO during first quarter 2017. Farmer Mac had previously recorded a specific allowance of \$0.2 million on these impaired crop loans as of December 31, 2016. During second quarter 2017, Farmer Mac sold the related properties for \$5.4 million and recognized a \$0.8 million gain on sale of REO.

The provisions to the allowance for loan losses recorded during 2016 were due to (1) an increase in the general allowance due to overall net volume growth in on-balance sheet Farm & Ranch loans; (2) downgrades in risk ratings for certain loans; and (3) an increase in the specific allowance for on-balance sheet impaired loans resulting from an increase in the outstanding balance of such loans. The releases from the reserve for losses recognized during 2016 were primarily due to the release of a specific reserve on an impaired livestock loan underlying an LTSPC that was required to be removed from the LTSPC pool by the originator during third quarter 2016, offset in part by provisions to the reserve for losses due to an increase in the general reserve due to downgrades in risk rating on certain loans underlying LTSPCs.

See Note 8 to the consolidated financial statements and "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Credit Risk – Loans and Guarantees."

Guarantee and Commitment Fees. Guarantee and commitment fees, which compensate Farmer Mac for assuming the credit risk on loans underlying off-balance sheet Farmer Mac Guaranteed Securities and LTSPCs, were \$14.0 million for 2018, compared to \$14.1 million and \$14.9 million for 2017 and 2016, respectively.

Guarantee and commitment fees, for the purpose of core earnings, include interest income and interest expense related to consolidated trusts owned by third parties to reflect management's view that the net interest income Farmer Mac earns is effectively a guarantee fee on the consolidated Farmer Mac Guaranteed Securities. For 2018, guarantee and commitment fees, for the purpose of core earnings, were \$20.7 million compared to \$20.4 million and \$19.2 million for 2017 and 2016, respectively.

For more information about net income attributable to common stockholders, the composition of core earnings, and a reconciliation of net income attributable to common stockholders to core earnings, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations." For more information about the non-GAAP measures Farmer Mac uses, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Use of Non-GAAP Measures."

Gains/(losses) on financial derivatives. The components of gains and losses on financial derivatives for the years ended December 31, 2018, 2017, and 2016 are summarized in the following table:

Table 8

	For the Year Ended December 31,		
	2018 ⁽¹⁾	2017	2016
	(in thousands)		
Fair value hedges:			
(Losses)/gains due to fair value changes:			
Financial derivatives ⁽²⁾	\$—	\$1,694	\$25,365
Hedged items	—	(2,413)	(20,322)
(Losses)/gains on fair value hedging activities	—	(719)	5,043
Cash flow hedges:			
Loss recognized (ineffective portion)	—	(320)	(353)
Losses on cash flow hedges	—	(320)	(353)
No hedge designation:			
(Losses)/gains due to fair value changes	7,958	10,218	8,585
Accrual of contractual payments	(11,685)	(9,941)	(11,127)
Gains/(losses) due to terminations or net settlements	40	1,515	163
(Losses)/gains on financial derivatives not designated in hedging relationships	(3,687)	1,792	(2,379)
(Losses)/gains on financial derivatives	\$(3,687)	\$753	\$2,311

Effective in first quarter 2018, Farmer Mac adopted ASU 2017-12, "Derivatives and Hedging (Topic 815):

Targeted Improvements to Accounting for Hedging Activities." For financial derivatives designated in fair value
(1) hedge relationships, changes in the fair values of the derivative and the associated hedged item are recorded within net interest income. For financial derivatives designated in cash flow hedge relationships, changes in the fair values of the derivative and the associated hedged item are recorded within accumulated other comprehensive income and reclassified to net interest income when the hedged item impacts earnings.

Included in the assessment of hedge effectiveness as of December 31, 2017, but excluded from the amounts in the table, were gains of \$0.1 million for the year ended December 31, 2017, attributable to the fair value of the swaps at the inception of the hedging relationship. Accordingly, the amounts recognized as hedge ineffectiveness for the (2) year ended December 31, 2017 were gains of \$0.6 million. The comparable amounts as of December 31, 2016 were losses of \$5.2 million for the year ended December 31, 2016, attributable to the fair value of the swaps at the inception of the hedging relationship and, accordingly, gains of \$0.2 million for the year ended December 31, 2016, attributable to hedge ineffectiveness.

The adoption of the new hedge accounting guidance ASU 2017-12, "Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities," effective first quarter 2018, impacted the presentation in Table 8 above. Beginning in first quarter 2018, gains and losses due to fair value changes on financial derivatives designated in fair value hedge accounting relationships are included in either interest income or interest expense depending on the corresponding hedged financial asset or liability, respectively. For cash flow hedges, both the effective and ineffective portions of the changes in the fair values of the derivative instruments are recorded in accumulated other comprehensive income (AOCI) and reclassified to net interest income when the hedged item impacts earnings. Thus, for 2018, the table above only presents changes in the fair values of Farmer Mac's open financial derivative positions that are not designated in hedge accounting relationships. Before 2018, gains and losses on financial derivatives were included in "(Losses)/gains due to fair value changes" whether or not they were designated in hedge accounting relationships. Thus, for 2017 and 2016, the table above presents gains and losses on all financial derivatives in "(Losses)/gains due to fair value changes." These changes in fair value are primarily the result of fluctuations in long-term interest rates. The accrual of periodic cash settlements for interest paid or received from Farmer Mac's interest rate swaps that are not designated in hedge accounting relationships is shown as expense related to financial derivatives. Payments or receipts to terminate derivative positions or net cash settled forward sales contracts on the debt of other GSEs and U.S. Treasury futures that are not designated in hedge accounting relationships and initial cash payments received upon the inception of certain swaps not designated in hedge accounting relationships are included in "Gains/(losses) due to terminations or net settlements" in the table above. For swaps not designated in a hedge accounting relationship, when there is no direct payment arrangement between a swap dealer counterparty and a debt dealer issuing Farmer Mac's medium-term notes for a particular transaction, Farmer Mac may receive an initial cash payment from the swap dealer at the inception of the swap to offset dollar-for-dollar the amount of the discount on the associated hedged debt. Changes in the fair value of these swaps are recognized immediately in "Gains/(losses) on financial derivatives," while the offsetting discount on the hedged debt is amortized over the term of the debt as an adjustment to its yield. The amounts of initial cash payments received by Farmer Mac vary depending on the number of the aforementioned type of swaps it executes during a quarter.

(Losses)/gains on Sale of Real Estate Owned (REO). During 2018, Farmer Mac realized net losses of \$7,000 on the sales of REO properties, compared to net gains of \$1.7 million and \$15,000 for 2017 and 2016, respectively.

Gains/(losses) on Trading Securities. During 2018, Farmer Mac recorded \$81,000 of unrealized gains on trading securities, compared to unrealized losses of \$24,000 during 2017 and unrealized gains of \$1.5 million during 2016. During 2018 and 2017, all of the unrealized gains and losses, respectively, were related to financial assets that had been selected to be carried at fair value with the related changes in fair value included in earnings (i.e., the "fair value option"), compared to recorded losses of \$0.3 million under the fair value option for 2016.

Other Income. Other income totaled \$1.4 million during 2018, compared to \$0.8 million and \$1.8 million during 2017 and 2016, respectively. The increase in other income for 2018 compared to 2017 was primarily due to the collection of \$1.3 million and \$0.5 million, respectively, in late fees received on Farm & Ranch loans. The increase was offset in part by the absence in 2018 of the recognition of \$0.4 million

of appraisal fees received by Farmer Mac's former consolidated appraisal company subsidiary, AgVisory, that occurred in 2017. As of May 1, 2017, Farmer Mac transferred its entire 65% ownership interest in AgVisory back to the limited liability company. Farmer Mac recognized a loss of approximately \$0.1 million upon the transfer.

Compensation and Employee Benefits. Compensation and employee benefits were \$27.5 million in 2018, compared to \$24.2 million and \$22.8 million, respectively, in 2017 and 2016. The increase in compensation and employee benefits in 2018 compared to 2017 was due to an increase in headcount and related employee health insurance costs and higher payouts of variable incentive compensation resulting from actual performance exceeding certain performance target amounts during 2017, which was paid in 2018. Another significant factor contributing to the increase in compensation expense in 2018 compared to 2017 was the absence in 2018 of the recoupment of approximately \$1.3 million in compensation costs related to the forfeiture of unvested equity awards and annual variable incentive compensation resulting from the termination of employment of Farmer Mac's former President and Chief Executive Officer in December 2017. The increase in compensation and employee benefits in 2017 compared to 2016 was primarily due to an increase in headcount and related employee health insurance costs and higher payouts of variable incentive compensation resulting from actual performance exceeding certain performance targets during 2016, which was paid in 2017.

General and Administrative Expenses. G&A expenses were \$19.7 million for 2018, compared to \$16.0 million and \$15.1 million for 2017 and 2016, respectively. The increase in G&A expenses for 2018 compared to 2017 was primarily due to higher expenses related to: (1) continued technology and business infrastructure investments; (2) an increase in headcount and the search process for Farmer Mac's current President and Chief Executive Officer; and (3) new leases for office space entered into during 2017. The increase for 2017 compared to 2016 was primarily due to higher expenses related to (1) continued technology and business infrastructure investments; (2) legal fees related to general corporate matters, including fees related to the termination of employment of Farmer Mac's former President and Chief Executive Officer in December 2017; (3) building lease expenses due to new leases for office space entered into during 2017; and (4) expenses related to business development efforts.

Regulatory Fees. Regulatory fees, which consist of the fees paid to the Farm Credit Administration ("FCA"), an independent agency in the executive branch of the United States government that regulates Farmer Mac, were \$2.6 million for 2018, compared to \$2.5 million for both 2017 and 2016, respectively. FCA has advised Farmer Mac that its estimated fees for the federal government fiscal year ending September 30, 2019 would increase to \$2.75 million (\$0.688 million per federal government fiscal quarter). After the end of a federal government fiscal year, FCA may revise its prior year estimated assessments to reflect actual costs incurred, and has issued both additional assessments and refunds in the past.

Income Tax Expense. Income tax expense was \$27.9 million for 2018, compared to \$46.4 million and \$42.1 million for 2017 and 2016, respectively. The decrease in income tax expense for 2018 compared to 2017 was primarily due to a lower effective federal corporate tax rate under the Tax Cuts and Jobs Act enacted in December 2017. The effective federal tax rate for the year ended December 31, 2018 was slightly lower than the statutory federal corporate tax rate due to the effect of exercises of share-based compensation awards during 2018.

The increase in income tax expense in 2017 compared to 2016 was primarily due to higher pre-tax income. Also contributing to the increase was a \$1.4 million charge to income tax expense as a result of

the re-measurement of Farmer Mac's net deferred tax asset due to the enactment of the Tax Cuts and Jobs Act. Income tax expense for 2017 also reflected \$0.9 million of tax benefits associated with stock-based compensation activity. The excess of Farmer Mac's effective income tax rate above the statutory rate in 2017 was primarily due to the non-recurring, non-cash charge related to the enactment of the Tax Cuts and Jobs Act, which was offset in part by the tax benefits associated with stock-based compensation activity.

Business Volume. During 2018, we added \$5.2 billion of gross new business volume, compared to \$4.7 billion in 2017 and \$4.4 billion in 2016. Specifically, in 2018 we:

- purchased \$3.0 billion of AgVantage securities;
- renewed a \$300.0 million revolving floating rate AgVantage facility;
- purchased \$960.8 million of newly originated Farm & Ranch loans;
- added \$430.1 million of Farm & Ranch loans under LTSPCs;
- purchased \$332.3 million of USDA Securities;
- issued \$127.9 million of Farmer Mac Guaranteed USDA Securities; and
- purchased \$11.6 million of Rural Utilities loans.

We achieved net growth of \$477.9 million in our Institutional Credit line of business during 2018, as \$3.3 billion of new business volume was offset in part by \$2.8 billion of maturities and repayments. The new business consisted of: (1) \$800.0 million of new AgVantage securities purchased; (2) \$2.2 billion in refinances of maturing AgVantage securities; and (3) the renewal of a \$300.0 million revolving floating rate AgVantage facility. The maturities and repayments consisted of \$2.5 billion of repayments on and maturities of AgVantage securities and the expiration of the \$300.0 million revolving floating rate AgVantage facility that was renewed during fourth quarter.

Our Farm & Ranch line of business experienced net growth of \$366.4 million during 2018 attributable to \$960.8 million of new loans purchased and \$430.1 million of new LTSPCs, offset in part by loan repayments of \$571.1 million and LTSPC repayments of \$453.4 million. Net growth in loan purchases decreased by \$294.7 million during 2018 compared to 2017. This decrease in growth was primarily due to fewer opportunities to purchase large loans in amounts greater than \$15.0 million compared to 2017. We believe that this could be due to fewer eligible borrowers that are able to secure financing of that size, as well as potentially increased pricing competition for the highest credit quality borrowers of these larger loans. Also, increases in interest rates have reduced the demand for refinances in 2018 compared to 2017. Based on our analysis of bank and FCS call report data, there was a decline in the growth of the overall agricultural mortgage market in 2018. Nevertheless, we believe that our relative share of the overall agricultural mortgage market during 2018 remained consistent with prior years and that our net growth of 9.3% in Farm & Ranch loan purchases compared favorably to the 4.9% net growth of the overall agricultural mortgage loan market based on a review of bank and FCS call report data as of September 30, 2018. Net growth in LTSPCs decreased by \$67.2 million during 2018 compared to 2017 primarily due to the absence in 2018 of some customers that added large pools of loans under LTSPCs to restructure their credit risk profile, which occurred in 2017.

Our USDA Guarantees line of business experienced net growth of \$163.4 million during 2018, as \$460.1 million of new business volume was offset in part by \$296.7 million of maturities and repayments. The new business consisted of \$332.3 million of new USDA Securities purchased and the issuance of \$127.9 million of Farmer Mac Guaranteed USDA Securities. The repayments and maturities consisted of \$282.3 million on USDA Securities and \$14.3 million on USDA Securities underlying Farmer Mac Guaranteed USDA Securities. The decrease in purchases and net growth in the USDA Guarantees line of business

reflects increased competition, fewer refinances due to higher interest rates, and potentially lower loan volume being processed through USDA. However, we do not believe that this indicates a decrease in borrower demand for USDA agricultural loans.

Outstanding business volume in our Rural Utilities line of business decreased by \$290.5 million during 2018, primarily due to repayments on loans held and loans underlying LTSPCs. Capital expenditures have declined in the rural utilities industry, which we believe has decreased the overall demand for credit.

On February 19, 2019, we purchased a \$546 million portfolio of participations in seasoned Rural Utilities loans from CoBank under a master loan participation agreement entered into on February 13, 2019. CoBank is a related party to Farmer Mac because of its stock ownership in Farmer Mac. For more information, see the Current Report on Form 8-K that we filed with the SEC on February 20, 2019.

For more information about potential growth opportunities in Farmer Mac's lines of business, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Outlook" in this report.

The following table sets forth gross purchase volumes of non-delinquent eligible loans, new loans added under LTSPCs, and new guarantees during the periods indicated in the Farm & Ranch, USDA Guarantees, and Rural Utilities lines of business, as well as purchases of AgVantage securities in the Institutional Credit line of business. The table also sets forth the net growth or decrease under Farmer Mac's lines of business, after maturities, principal paydowns, and sales:

Table 9

New Business Volume – Farmer Mac Loan Purchases, Guarantees, LTSPCs, and AgVantage Securities

	For the Year Ended December 31,					
	2018		2017		2016	
	Gross volume	Net growth/(decrease)	Gross volume	Net growth/(decrease)	Gross volume	Net growth/(decrease)
	(in thousands)					
Farm & Ranch:						
Loans	\$960,848	\$ 389,589	\$1,129,545	\$ 684,279	\$966,023	\$ 556,479
LTSPCs	430,071	(23,204)	554,743	44,003	399,095	(142,474)
USDA Guarantees:						
USDA Securities	332,270	52,537	369,759	113,217	375,203	78,349
Farmer Mac Guaranteed USDA Securities	127,851	110,870	161,925	144,622	106,054	97,749
Rural Utilities:						
Loans	11,645	(137,448)	137,341	76,779	50,491	(8,614)
LTSPCs	—	(153,069)	—	(72,256)	441,404	355,734
Institutional Credit:						
AgVantage securities	3,010,307	477,939	2,383,912	617,192	2,098,852	563,432
AgVantage revolving line of credit facility	300,000	—	—	—	—	—
Total purchases, guarantees, LTSPCs, and AgVantage securities	\$5,172,992	\$ 717,214	\$4,737,225	\$ 1,607,836	\$4,437,122	\$ 1,500,655

Within the Institutional Credit line of business, we experienced net new growth in AgVantage business volume with our large counterparties of \$270.3 million in the rural utilities industry and \$75.0 million in the agricultural industry.

We also grew our AgVantage business with smaller financial fund counterparties by a net \$133.0 million. We committed to a new \$300.0 million revolving floating rate AgVantage facility

with CFC to replace a similar facility that expired during third quarter 2018. We receive a fixed fee based on the full dollar amount of this facility. If CFC draws on this facility, the amounts drawn will be in the form of on-balance sheet AgVantage securities, and we will earn interest income on those securities.

The decrease in gross new business volume of loans purchased within the Farm & Ranch line of business in 2018 compared to 2017 was primarily due to there being far fewer opportunities to purchase large loans over \$15.0 million. During 2017, we purchased eight large loans totaling \$210.0 million, compared to the purchase of only three large loans totaling \$87.5 million during 2018. While gross Farm & Ranch loan purchases were down during 2018, prepayments on Farm & Ranch loans during that time period also decreased. Net outstanding Farm & Ranch loan volume grew 5.3% year-over-year, which compares to year-over-year overall agricultural mortgage market growth of 4.9% based on a review of the most recent bank and FCS call report data as of September 30, 2018. The decrease in Farmer Mac's prepayment rate was primarily attributable to a steadily rising interest rate environment. During 2018, our prepayment rate remained below our historical averages.

During 2018, we purchased 2,171 Farm & Ranch term loans and revolving line of credit draws. These purchases consisted of 910 term loans with an average unpaid principal balance of \$910,000 and 1,261 revolving line of credit draws with an average unpaid principal balance of \$127,000. Last year, we purchased 2,129 Farm & Ranch term loans and revolving line of credit draws. These purchases consisted of 1,037 term loans with an average unpaid principal balance of \$979,000 and 1,092 revolving line of credit draws with an average unpaid principal balance of \$107,000.

The moderate decrease in new business volume in the USDA Guarantees line of business in 2018 compared to 2017 reflected an increase in competition for these loans, fewer refinances due to a higher interest rate environment, and lower loan volume being processed through USDA. However, we do not believe that this indicates a decline in borrower demand for USDA agricultural loans.

Farmer Mac either retains the loans it purchases or securitizes them and retains or sells Farmer Mac Guaranteed Securities backed by those loans. The weighted-average age of the Farm & Ranch non-delinquent eligible loans purchased and retained (excluding the purchases of defaulted loans) during both 2018 and 2017 was less than one year. Of those loans, 59% and 66% had principal amortization periods longer than the maturity date, resulting in balloon payments at maturity, with a weighted-average remaining term to maturity of 18.5 years and 17.9 years, respectively.

During 2018, 2017, and 2016, Farmer Mac securitized some of the Farm & Ranch loans it had purchased and sold the resulting Farmer Mac Guaranteed Securities, as shown below. Farmer Mac consolidates these loans and presents them as "Loans held for investment in consolidated trusts, at amortized cost" on the consolidated balance sheets. In 2018, 2017, and 2016, \$68.7 million, \$128.9 million, and \$273.6 million, respectively, of Farmer Mac Guaranteed Securities were sold to Zions First National Bank, which is a related party to Farmer Mac.

The following table sets forth information about the Farmer Mac Guaranteed Securities issued during the periods indicated:

Table 10

	For the Year Ended December 31,		
	2018	2017	2016
	(in thousands)		
Loans securitized and sold as Farm & Ranch Guaranteed Securities	\$255,078	\$363,475	\$511,393
Farmer Mac Guaranteed USDA Securities	127,851	161,925	106,054
AgVantage securities	3,010,307	2,383,912	2,098,852
Total Farmer Mac Guaranteed Securities issuances	\$3,393,236	\$2,909,312	\$2,716,299

The following table sets forth information about outstanding volume in each of Farmer Mac's four lines of business as of the dates indicated:

Table 11

Lines of Business - Outstanding Business Volume

	As of December 31,		
	2018	2017	2016
	(in thousands)		
Farm & Ranch:			
Loans	\$3,071,222	\$2,798,906	\$2,381,488
Loans held in trusts:			
Beneficial interests owned by third party investors	1,517,101	1,399,827	1,132,966
LTSPCs ⁽¹⁾	2,509,787	2,335,342	2,209,409
Guaranteed Securities ⁽¹⁾	135,862	333,511	415,441
USDA Guarantees:			
USDA Securities	2,120,553	2,068,017	1,954,800
Farmer Mac Guaranteed USDA Securities	395,067	284,197	139,575
Rural Utilities:			
Loans	938,843	1,076,291	999,512
LTSPCs ⁽²⁾	653,272	806,342	878,598
Institutional Credit			
AgVantage Securities	8,082,817	7,604,878	6,987,686
Revolving floating rate AgVantage facility ⁽³⁾	300,000	300,000	300,000
Total	\$19,724,524	\$19,007,311	\$17,399,475

During fourth quarter 2018, Farmer Mac repurchased the 100% participation interests in loans underlying a pool of \$134.1 million in Farm & Ranch Guaranteed Securities at par, thereby redeeming the corresponding Farm & Ranch Guaranteed Securities from their sole security holder. Farmer Mac repurchased these participation interests at the request of the sole security holder in exchange for the termination of the participation interests and the reconveyance of all beneficial interest in the loans to the sole security holder that owned the loans in which the participation interests had been issued. The resulting pool of Farm & Ranch loans was concurrently added under LTSPCs. The commitment fee Farmer Mac receives on these loans added under LTSPCs is the same as the guarantee fee Farmer Mac had been earning on the Farm & Ranch Guaranteed Securities.

- (1) As of December 31, 2018, 2017, and 2016, includes \$17.0 million, \$20.0 million, and \$20.0 million, respectively, related to one-year loan purchase commitments on which Farmer Mac receives a nominal unused commitment fee. During both 2018 and 2017, \$100.0 million of this facility was drawn and later repaid. During 2016, this facility was not used. Farmer Mac receives a fixed fee based on the full dollar amount of the facility. If the counterparty draws on the facility, the amounts drawn will be in the form of AgVantage securities, and Farmer Mac will earn interest income on those securities.
- (2) As of December 31, 2018, 2017, and 2016, includes \$17.0 million, \$20.0 million, and \$20.0 million, respectively, related to one-year loan purchase commitments on which Farmer Mac receives a nominal unused commitment fee. During both 2018 and 2017, \$100.0 million of this facility was drawn and later repaid. During 2016, this facility was not used. Farmer Mac receives a fixed fee based on the full dollar amount of the facility. If the counterparty draws on the facility, the amounts drawn will be in the form of AgVantage securities, and Farmer Mac will earn interest income on those securities.
- (3) As of December 31, 2018, 2017, and 2016, includes \$17.0 million, \$20.0 million, and \$20.0 million, respectively, related to one-year loan purchase commitments on which Farmer Mac receives a nominal unused commitment fee. During both 2018 and 2017, \$100.0 million of this facility was drawn and later repaid. During 2016, this facility was not used. Farmer Mac receives a fixed fee based on the full dollar amount of the facility. If the counterparty draws on the facility, the amounts drawn will be in the form of AgVantage securities, and Farmer Mac will earn interest income on those securities.

The following table summarizes by maturity date the scheduled principal amortization of loans held, loans underlying off-balance sheet Farmer Mac Guaranteed Securities (excluding AgVantage securities) and LTSPCs, USDA Securities, and Farmer Mac Guaranteed USDA Securities as of December 31, 2018:

Table 12
Schedule of Principal Amortization as of December 31, 2018

Loans Held	Loans Underlying Off-Balance Sheet Farmer Mac Guaranteed Securities and LTSPCs	USDA Securities and Farmer Mac Guaranteed USDA Securities	Total	
(in thousands)				
2019	\$ 233,439	\$ 253,395	\$ 114,524	\$ 601,358
2020	245,859	241,383	112,040	599,282
2021	258,436	269,652	112,309	640,397
2022	221,169	210,230	115,990	547,389
2023	231,829	197,099	119,612	548,540
Thereafter	4,336,434	2,127,162	1,941,145	8,404,741
Total	\$ 5,527,166	\$ 3,298,921	\$ 2,515,620	\$ 11,341,707

Of the \$19.7 billion outstanding principal balance of volume included in Farmer Mac's four lines of business as of December 31, 2018, \$8.4 billion were AgVantage securities included in the Institutional Credit line of business. Unlike business volume in the form of purchased loans, USDA Securities, and loans underlying LTSPCs and non-AgVantage Farmer Mac Guaranteed Securities, most AgVantage securities do not require periodic payments of principal based on amortization schedules and instead have fixed maturity dates when the secured general obligation is due. The following table summarizes by maturity date the outstanding principal amount of both on- and off-balance sheet AgVantage securities as of December 31, 2018:

Table 13
AgVantage Balances by Year of Maturity

	As of December 31, 2018
(in thousands)	
2019	\$ 1,436,529
2020	1,327,682
2021	1,535,572
2022	1,009,278
2023	902,222
Thereafter ⁽¹⁾⁽²⁾	2,171,534
Total	\$ 8,382,817

⁽¹⁾ Includes the expiration of the \$300.0 million revolving floating rate AgVantage facility.

⁽²⁾ Includes various maturities ranging from 2024 to 2044.

The weighted-average remaining maturity of the outstanding AgVantage securities shown in the table above was 4.9 years as of December 31, 2018.

As part of fulfilling its guarantee obligations for Farm & Ranch Guaranteed Securities and commitments to purchase eligible loans underlying LTSPCs, Farmer Mac purchases defaulted loans (all of which are at least 90 days delinquent or in material non-monetary default at the time of purchase) out of the loan pools underlying those securities and LTSPCs and records the purchased loans as such on its balance sheet. The purchase price for a defaulted loan purchased out of a pool of loans backing Farm & Ranch Guaranteed Securities is the then-current outstanding principal balance of the loan plus accrued and unpaid interest. The purchase price for a defaulted loan purchased under an LTSPC is the then-current outstanding principal balance of the loan, with accrued and unpaid interest on the defaulted loan. The purchase price of a defaulted loan is not an indicator of the expected loss on that loan; many other factors affect expected loss, if any, on any loan so purchased. The delinquent loans purchased out of securitized pools and LTSPCs during 2018 had a weighted average age of 4 years. During 2017 and 2016, the delinquent loans purchased out of securitized pools had a weighted-average age of 4 years and 9 years, respectively. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Credit Risk – Loans and Guarantees."

The following table presents Farmer Mac's purchases of defaulted loans underlying Farm & Ranch Guaranteed Securities and LTSPCs for the periods indicated:

Table 14

	For the Year Ended December 31,		
	2018	2017	2016
	(in thousands)		
Defaulted loans purchased underlying Farm & Ranch Guaranteed Securities owned by third party investors	\$7,748	\$5,670	\$2,118
Defaulted loans purchased underlying LTSPCs	1,483	311	398
Total loan purchases	\$9,231	\$5,981	\$2,516

The increase in 2018 was driven by the purchase of two defaulted loans totaling \$4.4 million.

Related Party Transactions. As provided by Farmer Mac's statutory charter, only banks, insurance companies, and other financial institutions or similar entities may hold Farmer Mac's Class A voting common stock, and only institutions of the FCS may hold Farmer Mac's Class B voting common stock. Farmer Mac's charter also provides that holders of Class A voting common stock elect five members of Farmer Mac's 15-member board of directors and that holders of Class B voting common stock elect five members of the board of directors. The ownership of Farmer Mac's two classes of voting common stock is currently concentrated in a small number of institutions. Approximately 45% of the Class A voting common stock is held by three financial institutions, with 31% held by one institution. Approximately 97% of the Class B voting common stock is held by five FCS institutions (two of which are related to each other through a parent-subsidary relationship).

Unlike some other GSEs, specifically other FCS institutions and the Federal Home Loan Banks, Farmer Mac is not structured as a cooperative owned exclusively by member institutions and established to provide services exclusively to its members. Farmer Mac, as a stockholder-owned, publicly-traded corporation, seeks to fulfill its mission of serving the financing needs of rural America in a way that is consistent with providing a return on the investment of its stockholders, including those who do not directly participate in the secondary market provided by Farmer Mac. Farmer Mac's policy is to generally require financial institutions to own a requisite amount of common stock, based on the size and type of institution, to participate in the Farm & Ranch line of business. As a result of this requirement, coupled

with the ability of holders of Class A and Class B voting common stock to elect two-thirds of Farmer Mac's board of directors, Farmer Mac regularly conducts business with "related parties," including institutions affiliated with members of Farmer Mac's board of directors and institutions that own large amounts of Farmer Mac's voting common stock. Farmer Mac has adopted a Code of Business Conduct and Ethics and other related corporate policies that govern any conflicts of interest that may arise in these transactions, and Farmer Mac's policy is to require that any transactions with related parties be conducted in the ordinary course of business, with terms and conditions comparable to those available to any other counterparty not related to Farmer Mac.

The following table summarizes the material relationships between Farmer Mac and certain related parties. The related parties listed in the table below consist of (1) all holders of at least five percent of a class of Farmer Mac voting common stock as of December 31, 2018 and (2) other institutions that are considered "related parties" through an affiliation with a Farmer Mac director and that have conducted business with Farmer Mac during the two years ended December 31, 2018. The table below does not specify any relationships based on the ownership of Farmer Mac's non-voting common stock or any series of preferred stock.

Table 15

Name of Institution	Ownership of Farmer Mac Voting Common Stock	Affiliation with Any Farmer Mac Directors	Primary Aspects of Institution's Business Relationship with Farmer Mac
AgFirst Farm Credit Bank	84,024 shares of Class B voting common stock (16.79% of outstanding Class B stock and 5.49% of total voting common stock outstanding)	None	In 2018 and 2017, Farmer Mac earned approximately \$1.3 million and \$1.2 million, respectively, in fees attributable to transactions with AgFirst, primarily commitment fees for LTSPCs.
AgriBank, FCB	201,621 shares of Class B voting common stock (40.30% of outstanding Class B stock and 13.17% of total voting common stock outstanding)	Farmer Mac directors Richard H. Davidson and Keri L. Votruba currently serve as directors of AgriBank.	No Farmer Mac business through any of its lines of business was conducted between the parties during 2018 or 2017.
Bath State Bank	Less than 5% ownership	Farmer Mac director Dennis L. Brack serves as a director of Bath State Bank and Bath State Bancorp, the holding company of Bath State Bank.	Farmer Mac purchased \$2.0 million and \$5.4 million in USDA Securities from Bath State Bank in 2018 and 2017, respectively.

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Name of Institution	Ownership of Farmer Mac Voting Common Stock	Affiliation with Any Farmer Mac Directors	Primary Aspects of Institution's Business Relationship with Farmer Mac
CoBank, ACB	163,253 shares of Class B voting common stock (32.63% of outstanding Class B stock and 10.66% of total voting common stock outstanding)	Farmer Mac director Douglas E. Wilhelm served as an executive officer of CoBank until June 30, 2012. Mr. Wilhelm is also currently a party to a services agreement with CoBank, under which he serves as an employee of CoBank.	No Farmer Mac business through any of its lines of business was conducted between the parties during 2018 or 2017.
Farm Credit Bank of Texas (FCBT)	38,503 shares of Class B voting common stock (7.70% of outstanding Class B stock and 2.51% of total voting common stock outstanding)	Farmer Mac director Thomas W. Hill served as an executive officer of FCBT until November 2010. Mr. Hill is also currently a party to a services agreement with FCBT, under which he serves as an employee of FCBT.	In both 2018 and 2017, Farmer Mac earned approximately \$1.0 million in fees attributable to transactions with FCBT, primarily commitment fees for LTSPCs.
First Dakota National Bank (First Dakota)	Less than 5% ownership	Farmer Mac director Dennis Everson is a director of First Dakota and also served as Branch Administration Director of First Dakota until December 2012.	In both 2018 and 2017, FCBT retained approximately \$0.2 million in servicing fees for its work as a Farmer Mac central servicer. Farmer Mac purchased \$39.5 million and \$28.5 million in loans from First Dakota in 2018 and 2017, respectively, and entered into \$3.0 million and \$0.4 million of new LTPSCs with First Dakota in 2018 and 2017, respectively.
National Rural Utilities Cooperative Finance Corporation (CFC)	81,500 shares of Class A voting common stock (7.91% of outstanding Class A stock and 5.32% of total voting common stock outstanding)	None	In 2018 and 2017, First Dakota retained approximately \$1.4 million and \$1.2 million, respectively, in servicing fees for its work as a Farmer Mac servicer. Transactions with CFC represented 100% of business volume under the Rural Utilities line of business during 2018 and 2017, and 100% of the AgVantage securities secured by Rural Utilities loans that have been issued to date. Transactions with CFC during 2018 and 2017 represented 19.1% and 10.3%,

respectively, of Farmer Mac's total purchases for those years. Transactions with CFC represented 23.6% and 24.6%, respectively, of Farmer Mac's total outstanding business volume as of December 31, 2018 and 2017.

In both 2018 and 2017, Farmer Mac earned guarantee fees of approximately \$0.1 million attributable to transactions with CFC. In 2018 and 2017, Farmer Mac earned commitment fees of approximately \$1.9 million and \$2.2 million, respectively, attributable to transactions with CFC.

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Name of Institution	Ownership of Farmer Mac Voting Common Stock	Affiliation with Any Farmer Mac Directors	Primary Aspects of Institution's Business Relationship with Farmer Mac
			<p>In 2018 and 2017, Farmer Mac earned interest income of \$76.8 million and \$43.9 million, respectively, attributable to AgVantage transactions with CFC.</p> <p>In 2018 and 2017, CFC retained approximately \$3.6 million and \$3.5 million, respectively, in servicing fees for its work as a Farmer Mac central servicer.</p> <p>In 2018 and 2017, CFC was the only servicer of rural utilities loans and loans underlying LTSPCs in the Rural Utilities line of business and securing AgVantage securities in the Institutional Credit line of business.</p>
The Vanguard Group, Inc.	56,376 shares of Class A voting common stock (5.47% of outstanding Class A stock and 3.68% of total voting common stock outstanding)	None	<p>No Farmer Mac business through any of its lines of business was conducted between the parties during 2018 and 2017.</p>
Zions First National Bank	322,100 shares of Class A voting common stock (31.25% of outstanding Class A stock and 21.04% of total voting common stock outstanding)	None	<p>In 2018 and 2017, Farmer Mac's purchases of loans from Zions under the Farm & Ranch line of business represented approximately 11.9% and 11.2%, respectively, of Farm & Ranch loan purchase volume for those years. Those purchases represented 8.2% and 7.5%, respectively, of total Farm & Ranch business volume for those years. The purchases of USDA Securities from Zions under the USDA Guarantees line of business represented approximately 4.2% and 3.8%, respectively, of the USDA Guarantees line of business purchases for the year ended December 31, 2018 and 2017. Farmer Mac did not purchase AgVantage securities from Zions for the year ended December 31, 2018 and 2017. Transactions with Zions represented 4.7% and 5.0%, respectively, of Farmer Mac's total outstanding business volume as of December 31, 2018 and 2017. In 2018 and 2017, Zions retained approximately \$11.6 million and \$11.5 million, respectively, in servicing fees for its work as a Farmer Mac servicer.</p>

As discussed in more detail in Note 2(p) to the consolidated financial statements, Farmer Mac's consolidated financial statements include the accounts of VIEs in which Farmer Mac determines itself to be the primary beneficiary,

including securitization trusts where Farmer Mac shares the power to make decisions about default mitigation with a related party. If that related party status changes, consolidation or deconsolidation of securitization trusts may occur. For more information about related party transactions, see Note 3 to the consolidated financial statements.

Outlook

Farmer Mac continues to provide a stable source of liquidity, capital, and risk management tools as the secondary market that helps meet the financing needs of rural America. While the pace of Farmer Mac's growth will depend on the capital and liquidity needs of the participants in the rural financing business, Farmer Mac foresees opportunities for continued growth across our lines of business, driven by several key factors:

As agricultural and rural utilities lenders seek to manage equity capital and return on equity capital requirements or seek to reduce exposure due to lending limits or concentration limits, Farmer Mac can provide relief for those institutions through loan purchases, participations, guarantees, LTSPCs, or wholesale funding.

Overall loan growth within the rural utilities industry appears to be modest in the near term due to generally flat demand for capital. Future growth opportunities for Farmer Mac related to this industry through its Rural Utilities and Institutional Credit lines of business may arise from transacting business with a new counterparty for Farmer Mac and may include new types of loan products. However, Farmer Mac's growth may be impacted by sector growth, credit quality, and the competitiveness of Farmer Mac's products.

As a result of business development efforts, targeted marketing and brand awareness initiatives, product development efforts, and continued interest in the agricultural asset class from institutional investors, Farmer Mac's customer base and product set continue to expand, which may generate more demand for Farmer Mac's products from new sources. Consolidation, expansion, and vertical integration occurring across many sectors of the agricultural industry and in agricultural finance, coupled with Farmer Mac's relationships with larger regional and national lenders, continues to provide opportunities that could influence Farmer Mac's loan demand and the average transaction size within Farmer Mac's Farm & Ranch line of business.

We believe that these growth opportunities will be important in replacing income earned on our loans and other assets as they mature, pay down, or are reinvested at potentially lower spreads.

Expense Outlook. Farmer Mac continues to expand its investments in human capital, technology, and business infrastructure to increase capacity and efficiency as it seeks to accommodate its growth opportunities and achieve its long-term strategic objectives. Accordingly, Farmer Mac expects the annual increases in its operating expenses to be above historical averages over the next several years. Specifically, Farmer Mac believes that aggregate operating expenses – compensation and employee benefits, general and administrative expenses, and regulatory fees – will increase by approximately 8% to 9% in 2019 relative to 2018, depending on the execution of various growth and strategic initiatives.

Agricultural Industry. The agricultural industry includes many diverse sectors that respond in different ways to changes in economic conditions. Those individual sectors often are affected differently, sometimes positively and sometimes negatively, by prevailing domestic and global economic factors and regional weather conditions. This results in cycles where one or more sectors may be under stress while others are not. The profitability of agricultural sectors is also affected by the demand for and supply of agricultural commodities and products on a domestic and global basis, which can vary largely as a result of global production trends, international trade policies, weather patterns, access to water supply, and harvest conditions.

Net cash income, as reported by the USDA and one of its benchmark measures of economic activity in the agricultural industry, has declined significantly since reaching a cyclical peak in 2013. However, changes in farm income levels are largely localized and depend on producer region and commodity production type. The USDA forecasts that aggregate net cash income levels decreased year-over-year in 2018 due to rising farm production expenses that were not offset by higher commodity quantities sold and stabilizing commodity prices. Farmland values appear to have held steady in 2018, even in the Midwest region where producers are most exposed to changes in the grain markets. Data released by the USDA indicates an average increase in farm real estate values of 2.7% in 2018 in Corn Belt states (Illinois, Indiana, Iowa, Missouri, and Ohio), but a decline of 1.4% in Northern Plains states (Kansas, Nebraska, North Dakota, and South Dakota). In all other regions, farmland value averages are reported to be flat to increasing. While regional averages for farmland values provide a good barometer for the overall movement in U.S. farmland values, economic forces affecting land markets are highly localized and some markets may experience greater volatility than state or national averages indicate.

Over the past few decades, the U.S. agricultural industry has become increasingly connected to global trade, and agricultural export demand depends significantly on trading relationships in numerous foreign markets, as well as on foreign exchange rates. A slowdown in global economic growth or a tightening in trade policies and agreements could also adversely affect the demand for certain U.S. agricultural exports, which may result in downward pressure on commodity prices. For example, the series of reciprocal import tariffs placed on various agricultural products by China and the U.S. during 2018 has materially affected the market prices for these products, particularly soybeans produced in the U.S. Tariffs placed on imports of U.S. agricultural products into Mexico have also dampened price outlooks for other agricultural products, such as pork and dairy. In August 2018, the USDA released initial details on a potential \$12 billion aid package for U.S. agricultural producers designed to help offset expected market losses resulting from recent trade disruptions. The USDA reports making initial payments to affected producers of nearly \$5.9 billion, more than half of which is anticipated to assist soybean growers in the form of cash payments in late 2018 and early 2019 through the USDA's Market Facilitation Program. The USDA announced in December 2018 that a final round of payments for the roughly \$6 billion remaining in aid is expected to be delivered throughout the spring months of 2019. If fully realized, the Market Facilitation Program payments would constitute approximately 10% of net cash income, which equates to approximately three-quarters of the expected decline in net cash income forecasted for 2018. At the same time, the U.S. dollar strengthened by approximately 5% during 2018, as measured by the U.S. Dollar Index, which has decreased the competitiveness of U.S. agricultural exports and thereby diminished their global demand and driven down producer profits. We believe that our portfolio is sufficiently diverse by product and production region to be able to withstand any short-term market volatility that may arise because of changes in trade policy or sentiment. However, a prolonged trade dispute between one or more primary agricultural markets without substantial offsetting relief could put significant financial stress on the U.S. agricultural industry, which could have an adverse effect on Farmer Mac's portfolio.

In recent years, the 90-day delinquencies and credit losses in Farmer Mac's portfolio have remained low compared to historical averages. However, some indications of stress have emerged, as the volume of Farmer Mac's substandard assets has generally increased since 2015. To date, the fluctuations in 90-day delinquencies and the increase in substandard assets have not yet translated into rising credit losses. Farmer Mac believes that any losses associated with the current agricultural credit cycle will be moderated by the strength and diversity of its portfolio, which Farmer Mac believes is adequately collateralized. Farmer Mac believes that its portfolio remains sufficiently diversified, both geographically and by commodity, and that its portfolio has been underwritten to high credit quality standards. Farmer Mac therefore believes that its portfolio is well-positioned to endure reasonably foreseeable volatility in

farmland values and commodity prices. Farmer Mac also continues to closely monitor sector profitability, economic and weather conditions, and agricultural land value and geographic trends to tailor underwriting practices to changing conditions. For more information about the loan balances, loan-to-value ratios, 90-day delinquencies, and substandard asset rate for the Farm & Ranch loans in Farmer Mac's portfolio as of December 31, 2018, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Credit Risk – Loans and Guarantees."

Farmer Mac continues to monitor the establishment and evolution of legislation and regulations, as well as the status of various international trade agreements and partnerships, that could affect farmers, ranchers, rural lenders, and rural America in general. The Agricultural Improvement Act of 2018, also referred to as the Farm Bill, was signed into law in December 2018. Many provisions in the new Farm Bill are a continuation of existing federal agricultural policies in effect under the previous Farm Bill, including those affecting crop insurance, commodity support programs, and other aspects of agricultural production. We will continue to monitor the effects of any altered federal agricultural policies as the USDA adopts final regulations implementing the new Farm Bill.

The Farm Bill also contains a provision that amends Farmer Mac's charter to expand the acreage exception to the loan amount limitation on Farm & Ranch loans from 1,000 acres to 2,000 acres, subject to FCA's assessment of the feasibility of the change. FCA's assessment must be submitted to Congress no later than June 18, 2019, and the amendment will become effective one year after this assessment is submitted if FCA indicates that the change is feasible. We will continue to evaluate the effect that the potential increase in acreage limitation may have on our business in the future.

Under the Farm Bill, the authorized limit for the amount of new guarantees issued by the USDA under the Consolidated Farm and Rural Development Act, which are eligible for Farmer Mac's USDA Guarantees line of business, was increased from \$3.026 billion to \$7.0 billion for each government fiscal year through September 2023. Also, the limit for the size of individual loans to which these guarantees are applied was increased from \$1.399 million to \$1.75 million, which thereby increases the authorized amount of the USDA-guaranteed portion for an individual loan. These higher loan limits could result in increased new business volume in our USDA Guarantees line of business. However, the effects of the new limits may be offset by a continued slowdown in the issuance of new guarantees by the USDA, which could be further exacerbated by the U.S. federal government shutdown that lasted for several weeks in early 2019 or any future shutdowns.

Other legislation and regulations focused on groundwater management practices, including in California, may result in tighter restrictions on groundwater usage that could negatively affect agricultural producers in the future. As the Trump administration and the U.S. Congress continue their review of existing regulations and promote new legislative or regulatory proposals and policies, Farmer Mac will monitor the effects that any changes in legislation or regulation could have on Farmer Mac or its customers.

Farmer Mac's marketing and brand awareness initiatives directed towards the Farm & Ranch line of business focus on lenders that have demonstrated a commitment to agricultural lending based on their lending history. Farmer Mac conducts its outreach efforts to these lenders through direct personal contact, which is facilitated through Farmer Mac's frequent participation in state and national banking conferences, its alliances with the American Bankers Association and the Independent Community Bankers of America, and its business relationships with members of the FCS. Farmer Mac's initiatives to increase the awareness of Farmer Mac and its products within the agricultural lender community and the larger agricultural industry have included hosting events on relevant agricultural lending topics, participating on speaker

panels at agriculture-related regional and national conferences, and distributing original content about conditions in the agricultural economy. Demand for Farmer Mac's secondary market tools also depends on the fluctuating needs of rural lenders as they seek to maintain liquidity and adequate capital levels.

Farmer Mac also directs marketing efforts towards the agricultural industry by trying to identify and develop relationships with potential issuers of AgVantage securities, including insurance company agricultural lenders, agricultural finance companies, and bank and non-bank agricultural lenders such as agricultural mortgage funds, who can pledge loans as collateral to obtain financing as part of Farmer Mac's Institutional Credit line of business. As part of these efforts, Farmer Mac has increased its focus on wholesale financing for institutional investors in agricultural assets that qualify as eligible collateral under Farmer Mac's charter. Farmer Mac has tailored a version of its AgVantage product to this type of issuer, which is referred to as the Farm Equity AgVantage product. Farmer Mac also offers other AgVantage products tailored to fund investors in agricultural mortgages. Farmer Mac directs its outreach efforts to these potential issuers through its business relationships within the agricultural community and through executive outreach to institutions whose profile presents opportunity to benefit from wholesale financing. As institutional investment in agricultural assets continues to grow, Farmer Mac believes that it is in a unique position to help increase access to capital for these types of counterparties and thereby provide a new source of capital to benefit rural America. Farmer Mac believes there is opportunity to expand this type of business as both the trend toward institutional investment in agricultural assets and awareness of Farmer Mac's AgVantage product offerings continue to grow. For more information about the AgVantage products, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Credit Risk – Institutional" in this report.

Rural Utilities Industry. Prospects for loan growth within the rural utilities industry appear to be modest in the near term due to generally flat demand for capital, as capital expenditures for large generation assets have decreased and increased revenues for electrical cooperatives have driven a de-leveraging trend. Future growth opportunities within the rural utilities industry may be impacted by the demand for electric power in rural areas, capital expenditures by electric cooperatives driven by regulatory or technological changes, and competitive dynamics within the rural utilities cooperative finance industry. In the coming years, the retirement of coal generation assets combined with growth in renewable generation, as well as transacting business with a new counterparty, may provide new business opportunities for Farmer Mac.

Balance Sheet Review

Assets. Farmer Mac's total assets as of December 31, 2018 were \$18.7 billion, compared to \$17.8 billion as of December 31, 2017. The increase in total assets was primarily attributable to an increase in total Farmer Mac Guaranteed Securities and total loans, net of allowance.

As of December 31, 2018, Farmer Mac had \$0.4 billion of cash and cash equivalents and \$2.3 billion of investment securities, compared to \$0.3 billion of cash and cash equivalents and \$2.3 billion of investment securities as of December 31, 2017. As of December 31, 2018, Farmer Mac had \$8.1 billion of Farmer Mac Guaranteed Securities, \$5.5 billion of loans, net of allowance, and \$2.2 billion of USDA Securities. This compares to \$7.6 billion of Farmer Mac Guaranteed Securities, \$5.3 billion of loans, net of allowance, and \$2.1 billion of USDA Securities as of December 31, 2017.

Liabilities. Farmer Mac's total liabilities were \$17.9 billion as of December 31, 2018, compared to \$17.1 billion as of December 31, 2017. The increase in total liabilities was primarily attributable to an increase in total notes payable.

Equity. As of December 31, 2018, Farmer Mac had total equity of \$752.6 million, compared to \$708.1 million as of December 31, 2017. The increase in total equity was a result of an increase in retained earnings.

Risk Management

Credit Risk – Loans and Guarantees. Farmer Mac is exposed to credit risk resulting from the inability of borrowers to repay their loans along with a deficiency in the value of the collateral relative to the outstanding balance of the loan and the costs of liquidation. Farmer Mac is exposed to credit risk on:

- loans held;
- loans underlying Farmer Mac Guaranteed Securities; and
- loans underlying LTSPCs.

Farmer Mac generally assumes 100% of the credit risk on loans held and loans underlying LTSPCs in the Farm & Ranch and Rural Utilities lines of business and loans underlying Farm & Ranch Guaranteed Securities. Farmer Mac has direct credit exposure to the loans in non-AgVantage transactions but only indirect credit exposure to loans that secure AgVantage transactions because AgVantage securities represent a general obligation of an issuer that is, in turn, secured by eligible loans. Non-AgVantage transactions like loan purchases, LTSPCs, and "pass-through" guaranteed securities that represent beneficial interests in the underlying loans do not include a general obligation of a counterparty as a separate source of repayment. For the reasons described in more detail below, Farmer Mac excludes its assets in the USDA Guarantees line of business, the loans in the Rural Utilities line of business, and AgVantage securities in the Institutional Credit line of business from the loan-level credit risk metrics it discloses.

Farmer Mac's direct credit exposure to Farm & Ranch loans held and loans underlying Farm & Ranch Guaranteed Securities and LTSPCs as of December 31, 2018 was \$7.2 billion across 48 states. Farmer Mac has established underwriting, collateral valuation, and documentation standards for agricultural real estate mortgage loans and believes that these standards mitigate the risk of loss from borrower defaults and provide guidance about the management, administration, and conduct of underwriting and appraisals to all participating and potential lenders. These standards were developed based on industry practices for agricultural real estate mortgage loans and are designed to assess the creditworthiness of the borrower, as well as the value of the collateral securing the loan. Farmer Mac evaluates and adjusts these standards on an ongoing basis based on current and anticipated market conditions. For more information about Farmer Mac's underwriting and collateral valuation standards for Farm & Ranch loans, see "Business—Farmer Mac's Lines of Business—Farm & Ranch—Underwriting and Collateral Valuation (Appraisal) Standards."

Farmer Mac's direct credit exposure to Rural Utilities loans held and loans underlying LTSPCs as of December 31, 2018 was \$1.6 billion across 39 states, of which \$1.2 billion were loans to electric distribution cooperatives and \$0.4 billion were loans to G&T cooperatives. Farmer Mac has developed different underwriting standards for rural utilities loans that depend on whether direct or indirect credit exposure is assumed on a loan and whether the borrower is an electric distribution cooperative or a G&T cooperative. See "Business—Farmer Mac's Lines of Business—Rural Utilities—Underwriting." As of December 31, 2018, there were no delinquencies in Farmer Mac's portfolio of Rural Utilities loans, and Farmer Mac has not experienced any credit losses on Rural Utilities loans since Congress authorized

Farmer Mac's Rural Utilities line of business in 2008. Based on this performance, Farmer Mac excludes the loans in the Rural Utilities line of business from the credit risk metrics it discloses.

Farmer Mac has indirect credit exposure to the Farm & Ranch loans and Rural Utilities loans that secure AgVantage securities included in the Institutional Credit line of business. Farmer Mac's AgVantage securities are general obligations of institutions approved by Farmer Mac and are secured by current loans in an amount at least equal to the outstanding principal amount of the related security. Farmer Mac excludes the loans that secure AgVantage securities from the credit risk metrics it discloses because Farmer Mac has only indirect credit risk on those loans and because of the other characteristics of AgVantage securities that mitigate credit risk. Those characteristics include a general obligation of an issuing institution approved by Farmer Mac, the required collateralization level for the securities, the requirement for delinquent loans to be removed from the pool of pledged loans and replaced with current eligible loans, and in some cases, the requirement for the counterparty to comply with specified financial covenants for the life of the related AgVantage security. As of December 31, 2018, Farmer Mac had not experienced any credit losses on any AgVantage securities and does not expect to incur any such losses in the future. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Credit Risk – Institutional" for more information about Farmer Mac's credit risk on AgVantage securities.

The credit exposure of Farmer Mac and Farmer Mac II LLC on USDA Securities, including those underlying Farmer Mac Guaranteed USDA Securities, is covered by the full faith and credit of the United States. Therefore, Farmer Mac believes that Farmer Mac and Farmer Mac II LLC have little or no credit risk exposure in the USDA Guarantees line of business because of the USDA guarantee. As of December 31, 2018, neither Farmer Mac nor Farmer Mac II LLC had experienced any credit losses on any business under the USDA Guarantees line of business, and neither expects to incur any such losses in the future.

Loans in the Farm & Ranch line of business are all secured by first liens on agricultural real estate. Accordingly, Farmer Mac's exposure on a loan is limited to the difference between (1) the total of the accrued interest, advances, and the principal balance of a loan and (2) the value of the property less the cost to sell. Measurement of that excess or shortfall is the best predictor and determinant of loss, compared to other measures that evaluate the efficiency of a particular farm operator. For example, debt service ratios depend on farm operator efficiency and leverage, which can vary widely within a geographic region or commodity type or based on an operator's business and farming skills. Thus, Farmer Mac considers a loan's original loan-to-value ratio as one of many factors in evaluating loss severity. This ratio is calculated by dividing the loan principal balance at the time of guarantee, purchase, or commitment by the lower of the appraised value or the purchase price at the date of loan origination or, when available, updated appraised value at the time of guarantee, purchase, or commitment. Other factors Farmer Mac considers include, but are not limited to, other underwriting standards, commodity and farming forecasts, and regional economic and agricultural conditions.

Loan-to-value ratios depend on the market value of a property, as determined in accordance with Farmer Mac's collateral valuation standards. As of December 31, 2018 and December 31, 2017, the average unpaid loan balances for loans outstanding in the Farm & Ranch line of business was \$640,000 and \$642,000, respectively. Farmer Mac calculates the original loan-to-value ratio of a loan by dividing the original loan principal balance by the original appraised property value. This calculation does not reflect any amortization of the original loan balance or any adjustment to the original appraised value to provide a current market value. The original loan-to-value ratio of any cross-collateralized loans is calculated on a consolidated basis rather than on a loan-by-loan basis. The weighted-average original loan-to-value

ratio for Farm & Ranch loans purchased during 2018 was 54%, compared to 50% for loans purchased during 2017. The weighted-average original loan-to-value ratio for all Farm & Ranch loans held and all loans underlying off-balance sheet Farm & Ranch Guaranteed Securities and LTSPCs was approximately 51% as of both December 31, 2018 and December 31, 2017. The weighted-average original loan-to-value ratio for all 90-day delinquencies was 52% as of both December 31, 2018 and 2017.

The weighted-average current loan-to-value ratio (the loan-to-value ratio based on original appraised value adjusted to reflect loan amortization since purchase) for Farm & Ranch loans held and loans underlying off-balance sheet Farm & Ranch Guaranteed Securities and LTSPCs was approximately 45% as of both December 31, 2018 and 2017.

Farmer Mac maintains an allowance for loan losses to cover estimated probable losses on loans held and a reserve for losses to cover estimated probable losses on loans underlying LTSPCs and off-balance sheet Farm & Ranch Guaranteed Securities. The methodology that Farmer Mac uses to determine the level of its allowance for losses is described in Note 2(i) to the consolidated financial statements. Management believes that this methodology produces a reasonable estimate of probable losses, as of the balance sheet date, for all loans held and loans underlying off-balance sheet Farm & Ranch Guaranteed Securities and LTSPCs.

The following table summarizes the components of Farmer Mac's total allowance for losses as of December 31, 2018 and 2017:

Table 16

	As of December 31, 2018	As of December 31, 2017
	(in thousands)	
Allowance for loan losses	\$7,017	\$ 6,796
Reserve for losses:		
Off-balance sheet Farm & Ranch Guaranteed Securities	215	257
LTSPCs	1,952	1,813
Total allowance for losses	\$9,184	\$ 8,866

The following table summarizes the changes in the components of Farmer Mac's total allowance for each year in the five-year period ended December 31, 2018:

Table 17

	Allowance for Loan Losses	Reserve for Losses	Total Allowance for Losses
	(in thousands)		
Balance as of January 1, 2014	\$6,866	\$ 6,468	\$ 13,334
Release of losses	(961)	(2,205)	(3,166)
Charge-offs	(86)	—	(86)
Recoveries	45	—	45
Balance as of December 31, 2014	\$5,864	\$ 4,263	\$ 10,127
Provision for/(release of) losses	2,388	(2,180)	208
Charge-offs	(3,772)	—	(3,772)
Balance as of December 31, 2015	\$4,480	\$ 2,083	\$ 6,563
Provision for/(release of) losses	1,065	(63)	1,002
Charge-offs	(130)	—	(130)
Balance as of December 31, 2016	\$5,415	\$ 2,020	\$ 7,435
Provision for losses	1,708	50	1,758
Charge-offs	(327)	—	(327)
Balance as of December 31, 2017	\$6,796	\$ 2,070	\$ 8,866
Provision for losses	238	97	335
Charge-offs	(17)	—	(17)
Balance as of December 31, 2018	\$7,017	\$ 2,167	\$ 9,184

Activity affecting the allowance for loan losses and reserve for losses is discussed in "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Provision for and Release of Allowance for Loan Losses and Reserve for Losses." As of December 31, 2018, Farmer Mac's total allowance for losses totaled \$9.2 million, or 0.13% of the outstanding principal balance of Farm & Ranch loans held and loans underlying LTSPCs and off-balance sheet Farm & Ranch Guaranteed Securities, compared to \$8.9 million, or 0.13%, as of December 31, 2017.

As of December 31, 2018, Farmer Mac individually evaluated \$34.4 million of the \$155.3 million of recorded investment in impaired assets for collateral shortfalls against updated appraised values, other updated collateral valuations, or discounted values. For the remaining \$120.9 million of impaired assets for which updated valuations were not available, Farmer Mac evaluated them in the aggregate in consideration of their similar risk characteristics and historical statistics. Farmer Mac recorded specific allowances of \$3.4 million for undercollateralized assets as of December 31, 2018. Farmer Mac's general allowances were \$5.8 million as of December 31, 2018.

The charge-off recorded during 2018 related to one loan that was foreclosed and transitioned to REO during the year. The charge-offs recorded during 2017 were primarily related to two impaired crop loans (with one borrower) that were foreclosed and transitioned to REO during 2017. Farmer Mac had previously recorded a specific allowance of \$0.2 million on these impaired crop loans as of December 31, 2016. In 2017, Farmer Mac sold the related properties for \$5.4 million and recognized a \$0.8 million gain on the sale of the REO.

Farmer Mac's 90-day delinquency measure includes loans 90 days or more past due, as well as loans in foreclosure and non-performing loans where the borrower is in bankruptcy. As of December 31, 2018, Farmer Mac's 90-day delinquencies were \$26.9 million (0.37% of the Farm & Ranch portfolio), compared to \$48.4 million (0.71% of the Farm & Ranch portfolio) as of December 31, 2017. Those 90-day delinquencies were comprised of 47 delinquent loans as of December 31, 2018, compared to 51 delinquent loans as of December 31, 2017. The decrease in 90-day delinquencies compared to December 31, 2017 is primarily attributable to two permanent planting loans to one borrower totaling \$15.3 million that became current during 2018. During 2018, Farmer Mac's 90-day delinquency rate remained flat or decreased across all major commodity groups. For the past several years, downward pressure on many agricultural commodity prices has resulted in lower income for producers of a wide range of commodities within the crop, livestock, and permanent planting sectors. However, 90-day delinquency rates in Farmer Mac's portfolio across these three commodity groups have remained relatively stable, with 90-day delinquency rates actually decreasing for crop and permanent planting loans in 2018 after rising in 2017. Farmer Mac's 90-day delinquencies have historically fluctuated from quarter to quarter, both in dollars and as a percentage of the outstanding Farm & Ranch portfolio, with higher levels generally observed at the end of the first and third quarters and lower levels generally observed at the end of the second and fourth quarters of each year as a result of the annual (January 1st) and semi-annual (January 1st and July 1st) payment terms of most Farm & Ranch loans. Farmer Mac believes that it remains adequately collateralized on its delinquent loans. Farmer Mac expects that over time its 90-day delinquency rate will revert closer to Farmer Mac's historical average, and possibly exceed it (which it did in third quarter 2017), due to macroeconomic factors and the cyclical nature of the agricultural economy. Farmer Mac's average 90-day delinquency rate as a percentage of its Farm & Ranch portfolio over the last 15 years is approximately 1%. The highest 90-day delinquency rate observed during that period occurred in 2009 at approximately 2%, which coincided with increased delinquencies in loans within Farmer Mac's then-held ethanol loan portfolio that Farmer Mac no longer holds.

The following table presents historical information about Farmer Mac's 90-day delinquencies in the Farm & Ranch line of business compared to the principal balance of all Farm & Ranch loans held and loans underlying off-balance sheet Farm & Ranch Guaranteed Securities and LTSPCs:

Table 18

	Farm & Ranch Line of Business (dollars in thousands)	90-Day Delinquencies	Percentage	
As of:				
December 31, 2018	\$7,233,971	\$ 26,881	0.37	%
September 30, 2018	7,072,018	37,545	0.53	%
June 30, 2018	7,045,397	43,076	0.61	%
March 31, 2018	6,932,002	47,560	0.69	%
December 31, 2017	6,867,586	48,444	0.71	%
September 30, 2017	6,557,030	66,381	1.01	%
June 30, 2017	6,426,518	41,901	0.65	%
March 31, 2017	6,240,467	50,807	0.81	%
December 31, 2016	6,139,304	21,038	0.34	%

When analyzing the overall risk profile of its lines of business, Farmer Mac considers more than the Farm & Ranch loan delinquency percentages provided above. The lines of business also include AgVantage securities and Rural Utilities loans held and underlying LTSPCs, neither of which have any delinquencies, and USDA Securities, which are backed by the full faith and credit of the United States.

Across all of Farmer Mac's lines of business, 90-day delinquencies represented 0.14% of total outstanding business volume as of December 31, 2018, compared to 0.25% as of December 31, 2017. The following table presents outstanding Farm & Ranch loans held and loans underlying LTSPCs and off-balance sheet Farm & Ranch Guaranteed Securities and 90-day delinquencies as of December 31, 2018 by year of origination, geographic region, commodity/collateral type, original loan-to-value ratio, and range in the size of borrower exposure:

Table 19
Farm & Ranch 90-Day Delinquencies as of December 31, 2018

	Distribution of Farm & Ranch Line of Business (dollars in thousands)		Farm & Ranch Line of Business	90-Day Delinquencies ⁽¹⁾	Percentage	
By year of origination:						
2008 and prior	10	%	\$741,290	\$ 7,545	1.02	%
2009	1	%	89,716	—	—	%
2010	2	%	146,446	—	—	%
2011	3	%	219,016	5,955	2.72	%
2012	7	%	517,573	—	—	%
2013	10	%	740,298	2,327	0.31	%
2014	8	%	586,369	811	0.14	%
2015	10	%	749,218	486	0.06	%
2016	16	%	1,116,555	3,721	0.33	%
2017	18	%	1,302,561	6,036	0.46	%
2018	15	%	1,024,929	—	—	%
Total	100	%	\$7,233,971	\$ 26,881	0.37	%
By geographic region ⁽²⁾ :						
Northwest	12	%	\$855,596	\$ 8,383	0.98	%
Southwest	31	%	2,273,184	4,530	0.20	%
Mid-North	32	%	2,296,073	3,784	0.16	%
Mid-South	12	%	883,279	2,475	0.28	%
Northeast	5	%	332,370	7,027	2.11	%
Southeast	8	%	593,469	682	0.11	%
Total	100	%	\$7,233,971	\$ 26,881	0.37	%
By commodity/collateral type:						
Crops	52	%	\$3,771,627	\$ 14,821	0.39	%
Permanent plantings	21	%	1,509,821	3,194	0.21	%
Livestock	19	%	1,355,372	4,059	0.30	%
Part-time farm	7	%	504,138	4,807	0.95	%
Ag. Storage and Processing	1	%	85,181	—	—	%
Other	—		7,832	—	—	%
Total	100	%	\$7,233,971	\$ 26,881	0.37	%
By original loan-to-value ratio ⁽³⁾ :						
0.00% to 40.00%	19	%	\$1,333,790	\$ 3,500	0.26	%
40.01% to 50.00%	25	%	1,811,166	5,351	0.30	%

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50.01% to 60.00%	35 %	2,530,484	12,960	0.51 %
60.01% to 70.00%	17 %	1,244,823	3,815	0.31 %
70.01% to 80.00% ⁽⁴⁾	4 %	289,427	955	0.33 %
80.01% to 90.00% ⁽⁴⁾	— %	24,281	300	1.24 %
Total	100 %	\$7,233,971	\$ 26,881	0.37 %
By size of borrower exposure ⁽⁵⁾ :				
Less than \$1,000,000	34 %	\$2,431,296	\$ 8,889	0.37 %
\$1,000,000 to \$4,999,999	38 %	2,755,996	12,447	0.45 %
\$5,000,000 to \$9,999,999	13 %	916,422	5,545	0.61 %
\$10,000,000 to \$24,999,999	8 %	601,349	—	— %
\$25,000,000 and greater	7 %	528,908	—	— %
Total	100 %	\$7,233,971	\$ 26,881	0.37 %

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Includes loans held and loans underlying off-balance sheet Farm & Ranch Guaranteed Securities and LTSPCs that

- (1) are 90 days or more past due, in foreclosure, or in bankruptcy with at least one missed payment, excluding loans performing under either their original loan terms or a court-approved bankruptcy plan.

Geographic regions: Northwest (AK, ID, MT, OR, WA, WY); Southwest (AZ, CA, CO, HI, NM, NV, UT);

- (2) Mid-North (IA, IL, IN, MI, MN, NE, ND, SD, WI); Mid-South (AR, KS, LA, MO, OK, TX); Northeast (CT, DE, KY, MA, MD, ME, NH, NJ, NY, OH, PA, RI, VA, VT, WV); Southeast (AL, FL, GA, MS, NC, SC, TN).

- (3) Farmer Mac calculates the original loan-to-value ratio of a loan by dividing the original loan principal balance by the original appraised property value. This calculation does not reflect any amortization of the original loan balance or any adjustment to the original appraised value to provide a current market value. The original loan-to-value ratio of any cross-collateralized loans is calculated on a consolidated basis rather than on a loan-by-loan basis.

- (4) Primarily part-time farm loans. Loans with an original loan-to-value ratio of greater than 80% are required to have private mortgage insurance.

- (5) Includes aggregated loans to single borrowers or borrower-related entities.

Another indicator that Farmer Mac considers in analyzing the credit quality of its Farm & Ranch portfolio is the level of internally-rated "substandard" assets, both in dollars and as a percentage of the outstanding Farm & Ranch portfolio. Assets categorized as "substandard" have a well-defined weakness or weaknesses, and there is a distinct possibility that some loss will be sustained if deficiencies are not corrected. As of December 31, 2018, Farmer Mac's substandard assets were \$232.7 million (3.2% of the Farm & Ranch portfolio), compared to \$221.3 million (3.2% of the Farm & Ranch portfolio) as of December 31, 2017. Those substandard assets were comprised of 318 loans as of December 31, 2018 and 307 loans as of December 31, 2017. Although Farmer Mac's substandard asset volume increased modestly from year-end 2017 in aggregate dollars, it remained stable as a percentage of the Farm & Ranch portfolio. As of December 31, 2018, substandard asset volume included several large exposures and represents a relatively diverse set of commodities. Farmer Mac did not experience a significant change in the concentration of its substandard assets among commodities or geographic regions during 2018 as compared to 2017. Farmer Mac's average substandard assets as a percentage of its Farm & Ranch portfolio over the last 15 years is approximately 4%. Due to macroeconomic factors and the cyclical nature of the agricultural economy, Farmer Mac expects that over time its substandard asset rate will eventually revert closer to, and possibly exceed, Farmer Mac's historical average. The highest substandard asset rate observed during that period occurred in 2010 at approximately 8%, which coincided with an increase in substandard loans within Farmer Mac's then-held ethanol portfolio that Farmer Mac no longer holds. If Farmer Mac's substandard asset rate increases from current levels, it is likely that Farmer Mac's provision to the allowance for loan losses and the reserve for losses will also increase.

Although some credit losses are inherent to the business of agricultural lending, Farmer Mac believes that any losses associated with the current agricultural credit cycle will be moderated by the strength and diversity of its portfolio, which Farmer Mac believes is adequately collateralized. See Note 8 to the consolidated financial statements for more information about credit quality indicators related to Farm & Ranch loans held and loans underlying LTSPCs and off-balance sheet Farm & Ranch Guaranteed Securities.

The following table presents Farmer Mac's cumulative net credit losses relative to the cumulative original balance for all Farm & Ranch loans purchased and loans underlying LTSPCs and off-balance sheet Farm & Ranch Guaranteed Securities as of December 31, 2018 by year of origination, geographic region, and commodity/collateral type. The purpose of this information is to present information about losses relative to original Farm & Ranch purchases, guarantees, and commitments.

Table 20
Farm & Ranch Credit Losses Relative to Cumulative
Original Loans, Guarantees, and LTSPCs as of December 31, 2018

	Cumulative Original Loans, Guarantees and LTSPCs (dollars in thousands)	Cumulative Net Credit Losses/(Recoveries)	Cumulative Loss Rate	
By year of origination:				
2008 and prior	\$14,138,896	\$ 28,538	0.20	%
2009	542,233	1,544	0.28	%
2010	664,111	5	—	%
2011	778,333	3,661	0.47	%
2012	1,151,162	—	—	%
2013	1,420,260	—	—	%
2014	982,847	—	—	%
2015	1,107,874	(540)	(0.05))%
2016	1,415,489	—	—	%
2017	1,512,886	—	—	%
2018	1,164,700	—	—	%
Total	\$24,878,791	\$ 33,208	0.13	%
By geographic region ⁽¹⁾ :				
Northwest	\$3,299,276	\$ 11,191	0.34	%
Southwest	8,701,647	8,167	0.09	%
Mid-North	6,274,324	12,830	0.20	%
Mid-South	2,950,259	(211)	(0.01))%
Northeast	1,474,668	259	0.02	%
Southeast	2,178,617	972	0.04	%
Total	\$24,878,791	\$ 33,208	0.13	%
By commodity/collateral type:				
Crops	\$11,387,053	\$ 2,887	0.03	%
Permanent plantings	5,388,353	9,368	0.17	%
Livestock	5,782,757	3,877	0.07	%
Part-time farm	1,452,919	1,403	0.10	%
Ag. Storage and Processing	711,821	15,673	2.20	%
Other	155,888	—	—	%
Total	\$24,878,791	\$ 33,208	0.13	%

Geographic regions: Northwest (AK, ID, MT, OR, WA, WY); Southwest (AZ, CA, CO, HI, NM, NV, UT);

⁽¹⁾ Mid-North (IA, IL, IN, MI, MN, NE, ND, SD, WI); Mid-South (AR, KS, LA, MO, OK, TX); Northeast (CT, DE, KY, MA, MD, ME, NH, NJ, NY, OH, PA, RI, VA, VT, WV); Southeast (AL, FL, GA, MS, NC, SC, TN).

Analysis of portfolio performance indicates that commodity type is the primary determinant of Farmer Mac's exposure to loss on a given loan. Within most commodity groups, certain geographic areas allow greater economies of scale or proximity to markets than others and therefore may result in more successful operations within the commodity group. Certain geographic areas also offer better growing conditions and market access than others, which may result in more versatile and more successful operators within a given commodity group. Farmer Mac's board of directors has established policies on geographic and commodity concentration to maintain adequate diversification and measure concentration risk.

In Farmer Mac's experience, the degree to which the collateral for a commodity group is single-use or highly improved is a more significant determinant of the probability of ultimate losses on a given loan than diversity of geographic location within a commodity group. Commodity groups that tend to be single-use or highly improved include permanent plantings (nut crops for example), agricultural storage and processing facilities (canola plants and grain processing facilities for example), and certain livestock facilities (dairy facilities for example). The versatility of a borrower's operation (and in the case of persisting adverse economic conditions, the borrower's ability to switch commodity groups) will more likely result in profitability for the borrower and therefore a lower risk of decreased value for the underlying collateral. Producers of agricultural commodities that require highly improved property are generally less able to adapt their operations when faced with adverse economic conditions. Also, in the event of a borrower's default, the prospective sale value of the collateral is more likely to decrease and the related loan may become undercollateralized. This analysis is consistent with corresponding commodity analyses, which indicate that Farmer Mac has experienced higher loss and collateral deficiency rates in permanent planting loans and agricultural storage and processing loans, for which the collateral is typically highly improved and specialized.

The following tables present concentrations of Farm & Ranch loans held and loans underlying LTSPCs and off-balance sheet Farm & Ranch Guaranteed Securities by commodity type within geographic region and cumulative credit losses by origination year and commodity type:

Table 21

As of December 31, 2018
Farm & Ranch Concentrations by Commodity Type within Geographic Region

	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	Total	
	(dollars in thousands)							
By geographic region ⁽¹⁾ :								
Northwest	\$400,639	\$139,817	\$238,037	\$76,705	\$—	\$398	\$855,596	
	5.5	% 1.9	% 3.3	% 1.1	% —	% —	% 11.8	%
Southwest	544,888	1,148,175	433,401	85,691	57,011	4,018	2,273,184	
	7.5	% 15.9	% 5.9	% 1.2	% 0.8	% 0.1	% 31.4	%
Mid-North	1,947,100	16,764	186,603	134,493	8,491	2,622	2,296,073	
	26.9	% 0.2	% 2.6	% 1.9	% 0.1	% —	% 31.7	%
Mid-South	534,243	8,022	270,133	62,000	8,438	443	883,279	
	7.4	% 0.1	% 3.7	% 0.9	% 0.1	% —	% 12.2	%
Northeast	152,310	32,284	69,250	74,094	4,432	—	332,370	
	2.1	% 0.5	% 1.0	% 1.0	% 0.1	% —	% 4.7	%
Southeast	192,447	164,759	157,948	71,155	6,809	351	593,469	
	2.7	% 2.3	% 2.2	% 0.9	% 0.1	% —	% 8.2	%
Total	\$3,771,627	\$1,509,821	\$1,355,372	\$504,138	\$85,181	\$7,832	\$7,233,971	
	52.1	% 20.9	% 18.7	% 7.0	% 1.2	% 0.1	% 100.0	%

Geographic regions: Northwest (AK, ID, MT, OR, WA, WY); Southwest (AZ, CA, CO, HI, NM, NV, UT);

⁽¹⁾ Mid-North (IA, IL, IN, MI, MN, NE, ND, SD, WI); Mid-South (AR, KS, LA, MO, OK, TX); Northeast (CT, DE, KY, MA, MD, ME, NH, NJ, NY, OH, PA, RI, VA, VT, WV); Southeast (AL, FL, GA, MS, NC, SC, TN).

Table 22

As of December 31, 2018
 Farm & Ranch Cumulative Credit Losses by Origination Year
 and Commodity Type

	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Total
	(in thousands)					
By year of origination:						
2008 and Prior	\$3,329	\$ 9,184	\$ 3,803	\$ 1,403	\$ 10,819	\$28,538
2009	98	184	69	—	1,193	1,544
2010	—	—	5	—	—	5
2011	—	—	—	—	3,661	3,661
2012	—	—	—	—	—	—
2013	—	—	—	—	—	—
2014	—	—	—	—	—	—
2015	(540)	—	—	—	—	(540)
2016	—	—	—	—	—	—
2017	—	—	—	—	—	—
2018	—	—	—	—	—	—
Total	\$2,887	\$ 9,368	\$ 3,877	\$ 1,403	\$ 15,673	\$33,208

Farmer Mac regularly conducts detailed, statistical stress tests of its portfolio for credit risk and compares those results to current and historical credit quality metrics and to the various statutory, regulatory, and Farmer Mac's board of directors' capital policy metrics. Farmer Mac's methodologies for pricing its guarantee and commitment fees, managing credit risk, and providing adequate allowances for losses consider all of the foregoing factors and information.

Farmer Mac requires approved lenders to make representations and warranties about the conformity of eligible agricultural mortgage and rural utilities loans to Farmer Mac's standards, the accuracy of loan data provided to Farmer Mac, and other requirements related to the loans. Sellers are responsible to Farmer Mac for breaches of those representations and warranties, and Farmer Mac has the ability to require a seller to cure, replace, or repurchase a loan sold or transferred to Farmer Mac if any breach of a representation or warranty is discovered that was material to Farmer Mac's decision to purchase the loan or that directly or indirectly causes a default or potential loss on a loan sold or transferred by the seller to Farmer Mac. During the previous three years ended December 31, 2018, Farmer Mac has required one seller to repurchase a total of two loans aggregating \$0.8 million for breaches of representations and warranties made about those two loans, both of which repurchases occurred during first quarter 2016. In addition to relying on the representations and warranties of lenders, Farmer Mac also underwrites all of the agricultural real estate mortgage loans (other than rural housing and part-time farm mortgage loans) and rural utilities loans that it holds in its portfolio. For rural housing and part-time farm mortgage loans, Farmer Mac relies on representations and warranties from the seller that those loans conform to Farmer Mac's specified underwriting criteria without exception. For more information about Farmer Mac's loan eligibility requirements, see "Business—Farmer Mac's Lines of Business—Farm & Ranch—Loan Eligibility" and "Business—Farmer Mac's Lines of Business—Rural Utilities—Loan Eligibility."

Under contracts with Farmer Mac and in consideration for servicing fees, Farmer Mac-approved central servicers service loans in accordance with Farmer Mac's requirements. Central servicers are responsible to Farmer Mac for serious errors in the servicing of those loans. If a central servicer materially breaches the terms of its servicing agreement with Farmer Mac, such as failing to forward payments received or releasing collateral without Farmer

Mac's consent, or experiences insolvency or bankruptcy, Farmer Mac

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has the right to terminate the servicing relationship for a particular loan or the entire portfolio serviced by the central servicer. Farmer Mac also can proceed against the central servicer in arbitration or exercise any remedies available to it under law. During the previous three years ended December 31, 2018, Farmer Mac had not exercised any remedies or taken any formal action against any central servicers. For more information about Farmer Mac's servicing requirements, see "Business—Farmer Mac's Lines of Business—Farm & Ranch—Servicing" and "Business—Farmer Mac's Lines of Business—Rural Utilities—Servicing."

Credit Risk – Institutional. Farmer Mac is exposed to credit risk arising from its business relationships with other institutions including:

- issuers of AgVantage securities;
- approved lenders and servicers; and
- interest rate swap counterparties.

Farmer Mac approves AgVantage counterparties and manages institutional credit risk related to those AgVantage counterparties by requiring them to meet Farmer Mac's standards for creditworthiness for the particular counterparty and transaction. The required collateralization level is established when the AgVantage facility is entered into with the counterparty and does not change during the life of the AgVantage securities issued under the facility. In AgVantage transactions, the corporate obligor is required to remove from the pool of pledged collateral any loan that becomes more than 30 days delinquent in the payment of principal or interest and to substitute an eligible loan that is current in payment to maintain the minimum required collateralization level. In the event of a default on the general obligation, Farmer Mac would have recourse to the pledged collateral and have rights to the ongoing borrower payments of principal and interest. For Farm Equity AgVantage counterparties and smaller financial funds or entities, Farmer Mac also requires that the counterparty generally (1) maintain a higher collateralization level, through lower loan-to-value ratio thresholds and higher overcollateralization than required for traditional AgVantage securities and (2) comply with specified financial covenants for the life of the related AgVantage security to avoid default. For a more detailed description of AgVantage securities, see "Business—Farmer Mac's Lines of Business—Institutional Credit—AgVantage Securities."

The unpaid principal balance of outstanding on-balance sheet AgVantage securities secured by loans eligible for the Farm & Ranch line of business totaled \$5.3 billion as of December 31, 2018 and \$5.1 billion as of December 31, 2017. The unpaid principal balance of on-balance sheet AgVantage securities secured by loans eligible for the Rural Utilities line of business totaled \$2.8 billion as of December 31, 2018 and \$2.5 billion as of December 31, 2017. The unpaid principal balance of outstanding off-balance sheet AgVantage securities totaled \$0.3 billion as of December 31, 2018 and \$0.3 billion as of December 31, 2017.

The following table provides information about the issuers of AgVantage securities, as well as the required collateralization levels for those transactions as of December 31, 2018 and 2017:

Table 23

Counterparty	As of December 31, 2018			As of December 31, 2017		
	Balance	Credit Rating	Required Collateralization	Balance	Credit Rating	Required Collateralization
	(dollars in thousands)					
AgVantage:						
CFC ⁽¹⁾	\$3,070,455	A	100%	\$2,800,188	A	100%
MetLife	2,550,000	AA-	103%	2,550,000	AA-	103%
Rabo AgriFinance	2,075,000	None	110%	2,075,000	None	106%
Other ⁽²⁾	407,572	⁽³⁾	106% to 125%	199,959	⁽³⁾	106% to 125%
Farm Equity AgVantage ⁽⁴⁾	279,790	None	110%	279,731	None	110%
Total outstanding	\$5,312,362			\$5,104,690		

(1) Includes \$300.0 million related to a revolving floating rate AgVantage facility. Farmer Mac receives a fixed fee based on the full dollar amount of the facility.

(2) Consists of AgVantage securities issued by 6 different issuers as of both December 31, 2018 and 2017.

(3) Consists of AgVantage securities from 6 different issuers without a credit rating as of both December 31, 2018 and 2017.

(4) Consists of AgVantage securities from 5 different issuers as of both December 31, 2018 and 2017.

Farmer Mac manages institutional credit risk related to lenders and servicers by requiring those institutions to meet Farmer Mac's standards for creditworthiness. Farmer Mac monitors the financial condition of those institutions by evaluating financial statements and bank credit rating agency reports. For more information about Farmer Mac's lender eligibility requirements, see "Business—Farmer Mac's Lines of Business—Farm & Ranch—Approved Lenders" and "Business—Farmer Mac's Lines of Business—Rural Utilities—Approved Lenders."

Farmer Mac manages institutional credit risk related to its interest rate swap counterparties through collateralization provisions contained in each of its swap agreements that varies based on the market value of its swaps portfolio with each counterparty. Furthermore, Farmer Mac and its interest rate swap counterparties are required to fully collateralize their derivatives positions without any minimum threshold for cleared swap transactions, as well as for non-cleared swap transactions entered into after March 1, 2017 (the effective date of new rules that established zero threshold requirements for the exchange of variation margin between Farmer Mac and its swap dealer counterparties in such transactions). Farmer Mac transacts interest rate swaps with multiple counterparties to reduce any counterparty credit exposure concentration. Farmer Mac also uses the clearing process for cleared swap transactions as another mechanism for managing its derivative counterparty risk. Credit risk related to interest rate swap contracts is discussed in "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Interest Rate Risk" and Note 6 to the consolidated financial statements.

Credit Risk – Other Investments. As of December 31, 2018, Farmer Mac had \$0.4 billion of cash and cash equivalents and \$2.3 billion of investment securities. The management of the credit risk inherent in these investments is governed by Farmer Mac's internal policies as well as the Liquidity and Investment Regulations, which establish criteria for investments that are eligible for Farmer Mac's investment portfolio, including limitations on asset class, dollar amount, issuer concentration, and credit quality. In addition to establishing a portfolio of highly liquid investments as an available source of cash, the goals of Farmer Mac's investment policies are designed to minimize Farmer Mac's exposure to financial market volatility, preserve capital, and support Farmer Mac's access to the debt markets.

On September 13, 2018, FCA adopted a final rule to amend the Liquidity and Investment Regulations to comply with Section 939A of the Dodd-Frank Act by removing references and requirements relating to credit ratings and replacing them with other standards of creditworthiness. Previously, the Liquidity and

Investment Regulations and Farmer Mac's policies generally required each investment or issuer of an investment to be highly rated by a nationally recognized statistical rating organization. The amendments to the Liquidity and Investment Regulations and Farmer Mac's internal policies now require that investments held in Farmer Mac's investment portfolio meet the following creditworthiness standards: (1) at a minimum, at least one obligor of the investment must have a very strong capacity to meet financial commitments for the life of the investment, even under severely adverse or stressful conditions, and generally present a very low risk of default; (2) if the obligor whose capacity to meet financial commitments is being relied upon to meet the standard set forth in subparagraph (1) is located outside of the United States, the investment must also be fully guaranteed by a U.S. government agency; and (3) the investment must exhibit low credit risk and other risk characteristics consistent with the purpose or purposes for which it is held.

The Liquidity and Investment Regulations and Farmer Mac's internal policies also establish concentration limits, which are intended to limit exposure to any single entity, issuer, or obligor. The amendments to the Liquidity and Investment Regulations changed the limit for Farmer Mac's total credit exposure to any single entity, issuer, or obligor of securities from 25% to 10% of Farmer Mac's regulatory capital (\$73.7 million as of December 31, 2018). However, Farmer Mac's current policy limits this total credit exposure to 5% of its regulatory capital (\$36.8 million as of December 31, 2018). These exposure limits do not apply to obligations of U.S. government agencies or GSEs, although Farmer Mac's current policy restricts investing more than 100% of regulatory capital in the senior non-convertible debt securities of any one GSE.

Before their amendment, the Liquidity and Investment Regulations also established limits on the maximum amount, expressed as a percentage of Farmer Mac's investment portfolio, that could be invested in each eligible asset class. Although the amended Liquidity and Investments Regulations eliminated these limits, Farmer Mac's internal policies set forth asset class limits as part of Farmer Mac's overall risk management framework.

Interest Rate Risk. Farmer Mac is subject to interest rate risk on all assets retained on its balance sheet because of possible timing differences in the cash flows of the assets and related liabilities. This risk is primarily related to loans held, Farmer Mac Guaranteed Securities (excluding AgVantage securities), and USDA Securities due to the ability of borrowers to prepay their loans before the scheduled maturities, thereby increasing the risk of asset and liability cash flow mismatches. Cash flow mismatches in a changing interest rate environment can reduce the earnings of Farmer Mac if assets repay sooner than expected and the resulting cash flows must be reinvested in lower-yielding investments when Farmer Mac's funding costs cannot be correspondingly reduced, or if assets repay more slowly than expected and the associated debt must be replaced by higher-cost debt. As discussed below, Farmer Mac manages this interest rate risk by funding assets purchased with liabilities matching the duration and cash flow characteristics of the assets purchased.

Interest Rate Risk Management

The goal of interest rate risk management at Farmer Mac is to create and maintain a portfolio that generates stable earnings and value across a variety of interest rate environments. Recognizing that interest rate sensitivity may change with the passage of time and as interest rates change, Farmer Mac assesses this exposure regularly and, if necessary, readjusts its portfolio of assets and liabilities by:

- purchasing assets in the ordinary course of business;
- refinancing existing liabilities; or
- using financial derivatives to alter the characteristics of existing assets or liabilities.

Farmer Mac's primary strategy for managing interest rate risk is to fund asset purchases with liabilities that have similar duration and cash flow characteristics so that they will perform similarly as interest rates change. To match these characteristics, Farmer Mac issues discount notes and both callable and non-callable medium-term notes across a spectrum of maturities. Farmer Mac issues callable debt to offset the prepayment risk associated with some loans. By using a blend of liabilities that includes callable debt, the interest rate sensitivities of the liabilities tend to increase or decrease as interest rates change in a manner similar to changes in the interest rate sensitivities of the assets. Farmer Mac also uses financial derivatives to better match the durations of Farmer Mac's assets and liabilities, thereby reducing overall interest rate sensitivity.

Taking into consideration the prepayment provisions and the default probabilities associated with its loan assets, Farmer Mac uses prepayment models when projecting and valuing cash flows associated with these assets. Because borrowers' behaviors in various interest rate environments may change over time, Farmer Mac periodically evaluates the effectiveness of these models compared to actual prepayment experience and adjusts and refines the models as necessary to improve the precision of future prepayment forecasts.

Yield maintenance provisions and other prepayment penalties contained in certain agricultural real estate mortgage loans and most rural utilities loans reduce, but do not eliminate, prepayment risk. Those provisions require borrowers to make an additional payment when they prepay their loans, thus compensating Farmer Mac for the shortened duration of the prepaid loan. As of December 31, 2018, approximately 2% of the total outstanding balance of loans in the Farm & Ranch line of business where Farmer Mac either owned the loan or the beneficial interest in the underlying loan had yield maintenance provisions or other forms of prepayment protection (together covering 5% of all loans with fixed interest rates). Of the Farm & Ranch loans purchased in 2018, 5% had yield maintenance or another form of prepayment protection. As of December 31, 2018, none of Farmer Mac's USDA Securities had yield maintenance provisions and 4% contained other prepayment penalties. Of the USDA Securities purchased in 2018, 9% contained various forms of prepayment penalties. As of December 31, 2018, 68% of the Rural Utilities loans owned by Farmer Mac had yield maintenance provisions. All of the Rural Utilities loans purchased in 2018 contained prepayment penalties.

Farmer Mac's purchases of eligible loan assets expose Farmer Mac to interest rate risk arising primarily from uncertainty as to when the borrowers will repay the outstanding principal balance on the related loans. Generally, the values of Farmer Mac's eligible loan assets, and the debt issued to fund these assets, increase when interest rates decline, and their values decrease as interest rates rise. Furthermore, changes in interest rates may affect loan prepayment rates which may, in turn, affect durations and values of the loans. Declining interest rates generally increase prepayment rates, which shortens the duration of these assets, while rising interest rates tend to slow loan prepayments, thereby extending the duration of the loans.

Farmer Mac is also subject to interest rate risk on loans that Farmer Mac has committed to acquire but has not yet purchased, other than delinquent loans purchased through LTSPCs or loans designated for securitization under a forward purchase agreement. When Farmer Mac commits to purchase these loans, it is exposed to interest rate risk between the time it commits to purchase the loans and the time it issues debt to fund the purchase of those loans.

Farmer Mac manages the interest rate risk related to these loans by using futures contracts involving U.S. Treasury securities and/or forward sale contracts on the debt securities of other GSEs. Farmer Mac uses U.S. Treasury futures contracts as a hedge against the level of interest rates, while forward sale contracts on GSE securities reduce its interest rate exposure to changes in both U.S. Treasury rates and spreads on Farmer Mac debt and certain Farmer Mac Guaranteed Securities. Issuing debt to fund the loans as investments does not fully eliminate interest rate risk due to the possible timing differences in the cash flows of the assets and related liabilities, as discussed above.

Farmer Mac's \$0.4 billion of cash and cash equivalents mature within three months and are funded with discount notes having similar maturities. As of December 31, 2018, \$2.19 billion of the \$2.26 billion of investment securities (97%) were floating rate securities with rates that adjust within one year or fixed rate securities with original maturities between three months and one year. Those securities are funded with effectively floating rate debt that closely matches the rate adjustment dates of the associated investments.

Interest Rate Risk Metrics

Farmer Mac regularly stress tests its portfolio for interest rate risk and uses a variety of metrics to quantify and manage its interest rate risk. These metrics include sensitivity to interest rate movements of market value of equity ("MVE") and projected net effective spread ("NES") as well as duration gap analysis. MVE represents management's estimate of the present value of all future cash flows from on- and off-balance sheet assets, liabilities, and financial derivatives, discounted at current interest rates and appropriate spreads. However, MVE is not indicative of the market value of Farmer Mac as a going concern because these market values are theoretical and do not reflect future business activities. MVE sensitivity analysis is used to measure the degree to which the market values of Farmer Mac's assets and liabilities change for a given change in interest rates. Because this analysis evaluates the impact of interest rate movements on the value of all future cash flows, this measure provides an evaluation of Farmer Mac's long-term interest rate risk.

Farmer Mac's NES simulation represents the difference between projected income from interest-earning assets and interest expense produced by the related funding, including associated derivatives. Farmer Mac's NES may be affected by changes in market interest rates resulting from timing differences between maturities and re-pricing characteristics of assets and liabilities. The direction and magnitude of any such effect depends on the direction and magnitude of the change in interest rates as well as the composition of Farmer Mac's portfolio. The NES forecast represents an estimate of the net effective spread income that Farmer Mac's current portfolio is expected to produce over a twelve-month horizon. As a result, NES sensitivity statistics provide a short-term view of Farmer Mac's interest rate sensitivity.

Duration is a measure of a financial instrument's sensitivity to small changes in interest rates. Duration gap is the difference between the estimated durations of Farmer Mac's assets and liabilities. Because duration is a measure of market value sensitivity, duration gap summarizes the extent to which estimated market value sensitivities for assets and liabilities are matched. Duration gap provides a relatively concise measure of the interest rate risk inherent in Farmer Mac's outstanding portfolio.

A positive duration gap denotes that the duration of Farmer Mac's assets is greater than the duration of its liabilities. A positive duration gap indicates that the market value of Farmer Mac's assets is more sensitive to small interest rate movements than is the market value of its liabilities. Conversely, a negative duration gap indicates that Farmer Mac's assets are less sensitive to small interest rate movements than are its liabilities.

Each of the metrics is produced using asset/liability models and is derived based on management's best estimates of factors such as projected interest rates, interest rate volatility, and prepayment speeds. Accordingly, these metrics should be understood as estimates rather than as precise measurements. Actual results may differ to the extent there are material changes to Farmer Mac's portfolio or changes in strategies undertaken to mitigate unfavorable sensitivities to interest rate changes.

The following schedule summarizes the results of Farmer Mac's MVE and NES sensitivity analysis as of December 31, 2018 and 2017 to an immediate and instantaneous uniform or "parallel" shift in the yield curve:

Table 24

Interest Rate Scenario	Percentage Change in MVE from Base Case			
	As of December 31, 2018		As of December 31, 2017	
+100 basis points	(0.7	)%	(1.1)%
-100 basis points	(5.9	)%	(5.4)%

Interest Rate Scenario	Percentage Change in NES from Base Case			
	As of December 31, 2018		As of December 31, 2017	
+100 basis points	3.0	%	4.4	%
-100 basis points	(3.0	)%	(3.7)%

As of December 31, 2018, Farmer Mac's effective duration gap was negative 0.8 months, compared to negative 0.9 months as of December 31, 2017. During 2018, interest rates increased significantly. Despite this rate movement, Farmer Mac's overall interest rate sensitivity remained stable and at relatively low levels during 2018.

Financial Derivatives Transactions

The economic effects of financial derivatives are included in Farmer Mac's MVE, NES, and duration gap analyses. Farmer Mac enters into the following financial derivative transactions principally to protect against risk from the effects of market price or interest rate movements on the value of assets, future cash flows, credit exposure, and debt issuance, not for trading or speculative purposes:

- "pay-fixed" interest rate swaps, in which Farmer Mac pays fixed rates of interest to, and receives floating rates of interest from, counterparties;
- "receive-fixed" interest rate swaps, in which Farmer Mac receives fixed rates of interest from, and pays floating rates of interest to, counterparties; and
- "basis swaps," in which Farmer Mac pays variable rates of interest based on one index to, and receives variable rates of interest based on another index from, counterparties.

As of December 31, 2018, Farmer Mac had \$9.9 billion combined notional amount of interest rate swaps, with terms ranging from less than one year to twenty-five years, of which \$3.8 billion were pay-fixed interest rate swaps, \$4.3 billion were receive-fixed interest rate swaps, and \$1.8 billion were basis swaps.

Farmer Mac enters into interest rate swap contracts to synthetically adjust the characteristics of its debt to match more closely the cash flow and duration characteristics of its loans and other assets, thereby reducing interest rate risk and often deriving an overall lower effective cost of borrowing than would otherwise be available to Farmer Mac in the conventional debt market. Specifically, interest rate swaps synthetically convert the variable cash flows related to the forecasted issuance of short-term debt into effectively fixed rate medium-term notes that match the anticipated duration and interest rate characteristics of the corresponding assets. Farmer Mac evaluates the overall cost of using the swap market as a funding alternative and uses interest rate swaps to manage specific interest rate risks for specific transactions. Certain financial derivatives are designated as fair value hedges of fixed rate assets classified as available for sale or liabilities to protect against fair value changes in the assets or liabilities related to a benchmark interest rate (e.g., LIBOR). Furthermore, certain financial derivatives are designated as cash flow hedges to mitigate the volatility of future interest rate payments on floating rate debt.

Farmer Mac has used callable interest rate swaps (in conjunction with the issuance of short-term debt) as an alternative to callable medium-term notes with equivalently structured maturities and call options. The call options on the swaps are designed to match the prepayment options on those assets without prepayment protection. The blended durations of the swaps are also designed to match the duration of the related assets over their estimated lives. If the assets prepay, the swaps can be called and the short-term debt repaid; if the assets do not prepay, the swaps remain outstanding and the short-term debt is rolled over, effectively providing fixed rate callable funding over the lives of the related assets. Thus, the economics of the assets are closely matched to the economics of the interest rate swap and funding combination.

As discussed in Note 6 to the consolidated financial statements, all financial derivatives are recorded on the balance sheet at fair value as derivative assets or as derivative liabilities. Changes in the fair values of financial derivatives are reported in "(Losses)/gains on financial derivatives" in the consolidated statements of operations. For financial derivatives designated in fair value hedge accounting relationships, changes in the fair values of the hedged items, primarily fixed rate AgVantage securities and fixed rate medium-term notes, related to the risk being hedged are reported in "Net interest income" in the consolidated statements of operations. Interest accruals on derivatives designated in fair value hedge relationships are also recorded in "Net interest income" in the consolidated statements of operations. For financial derivatives designated in cash flow hedge accounting relationships, the unrealized gain or loss on the derivative is recorded in other comprehensive income. Because the hedging instrument is an interest rate swap and the hedged forecasted transactions are future interest payments on variable rate debt, amounts recorded in accumulated other comprehensive income are reclassified to "Total interest expense" in conjunction with the recognition of interest expense on the debt. All of Farmer Mac's financial derivatives transactions are conducted under standard collateralized agreements that limit Farmer Mac's potential credit exposure to any counterparty. As of December 31, 2018, Farmer Mac had \$1.4 million of uncollateralized net exposures to three counterparties. As of December 31, 2017, Farmer Mac had uncollateralized net exposures of \$0.5 million to three counterparties.

Basis Risk

In addition to being exposed to the risk of asset and liability cash flow mismatches, Farmer Mac is exposed to the risk related to changes in its cost of funds relative to floating rate market indexes (such as LIBOR) on some of the floating rate assets it holds. This exposure is referred to as "basis risk." Some of Farmer Mac's floating rate assets reset on rate adjustment dates based on a floating rate market index, while the related debt that Farmer Mac issued to fund those assets until their maturities may be refinanced based on Farmer Mac's cost of funds at a particular time. Basis risk arises from the potential variability between the rates at which those floating rate assets reset and the rates at which Farmer Mac can issue debt to fund those assets. Farmer Mac can fund these floating rate assets in several ways, including:

- issuing short-term discount notes with maturities that match the reset period of the assets;
- issuing floating rate medium-term notes with maturities that match the maturities of the assets;
- issuing non-maturity matched, floating rate medium-term notes; or
- issuing non-maturity matched, fixed-rate discount notes or medium-term notes swapped to match the interest rate reset dates of the assets as an alternative source of effectively floating rate funding.

Farmer Mac primarily uses the last two options identified in the list above to fund these floating rate assets because this funding strategy is usually the most effective way to provide an interest rate match, maintain a suitable liquidity profile, and lower Farmer Mac's cost of funds. As funding for these floating rate assets matures, Farmer Mac seeks to refinance the debt associated with these assets in a similar fashion to achieve an appropriate interest rate match for the remaining life of the assets. However, for example, if the rates on Farmer Mac's discount notes or medium-term notes deteriorate relative to LIBOR during the time between when these floating rate assets were first funded and when Farmer Mac refinances the associated debt, Farmer Mac is exposed to a commensurate reduction in its net effective spread on the associated assets. Conversely, if the rates on Farmer Mac's discount notes or medium-term notes improve relative to LIBOR during that time, Farmer Mac would benefit from a commensurate increase in its net effective spread on those assets.

Farmer Mac is also subject to basis risk on some of its fixed rate assets as a result of its use of pay-fixed interest rate swaps, combined with a series of discount note or medium-term note issuances, as an alternative source of effectively fixed rate funding. This risk arises because the rates at which Farmer Mac refinances its funding for some fixed rate assets through the issuance of discount notes or medium-term notes may vary from the agreed-upon rates based on the floating rate market index received by Farmer Mac on the associated swaps. In these cases, for example, if the rates on Farmer Mac's discount notes or medium-term notes were to deteriorate relative to LIBOR, Farmer Mac would be exposed to a commensurate reduction in its net interest income and net effective spread. Conversely, if the rates on Farmer Mac's discount notes or medium-term notes were to improve relative to LIBOR, Farmer Mac would benefit from a commensurate increase in its net interest income and net effective spread.

To mitigate this basis risk, Farmer Mac seeks to issue debt of sufficient maturity to reduce the frequency of required refinancing of that debt over the life of the associated asset. As of December 31, 2018, Farmer Mac held \$6.2 billion of floating rate assets in its lines of business and its investment portfolio that reset based on floating rate market indexes, primarily one-month and three-month LIBOR. As of the same date, Farmer Mac also had \$3.8 billion of interest rate swaps outstanding where Farmer Mac pays a fixed rate of interest and receives a floating rate of interest.

Farmer Mac's short-term funding costs relative to LIBOR have varied throughout 2018. For the first half of the year, funding costs relative to LIBOR were at levels generally more favorable than Farmer Mac's historical experience. As of December 31, 2018, these levels had deteriorated to levels less favorable than Farmer Mac's historical experience. Farmer Mac adjusts its funding strategies to mitigate the effects of this variability from time to time and seeks to maintain an effective funding cost.

Discontinuation of LIBOR

As described in "Risk Factors—Market Risk," Farmer Mac faces risks associated with the reform, replacement, or discontinuation of the LIBOR benchmark interest rate and the transition to an alternative benchmark interest rate. We are currently evaluating the potential effect on our business of the replacement of the LIBOR benchmark interest rate, including the possibility of SOFR as a dominant replacement. As of December 31, 2018, Farmer Mac held \$5.1 billion of floating rate assets in its lines of business and its investment portfolio, \$3.6 billion of floating rate debt, and \$9.8 billion notional amount of interest rate swaps, each of which reset based on LIBOR. In addition, Farmer Mac's Series C Preferred Stock will be indexed to LIBOR after July 17, 2024. The market transition away from LIBOR and towards SOFR, or any other alternative benchmark interest rate that may be developed, is expected to be complicated and require significant work, possibly requiring the development of term and credit adjustments to accommodate for differences between the benchmark interest rates. The transition may also result in different financial performance for previously booked transactions, require different hedging strategies, or require renegotiation of previously booked transactions.

Liquidity and Capital Resources

Farmer Mac regularly accesses the capital markets for funding, and Farmer Mac has maintained access to the capital markets at favorable rates throughout 2017 and 2018. Assuming continued access to the capital markets, Farmer Mac believes it has sufficient liquidity and capital resources to support its operations for the next 12 months and for the foreseeable future. Farmer Mac also has a liquidity contingency plan to manage unanticipated disruptions in its access to the capital markets. That plan involves borrowing through repurchase agreement arrangements and the sale of liquid assets. Farmer Mac must maintain a minimum of 90 days of liquidity under the Liquidity and Investment Regulations. Under the methodology for calculating available days of liquidity prescribed by those regulations, Farmer Mac maintained an average of 190 days of liquidity during 2018 and had 205 days of liquidity as of December 31, 2018.

Debt Issuance. Farmer Mac funds its purchases of eligible loan assets and investment assets and finances its operations primarily by issuing debt obligations of various maturities through a network of dealers in the public capital markets. Farmer Mac works to enhance its funding operations by undertaking extensive debt investor relations initiatives, including conducting non-deal roadshows with institutional investors, making periodic dealer sales force presentations, and speaking at fixed income investor conferences throughout the United States. Debt obligations issued by Farmer Mac include discount notes and fixed and floating rate medium-term notes, including callable notes. As of December 31, 2018, Farmer Mac had outstanding discount notes of \$1.6 billion, medium-term notes that mature within one year of \$6.2 billion, and medium-term notes that mature after one year of \$8.5 billion.

Farmer Mac's board of directors has authorized the issuance of up to \$20.0 billion of discount notes and medium-term notes (of which \$16.2 billion was outstanding as of December 31, 2018), subject to periodic review of the adequacy of that level relative to Farmer Mac's borrowing requirements. Farmer Mac invests the proceeds of its debt issuances in purchases of loans, USDA Securities, Farmer Mac Guaranteed

Securities, and investment assets in accordance with policies established by its board of directors and subject to regulations established by FCA.

Liquidity. The funding and liquidity needs of Farmer Mac's lines of business are driven by the purchase and retention of eligible loans, USDA Securities, and Farmer Mac Guaranteed Securities (including AgVantage securities); the maturities of Farmer Mac's discount notes and medium-term notes; and payment of principal and interest on Farmer Mac Guaranteed Securities. Farmer Mac's primary sources of funds to meet these needs are the proceeds of its debt issuances, fees for its guarantees and commitments, net effective spread, loan repayments, and maturities of AgVantage securities.

Farmer Mac maintains cash, cash equivalents (including U.S. Treasury securities and other short-term money market instruments), and other investment securities that can be drawn upon for liquidity needs. The following table presents these assets as of December 31, 2018 and 2017:

Table 25

	As of December 31, 2018 (in thousands)	As of December 31, 2017
Cash and cash equivalents	\$425,256	\$302,022
Investment securities:		
Guaranteed by U.S. Government and its agencies	1,216,911	1,331,490
Guaranteed by GSEs	1,013,281	893,843
Asset-backed securities	32,692	35,104
Total	\$2,688,140	\$2,562,459

Capital Requirements. Farmer Mac is subject to the following capital requirements – minimum, critical, and risk-based. Farmer Mac must comply with the higher of the minimum capital requirement and the risk-based capital requirement. The minimum capital requirement is expressed as a percentage of on-balance sheet assets and off-balance sheet obligations. The critical capital requirement is equal to one-half of the minimum capital amount. Farmer Mac's statutory charter does not specify the required level of risk-based capital but directs FCA to establish a risk-based capital stress test for Farmer Mac, using specified stress test parameters. Certain enforcement powers are given to FCA depending on Farmer Mac's compliance with these capital standards. As of December 31, 2018, Farmer Mac was in compliance with its statutory capital requirements and was classified as within "level I" (the highest compliance level).

In accordance with FCA's rule on capital planning, Farmer Mac's board of directors has adopted a policy for maintaining a sufficient level of "Tier 1" capital (consisting of retained earnings, paid-in capital, common stock, and qualifying preferred stock). That policy restricts Tier 1-eligible dividends and any discretionary bonus payments if Tier 1 capital falls below specified thresholds. As of December 31, 2018 and 2017, Farmer Mac's Tier 1 capital ratio was 13.4% and 12.6%, respectively, as capital growth outpaced the growth in risk-weighted assets during 2018. As of December 31, 2018, Farmer Mac was in compliance with its capital adequacy policy.

For more information about the capital requirements applicable to Farmer Mac, its capital adequacy policy, and FCA's rule on capital planning, see "Business—Government Regulation of Farmer Mac—Capital Standards." See Note 9 to the consolidated financial statements for more information about Farmer Mac's capital position.

Contractual Obligations. The following table presents the amount and timing of Farmer Mac's known, fixed, and determinable contractual obligations by payment date as of December 31, 2018. The payment amounts represent those amounts contractually due to the recipient (including return of discount and interest on debt) and do not include unamortized premiums or discounts or other similar carrying value adjustments.

Table 26

	One Year or Less	One to Three Years	Three to Five Years	Over Five Years	Total
	(in thousands)				
Discount notes ⁽¹⁾	\$ 1,594,662	\$ —	\$ —	\$ —	\$ 1,594,662
Medium-term notes ⁽¹⁾	6,171,308	5,321,325	1,744,555	1,437,475	14,674,663
Interest payments on fixed rate medium-term notes ⁽²⁾	188,664	242,661	127,139	162,696	721,160
Interest payments on floating rate medium-term notes ⁽³⁾	89,141	50,782	17,496	23,896	181,315
Operating lease obligations ⁽⁴⁾	1,944	3,914	4,016	1,311	11,185
Purchase obligations ⁽⁵⁾	1,965	1,343	—	—	3,308

Future events, including additional issuance of discount notes and medium-term notes and refinancing of those

(1) notes, could cause actual payments to differ significantly from these amounts. For more information regarding discount notes and medium-term notes, see Note 7 to the consolidated financial statements.

(2) Interest payments on callable medium-term notes are calculated based on contractual maturity. Future calls of these notes could cause actual interest payments to differ significantly from the amounts presented.

(3) Calculated using the effective interest rates as of December 31, 2018. As a result, these amounts do not reflect the effects of changes in the contractual interest rates effective on future interest rate reset dates.

(4) Includes amounts due under non-cancellable operating leases for office space and office equipment. See Note 12 to the consolidated financial statements for more information about Farmer Mac's minimum lease payments for office space.

(5) Includes minimum amounts due under non-cancellable agreements to purchase goods or services that are enforceable and legally binding and specify all significant terms. These agreements include, among others, agreements for the provision of consulting services, information technology support, equipment maintenance, and financial analysis software and services. The amounts actually paid under these agreements will likely be higher due to the variable components of some of these agreements under which the ultimate obligation owed is determined by reference to actual usage or hours worked. The table does not include amounts due under agreements that are cancellable without penalty or further payment as of December 31, 2018 and therefore do not represent enforceable and legally binding obligations. The table also does not include payments that are based on a varying outstanding loan volume (such as servicing fees), as those payments are not known, fixed, and determinable contractual obligations.

Farmer Mac enters into financial derivatives contracts under which it either receives cash from counterparties, or is required to pay cash to them, depending on changes in interest rates. Financial derivatives are carried on the consolidated balance sheets at fair value, representing the net present value of expected future cash payments or receipts based on market interest rates as of the balance sheet date adjusted for the consideration of credit risk of Farmer Mac and its counterparties. The fair values of the contracts change daily as market interest rates change. Because the financial derivative liabilities recorded on the consolidated balance sheet as of December 31, 2018 do not represent the amounts that may ultimately be paid under the financial derivative contracts, those liabilities are not included in the table of contractual obligations presented above. More information about financial derivatives is included in Note 2(g) and Note 6 to the consolidated financial statements.

Contingent Liabilities. In conducting its loan purchase activities, Farmer Mac enters into mandatory delivery commitments to purchase agricultural real estate mortgage loans and USDA Securities. In conducting its LTSPC activities, Farmer Mac commits, subject to the applicable LTSPC agreement, to a future purchase of one or more loans from identified pools of eligible loans that met Farmer Mac's standards when the applicable transaction was entered into and Farmer Mac assumed the credit risk on the loans. The following table presents these significant commitments:

Table 27

	As of December 31,	
	2018	2017
	(in thousands)	
LTSPCs ⁽¹⁾	\$3,163,059	\$3,141,684
Mandatory commitments to purchase loans and USDA Securities	37,077	54,347

⁽¹⁾ As of December 31, 2018 and 2017, includes \$17.0 million and \$20.0 million, respectively, related to one-year loan purchase commitments on which Farmer Mac receives a nominal unused commitment fee.

For more information about Farmer Mac's commitments to purchase loans, see Note 12 to the consolidated financial statements.

Off-Balance Sheet Arrangements

Farmer Mac offers approved lenders two credit enhancement alternatives to increase their liquidity or lending capacity while retaining the cash flow benefits of their loans: (1) Farmer Mac Guaranteed Securities, which are available through each of the Farm & Ranch, USDA Guarantees, Rural Utilities, and Institutional Credit lines of business; and (2) LTSPCs, which are available through the Farm & Ranch and Rural Utilities lines of business. For securitization trusts where Farmer Mac is the primary beneficiary, the trust assets and liabilities are included on Farmer Mac's consolidated balance sheet. For securitization trusts where Farmer Mac is not the primary beneficiary and in the event of de-consolidation, both of these alternatives create off-balance sheet obligations for Farmer Mac. See Note 12 to the consolidated financial statements for more information about consolidation and Farmer Mac's off-balance sheet business activities.

As of December 31, 2018 and 2017, outstanding off-balance sheet LTSPCs and Farmer Mac Guaranteed Securities totaled \$4.0 billion and \$4.0 billion respectively. The following table presents the balance of outstanding LTSPCs and off-balance sheet Farmer Mac Guaranteed Securities as of December 31, 2018 and 2017:

Table 28

Outstanding Balance of LTSPCs and

Off-Balance Sheet Farmer Mac Guaranteed Securities

	As of December 31,	
	2018	2017
	(in thousands)	
Farm & Ranch obligations:		
LTSPCs ⁽¹⁾	\$2,509,787	\$2,335,342
Farm & Ranch Guaranteed Securities ⁽¹⁾	135,862	333,511
Total Farm & Ranch obligations	2,645,649	2,668,853
USDA Guarantees obligations:		
Farmer Mac Guaranteed USDA Securities	367,684	254,217
Rural Utilities obligations:		
LTSPCs ⁽²⁾	653,272	806,342
Institutional Credit obligations:		
AgVantage Securities	9,898	11,556
Revolving floating rate AgVantage facility ⁽³⁾	300,000	300,000
Total Institutional Credit obligations	309,898	311,556
Total off-balance sheet	\$3,976,503	\$4,040,968

During fourth quarter 2018, Farmer Mac repurchased the 100% participation interests in loans underlying a pool of \$134.1 million in Farm & Ranch Guaranteed Securities at par, thereby redeeming the corresponding Farm & Ranch Guaranteed Securities from their sole security holder. Farmer Mac repurchased these participation interests

(1) at the request of the sole security holder in exchange for the termination of the participation interests and the reconveyance of all beneficial interest in the loans to the sole security holder that owned the loans in which the participation interests had been issued. The resulting pool of Farm & Ranch loans was concurrently added under LTSPCs. The commitment fee Farmer Mac receives on these loans added under LTSPCs is the same as the guarantee fee Farmer Mac had been earning on the Farm & Ranch Guaranteed Securities.

(2) As of December 31, 2018 and 2017, includes \$17.0 million and \$20.0 million, respectively, related to one-year loan purchase commitments on which Farmer Mac receives a nominal unused commitment fee.

During both 2018 and 2017, \$100.0 million of this facility was drawn and later repaid. Farmer Mac receives a (3) fixed fee based on the full dollar amount of the facility. If the counterparty draws on the facility, the amounts drawn will be in the form of AgVantage securities, and Farmer Mac will earn interest income on those securities.

See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Credit Risk – Loans and Guarantees" and Notes 2(d), 2(f), 5 and 12 to the consolidated financial statements for more information about Farmer Mac Guaranteed Securities and Notes 2(o) and 12 to the consolidated financial statements for more information about LTSPCs.

Regulatory Matters

The Agricultural Improvement Act of 2018, known as the "Farm Bill," was signed into law on December 20, 2018 and contains provisions that affect or may affect Farmer Mac, as discussed in more detail below.

The Farm Bill amended Farmer Mac's charter to increase the acreage limitation from 1,000 acres or more to 2,000 acres or more of agricultural real estate that must secure an eligible Farm & Ranch loan for which the Congressionally-authorized maximum loan size adjusted for inflation is applicable (currently \$13.1 million). This amendment is subject to FCA's assessment about the feasibility of such a change.

FCA is required to submit a report on its assessment of this change to Congress by no later than June 18, 2019. If FCA's assessment indicates that it is feasible to increase the acreage limitation to 2,000 acres or more of agricultural real estate, the change to Farmer Mac's charter will become effective one year after the date that FCA submits its report to Congress. If FCA's assessment determines that it is not feasible to increase the acreage limitation, then the current limitation will remain in place. In addition to this feasibility assessment, Congress expressed interest in FCA's opinion on alternatives other than the increased acreage limitation in relation to a maximum loan size that would adequately address any safety and soundness issues. We will continue to evaluate the effect that the increase in acreage limitation or any other related proposal by FCA may have on our business in the future. FCA must also conduct a study that analyzes and compares the financial risks inherent in loans made, held, securitized, or purchased by FCS banks and associations and Farmer Mac, and how such risks are required to be capitalized under statutes and regulations currently in effect. The Farm Bill also amended Farmer Mac's charter to repeal obsolete provisions and to make technical corrections. The Farm Bill also added a new subsection to the Farm Credit Act of 1971 to clarify that no funds from the administrative accounts of the Farm Credit System Insurance Corporation or from the Farm Credit System Insurance Fund may be used to provide assistance to Farmer Mac or to support any activities related to Farmer Mac.

The Farm Bill increased the authorized limits for the amount of new guarantees issued by the USDA under the Consolidated Farm and Rural Development Act, which are eligible for Farmer Mac's USDA Guarantees line of business, and for the size of individual loans to which these guarantees are applied. For more information about the changes to these authorized limits, as well as their implications for Farmer Mac, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Outlook."

The Farm Bill requires the Government Accountability Office ("GAO") to conduct two studies related to FCS institutions, including Farmer Mac. Specifically, the GAO must conduct a study to determine whether FCS institutions have sufficient authority and resources to meet the agricultural credit needs of Native American tribes and their members. The GAO must submit a written report to Congress within 90 days of enactment of the law presenting the findings of this study. If the GAO finds that FCS institutions do not have the ability to meet these agricultural credit needs, it must propose legislative and other recommendations that it determines would result in a system under which these needs are met in an equitable and effective manner. The GAO must also conduct a study assessing the availability of credit and related services, as well as any barriers limiting their availability, provided by FCS institutions, commercial banks, and life insurance companies, to socially disadvantaged farmers and ranchers. The GAO must submit a written report to Congress within 120 days of enactment of the law presenting the findings of this study and providing recommendations on how FCS institutions and other agricultural credit providers can improve outreach to these farmers and ranchers regarding the availability of credit and related services. We will continue to monitor any developments that could affect Farmer Mac as a result of the preparation and completion of these GAO studies.

Other Matters

The expected effects of recently issued accounting pronouncements on the consolidated financial statements are presented in Note 2(q) to the consolidated financial statements.

Supplemental Information

The following tables present quarterly and annual information about new business volume, repayments, and outstanding business volume:

Table 29
New Business Volume

	Farm & Ranch		USDA Guarantees	Rural Utilities		Institutional Credit	Total
	Loans	LTSPCs	USDA Securities	Loans	LTSPCs	AgVantage	
	(in thousands)						
For the quarter ended:							
December 31, 2018	\$285,008	\$80,840	\$90,297	\$3,000	\$	—\$585,814	\$1,044,959
September 30, 2018	192,628	64,100	116,339	—	—	1,085,953	1,459,020
June 30, 2018	224,101	126,066	129,960	—	—	825,203	1,305,330
March 31, 2018	259,111	159,065	123,525	8,645	—	813,337	1,363,683
December 31, 2017	204,917	282,809	100,024	15,000	—	234,753	837,503
September 30, 2017	298,274	102,774	131,298	70,000	—	290,995	893,341
June 30, 2017	312,217	55,899	169,261	25,000	—	1,296,757	1,859,134
March 31, 2017	314,137	113,261	131,101	27,341	—	561,407	1,147,247
December 31, 2016	243,692	117,265	129,343	10,800	20,000	247,154	768,254
For the year ended:							
December 31, 2018	960,848	430,071	460,121	11,645	—	3,310,307	5,172,992
December 31, 2017	1,129,545	554,743	531,684	137,341	—	2,383,912	4,737,225

Table 30

Repayments of Assets by Line of Business

	Farm & Ranch			USDA	Rural Utilities		Institutional	Total
	Loans	Guaranteed Securities	LTSPCs	Guarantees USDA Securities	Loans	LTSPCs	Credit AgVantage	
(in thousands)								
For the quarter ended:								
Scheduled	\$36,006	\$ 8,331	\$35,682	\$ 24,793	\$6,321	\$16,062	\$568,277	\$695,472
Unscheduled	56,299	9,257	33,319	21,135	20,538	—	—	140,548
December 31, 2018	\$92,305	\$ 17,588	\$69,001	\$ 45,928	\$26,859	\$16,062	\$568,277	\$836,020
Scheduled	\$73,476	\$ 5,677	\$21,742	\$ 28,135	\$25,640	\$8,286	\$1,102,798	\$1,265,754
Unscheduled	77,492	4,562	47,159	35,068	3,476	—	9,760	177,517
September 30, 2018	\$150,968	\$ 10,239	\$68,901	\$ 63,203	\$29,116	\$8,286	\$1,112,558	\$1,443,271
Scheduled	\$33,075	\$ 8,391	\$31,067	\$ 36,983	\$353	\$8,699	\$759,223	\$877,791
Unscheduled	86,426	8,273	69,539	66,601	51,306	—	—	282,145
June 30, 2018	\$119,501	\$ 16,664	\$100,606	\$ 103,584	\$51,659	\$8,699	\$759,223	\$1,159,936
Scheduled	\$110,733	\$ 14,085	\$70,057	\$ 40,811	\$26,507	\$—	\$392,310	\$654,503
Unscheduled	73,502	4,929	81,204	43,189	14,952	120,022	—	337,798
March 31, 2018	\$184,235	\$ 19,014	\$151,261	\$ 84,000	\$41,459	\$120,022	\$392,310	\$992,301
Scheduled	\$25,848	\$ 14,371	\$36,806	\$ 22,381	\$315	\$13,621	\$231,717	\$345,059
Unscheduled	49,229	6,941	43,975	24,385	4,876	—	—	129,406
December 31, 2017	\$75,077	\$ 21,312	\$80,781	\$ 46,766	\$5,191	\$13,621	\$231,717	\$474,465
Scheduled	\$61,961	\$ 6,735	\$21,409	\$ 24,163	\$27,191	\$39,816	\$100,571	\$281,846
Unscheduled	49,894	5,861	124,676	45,192	457	—	—	226,080
September 30, 2017	\$111,855	\$ 12,596	\$146,085	\$ 69,355	\$27,648	\$39,816	\$100,571	\$507,926
Scheduled	\$21,687	\$ 9,116	\$41,821	\$ 35,169	\$—	\$9,885	\$1,166,922	\$1,284,600
Unscheduled	51,442	10,737	47,262	46,776	—	—	4,000	160,217
June 30, 2017	\$73,129	\$ 19,853	\$89,083	\$ 81,945	\$—	\$9,885	\$1,170,922	\$1,444,817
Scheduled	\$70,394	\$ 16,184	\$48,375	\$ 36,322	\$26,909	\$8,934	\$161,451	\$368,569
Unscheduled	114,811	11,985	64,486	39,457	814	—	102,059	333,612
March 31, 2017	\$185,205	\$ 28,169	\$112,861	\$ 75,779	\$27,723	\$8,934	\$263,510	\$702,181
Scheduled	\$20,566	\$ 15,209	\$21,546	\$ 21,325	\$—	\$15,929	\$311,739	\$406,314
Unscheduled	47,156	10,767	111,137	34,477	4,427	—	2,240	210,204
December 31, 2016	\$67,722	\$ 25,976	\$132,683	\$ 55,802	\$4,427	\$15,929	\$313,979	\$616,518
For the year ended:								
Scheduled	\$253,290	\$ 36,484	\$158,548	\$ 130,722	\$58,821	\$33,047	\$2,822,608	\$3,493,520
Unscheduled	293,719	27,021	231,221	165,993	90,272	120,022	9,760	938,008
December 31, 2018	\$547,009	\$ 63,505	\$389,769	\$ 296,715	\$149,093	\$153,069	\$2,832,368	\$4,431,528

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Scheduled	\$179,890	\$ 46,406	\$148,411	\$ 118,035	\$54,415	\$72,256	\$1,660,661	\$2,280,074
Unscheduled	265,376	35,524	280,399	155,810	6,147	—	106,059	849,315
December 31, 2017	\$445,266	\$ 81,930	\$428,810	\$ 273,845	\$60,562	\$72,256	\$1,766,720	\$3,129,389

Table 31
Lines of Business - Outstanding Business Volume

	Farm & Ranch		LTSPCs	USDA	Rural Utilities		Institutional	Total
	Loans	Guaranteed Securities		Guarantees	Loans	LTSPCs	Credit	
				USDA			AgVantage	
	(in thousands)							
As of:								
December 31, 2018	\$4,588,322	\$ 135,862	\$2,509,787	\$2,515,620	\$938,843	\$653,273	\$8,382,817	\$19,724,524
September 30, 2018	4,420,619	287,594	2,363,805	2,471,251	962,702	669,335	8,365,280	19,540,586
June 30, 2018	4,378,958	297,833	2,368,606	2,418,115	991,819	677,621	8,391,885	19,524,837
March 31, 2018	4,274,359	314,497	2,343,146	2,391,739	1,043,477	686,320	8,325,905	19,379,443
December 31, 2017	4,198,733	333,511	2,335,342	2,352,214	1,076,291	806,342	7,904,878	19,007,311
September 30, 2017	4,068,893	354,823	2,133,314	2,298,956	1,066,482	819,963	7,901,842	18,644,273
June 30, 2017	3,882,474	367,419	2,176,625	2,237,013	1,024,130	859,779	7,711,418	18,258,858
March 31, 2017	3,643,386	387,272	2,209,809	2,149,697	999,130	869,664	7,585,583	17,844,541
December 31, 2016	3,514,454	415,441	2,209,409	2,094,375	999,512	878,598	7,287,686	17,399,475

Table 32
On-Balance Sheet Outstanding Business Volume

	Fixed Rate	5- to	1-Month to	Total Held in Portfolio
		10-Year ARMs & Resets	3-Year ARMs	
(in thousands)				
As of:				
December 31, 2018	\$8,325,347	\$2,717,505	\$4,705,169	\$15,748,021
September 30, 2018	7,945,007	2,629,612	4,986,987	15,561,606
June 30, 2018	7,551,149	2,594,399	5,398,021	15,543,569
March 31, 2018	7,507,581	2,498,985	5,432,923	15,439,489
December 31, 2017	7,158,014	2,499,203	5,309,126	14,966,343
September 30, 2017	6,921,477	2,447,923	5,426,757	14,796,157
June 30, 2017	6,722,463	2,406,120	5,226,982	14,355,565
March 31, 2017	5,373,283	2,330,819	5,255,146	12,959,248
December 31, 2016	5,346,011	2,274,535	4,888,291	12,508,837

The following table presents the quarterly net effective spread (a non-GAAP measure) by segment:

Table 33

	Net Effective Spread by Line of Business											
	Farm & Ranch		USDA Guarantees		Rural Utilities		Institutional Credit		Corporate		Net Effective Spread ⁽¹⁾	
	Dollars	Yield	Dollars	Yield	Dollars	Yield	Dollars	Yield	Dollars	Yield	Dollars	Yield
	(dollars in thousands)											
For the quarter ended:												
December 31, 2018 ⁽²⁾	\$13,288	1.79%	\$4,630	0.85%	\$2,833	1.19%	\$15,751	0.80%	\$2,353	0.36%	\$38,855	0.93%
September 30, 2018	13,887	1.91%	4,627	0.86%	2,877	1.18%	15,642	0.78%	2,044	0.30%	39,077	0.93%
June 30, 2018	13,347	1.86%	4,398	0.83%	2,923	1.15%	15,220	0.76%	274	0.04%	36,162	0.86%
March 31, 2018	12,540	1.80%	4,400	0.82%	2,950	1.12%	14,824	0.78%	2,387	0.36%	37,101	0.91%
December 31, 2017 ⁽²⁾	12,396	1.80%	4,979	0.93%	3,057	1.14%	14,800	0.78%	2,235	0.35%	37,467	0.93%
September 30, 2017	11,303	1.73%	4,728	0.90%	2,765	1.07%	14,455	0.78%	2,725	0.41%	35,976	0.91%
June 30, 2017	11,158	1.77%	4,551	0.87%	2,669	1.06%	14,467	0.81%	2,489	0.36%	35,334	0.91%
March 31, 2017	10,511	1.77%	4,561	0.89%	2,568	1.04%	12,615	0.82%	2,271	0.32%	32,526	0.90%
December 31, 2016	10,131	1.75%	5,152	1.04%	2,530	1.02%	11,636	0.78%	1,999	0.26%	31,448	0.88%

Net effective spread is a non-GAAP measure. Effective in fourth quarter 2017, Farmer Mac revised its methodology for calculating net effective spread to also include the net effects of terminations or net settlements on financial derivatives. All prior period information has been recast to reflect the revised net effective spread methodology. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Use of Non-GAAP Measures—Net Effective Spread" for more information about net effective spread.

⁽²⁾ See Note 14 to the consolidated financial statements for a reconciliation of GAAP net interest income by line of business to net effective spread by line of business for the years ended December 31, 2018 and 2017.

The following table presents quarterly core earnings (a non-GAAP measure) reconciled to net income attributable to common stockholders:

Table 34

Core Earnings by Quarter End

	December 2018	September 2018	June 2018	March 2018	December 2017	September 2017	June 2017	March 2017	December 2016
Revenues:									
Net effective spread	\$38,855	\$39,077	\$36,162	\$37,101	\$37,467	\$35,976	\$35,334	\$32,526	\$31,448
Guarantee and commitment fees	5,309	5,170	5,171	5,083	5,157	4,935	4,942	5,316	5,158
Other	(129)	110	111	428	69	274	107	485	545
Total revenues	44,035	44,357	41,444	42,612	42,693	41,185	40,383	38,327	37,151
Credit related expense/(income):									
Provision for/(release of) losses	166	(3)	582	(410)	464	384	466	444	512
REO operating expenses	—	—	—	16	—	—	23	—	—
Losses/(gains) on sale of REO	—	41	(34)	—	(964)	(32)	(757)	5	—
Total credit related expense/(income)	166	38	548	(394)	(500)	352	(268)	449	512
Operating expenses:									
Compensation and employee benefits	7,167	6,777	6,936	6,654	5,247	5,987	6,682	6,317	5,949
General and administrative	5,829	4,350	5,202	4,326	4,348	3,890	3,921	3,800	4,352
Regulatory fees	687	625	625	625	625	625	625	625	625
Total operating expenses	13,683	11,752	12,763	11,605	10,220	10,502	11,228	10,742	10,926
Net earnings	30,186	32,567	28,133	31,401	32,973	30,331	29,423	27,136	25,713
Income tax expense	6,431	6,891	5,477	6,259	11,796	10,268	10,307	8,844	9,189
Net (loss)/income attributable to non-controlling interest ⁽¹⁾	—	—	—	—	—	—	(150)	(15)	28
Preferred stock dividends	3,296	3,295	3,296	3,295	3,296	3,295	3,296	3,295	3,296
Core earnings	\$20,459	\$22,381	\$19,360	\$21,847	\$17,881	\$16,768	\$15,970	\$15,012	\$13,200
Reconciling items:									
(Losses)/gains on undesignated financial derivatives due to fair	(96)	3,625	6,709	(2,279)	(261)	995	801	8,683	17,906

value changes (Losses)/gains on hedging activities due to fair value changes	(853	) 1,051	1,687	2,564	(3	) 1,742	1,420	(3,878	) (673)
Unrealized gains/(losses) on trading assets	57	(3	) 11	16	60	—	(2	) (82	) (474)
Amortization of premiums/discounts and deferred gains on assets consolidated at fair value	67	(38	) 196	(686	) (129	) (954	) (117	) (127	) (40)
Net effects of terminations or net settlements on financial derivatives	(312	) 546	232	1,242	632	862	232	948	2,150	
Re-measurement of net deferred tax asset due to enactment of new tax legislation	—	—	—	—	(1,365) —	—	—	—	
Income tax effect related to reconciling items	238	(1,088	) (1,855	) (180	) (105	) (926	) (816	) (1,941	) (6,604)
Net income attributable to common stockholders	\$19,560	\$26,474	\$26,340	\$22,524	\$16,710	\$18,487	\$17,488	\$18,615	\$25,465	

(1) As of May 1, 2017, Farmer Mac transferred its entire 65% ownership interest in AgVisory back to the limited liability company.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Farmer Mac is exposed to market risk from changes in interest rates. Farmer Mac manages this market risk by entering into various financial transactions, including financial derivatives, and by monitoring and measuring its exposure to changes in interest rates. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Interest Rate Risk" for more information about Farmer Mac's exposure to interest rate risk and its strategies to manage that risk. For information about Farmer Mac's use of financial derivatives and related accounting policies, see Note 6 to the consolidated financial statements.

Item 8. Financial Statements

Management's Report on Internal Control over Financial Reporting

The management of Farmer Mac is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Exchange Act Rule 13a-15(f). Internal control over financial reporting is a process designed under the supervision of Farmer Mac's Chief Executive Officer and Chief Financial Officer to provide reasonable assurance regarding the reliability of financial reporting and the preparation of Farmer Mac's financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America.

Farmer Mac's internal control over financial reporting includes those policies and procedures that: (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of Farmer Mac; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of Farmer Mac are being made only in accordance with authorizations of management and directors of Farmer Mac; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of Farmer Mac's assets that could have a material effect on the consolidated financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Under the supervision and with the participation of Farmer Mac's Chief Executive Officer and Chief Financial Officer, Farmer Mac's management assessed the effectiveness of Farmer Mac's internal control over financial reporting as of December 31, 2018. In making this assessment, Farmer Mac's management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in Internal Control - Integrated Framework (2013). Based on its evaluation under the COSO criteria, management concluded that Farmer Mac's internal control over financial reporting as of December 31, 2018 was effective.

Farmer Mac's independent registered public accounting firm, PricewaterhouseCoopers LLP, has audited the effectiveness of Farmer Mac's internal control over financial reporting as of December 31, 2018, as stated in their report appearing below.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders
of the Federal Agricultural Mortgage Corporation:

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Federal Agricultural Mortgage Corporation and its subsidiaries (the "Company") as of December 31, 2018 and 2017 and the related consolidated statements of operations, comprehensive income, equity and cash flows for each of the three years in the period ended December 31, 2018, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Controls over Financial Reporting. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well

as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ PricewaterhouseCoopers LLP
McLean, VA
February 21, 2019

We have served as the Company's auditor since 2010.

FEDERAL AGRICULTURAL MORTGAGE CORPORATION AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS

	As of	
	December 31, 2018	December 31, 2017
	(in thousands)	
Assets:		
Cash and cash equivalents	\$425,256	\$302,022
Investment securities:		
Available-for-sale, at fair value	2,217,852	2,215,405
Held-to-maturity, at amortized cost	45,032	45,032
Total Investment Securities	2,262,884	2,260,437
Farmer Mac Guaranteed Securities:		
Available-for-sale, at fair value	5,974,497	5,471,914
Held-to-maturity, at amortized cost	2,096,618	2,126,274
Total Farmer Mac Guaranteed Securities	8,071,115	7,598,188
USDA Securities:		
Trading, at fair value	9,999	13,515
Held-to-maturity, at amortized cost	2,166,174	2,117,850
Total USDA Securities	2,176,173	2,131,365
Loans:		
Loans held for investment, at amortized cost	4,004,968	3,873,755
Loans held for investment in consolidated trusts, at amortized cost	1,517,101	1,399,827
Allowance for loan losses	(7,017)	(6,796)
Total loans, net of allowance	5,515,052	5,266,786
Real estate owned, at lower of cost or fair value	128	139
Financial derivatives, at fair value	7,487	7,093
Interest receivable (includes \$19,783 and \$17,373, respectively, related to consolidated trusts)	180,080	155,278
Guarantee and commitment fees receivable	40,366	39,895
Deferred tax asset, net	6,369	2,048
Prepaid expenses and other assets	9,418	29,023
Total Assets	\$18,694,328	\$17,792,274
Liabilities and Equity:		
Liabilities:		
Notes payable:		
Due within one year	\$7,757,050	\$8,089,826
Due after one year	8,486,647	7,432,790
Total notes payable	16,243,697	15,522,616
Debt securities of consolidated trusts held by third parties	1,528,957	1,404,945
Financial derivatives, at fair value	19,633	26,599
Accrued interest payable (includes \$17,125 and \$14,631, respectively, related to consolidated trusts)	96,743	75,402
Guarantee and commitment obligation	38,683	38,400
Accounts payable and accrued expenses	11,891	14,096
Deferred tax liability, net	—	—
Reserve for losses	2,167	2,070
Total Liabilities	17,941,771	17,084,128

Commitments and Contingencies (Note 6)

Equity:

Preferred stock:

Series A, par value \$25 per share, 2,400,000 shares authorized, issued and outstanding	58,333	58,333
Series B, par value \$25 per share, 3,000,000 shares authorized, issued and outstanding	73,044	73,044
Series C, par value \$25 per share, 3,000,000 shares authorized, issued and outstanding	73,382	73,382

Common stock:

Class A Voting, \$1 par value, no maximum authorization, 1,030,780 shares outstanding	1,031	1,031
Class B Voting, \$1 par value, no maximum authorization, 500,301 shares outstanding	500	500
Class C Non-Voting, \$1 par value, no maximum authorization, 9,137,550 shares and 9,087,670 shares outstanding, respectively	9,138	9,088
Additional paid-in capital	118,822	118,979
Accumulated other comprehensive income, net of tax	24,956	51,085
Retained earnings	393,351	322,704
Total Equity	752,557	708,146
Total Liabilities and Equity	\$ 18,694,328	\$ 17,792,274

The accompanying notes are an integral part of these consolidated financial statements.

FEDERAL AGRICULTURAL MORTGAGE CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS

	For the Year Ended December		
	31,		
	2018	2017	2016
	(in thousands, except per share amounts)		
Interest income:			
Investments and cash equivalents	\$55,179	\$34,586	\$27,042
Farmer Mac Guaranteed Securities and USDA Securities	290,953	203,796	150,281
Loans	198,152	162,150	134,577
Total interest income	544,284	400,532	311,900
Total interest expense	369,848	242,885	171,626
Net interest income	174,436	157,647	140,274
Provision for loan losses	(238)	(1,708)	(1,065)
Net interest income after provision for loan losses	174,198	155,939	139,209
Non-interest income:			
Guarantee and commitment fees	13,976	14,114	14,868
(Losses)/gains on financial derivatives	(3,687)	753	2,311
Gains/(losses) on trading securities	81	(24)	1,460
Gains/(losses) on sale of available-for-sale investment securities	—	89	(9)
(Losses)/gains on sale of real estate owned	(7)	1,748	15
Other income	1,377	832	1,823
Non-interest income	11,740	17,512	20,468
Non-interest expense:			
Compensation and employee benefits	27,534	24,233	22,772
General and administrative	19,707	15,959	15,109
Regulatory fees	2,562	2,500	2,463
Real estate owned operating costs, net	16	23	39
Provision for/(release of) reserve for losses	97	50	(63)
Non-interest expense	49,916	42,765	40,320
Income before income taxes	136,022	130,686	119,357
Income tax expense	27,942	46,369	42,057
Net income	108,080	84,317	77,300
Less: Net loss attributable to non-controlling interest	—	165	34
Net income attributable to Farmer Mac	108,080	84,482	77,334
Preferred stock dividends	(13,182)	(13,182)	(13,182)
Net income attributable to common stockholders	\$94,898	\$71,300	\$64,152
Earnings per common share and dividends:			
Basic earnings per common share	\$8.91	\$6.73	\$6.12
Diluted earnings per common share	\$8.83	\$6.60	\$5.97

The accompanying notes are an integral part of these consolidated financial statements.

FEDERAL AGRICULTURAL MORTGAGE CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	For the Year Ended December		
	31,	2017	2016
	2018		
	(in thousands)		
Net income	\$108,080	\$84,317	\$77,300
Other comprehensive income before taxes:			
Net unrealized (losses)/gains on available-for-sale securities	(29,980)	20,012	(6,694)
Net changes in held-to-maturity securities	(6,067)	(9,329)	71,120
Net unrealized gains on cash flow hedges	2,938	2,046	4,463
Other comprehensive (loss)/income before tax	(33,109)	12,729	68,889
Income tax benefit/(expense) related to other comprehensive (loss)/income	6,953	(4,455)	(24,112)
Other comprehensive (loss)/income net of tax	(26,156)	8,274	44,777
Comprehensive income	81,924	92,591	122,077
Less: comprehensive loss attributable to non-controlling interest	—	165	34
Comprehensive income attributable to Farmer Mac	\$81,924	\$92,756	\$122,111

The accompanying notes are an integral part of these consolidated financial statements.

FEDERAL AGRICULTURAL MORTGAGE CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF EQUITY

	Preferred Stock Shares	Preferred Stock Amount	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Accumulated Other Comprehensive Income/(Loss)	Retained Earnings	Non-controlling Interest	Total Equity
	(in thousands)								
Balance as of January 1, 2016	8,400	\$ 204,759	10,687	\$ 10,687	\$ 117,862	\$ (11,019)	\$ 231,228	\$ 203	\$ 553,720
Net income/(loss):									
Attributable to Farmer Mac	—	—	—	—	—	—	77,334	—	77,334
Attributable to non-controlling interest	—	—	—	—	—	—	—	(34)	(34)
Other comprehensive income, net of tax	—	—	—	—	—	44,777	—	—	44,777
Cash dividends:									
Preferred stock	—	—	—	—	—	—	(13,182)	—	(13,182)
Common stock	—	—	—	—	—	—	(10,885)	—	(10,885)
Issuance of Class C Common Stock	—	—	159	159	534	—	—	—	693
Repurchase of Class C Common Stock	—	—	(307)	(307)	—	—	(8,781)	—	(9,088)
Stock-based compensation cost	—	—	—	—	3,343	—	—	—	3,343
Other stock-based award activity	—	—	—	—	(3,084)	—	—	—	(3,084)
Redemption of interest in subsidiary - non-controlling interest	—	—	—	—	—	—	—	53	53
Balance as of December 31, 2016	8,400	\$ 204,759	10,539	\$ 10,539	\$ 118,655	\$ 33,758	\$ 275,714	\$ 222	\$ 643,647
Net income/(loss):									
Attributable to Farmer Mac	—	—	—	—	—	—	84,482	—	84,482
Attributable to non-controlling interest	—	—	—	—	—	—	—	(165)	(165)
Other comprehensive income, net of tax	—	—	—	—	—	8,274	—	—	8,274
Reclassification of stranded tax effects due to enactment of new tax legislation	—	—	—	—	—	9,053	(9,053)	—	—
Cash dividends:									
Preferred stock	—	—	—	—	—	—	(13,182)	—	(13,182)
Common stock	—	—	—	—	—	—	(15,257)	—	(15,257)

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Issuance of Class C Common Stock	—	—	80	80	231	—	—	—	311
Stock-based compensation cost	—	—	—	—	2,701	—	—	—	2,701
Other stock-based award activity	—	—	—	—	(2,608)	—	—	—	(2,608)
Redemption of interest in subsidiary	—	—	—	—	—	—	—	(57)	(57)
Balance as of December 31, 2017	8,400	\$204,759	10,619	\$10,619	\$118,979	\$51,085	\$322,704	\$—	\$708,146
Balance as of December 31, 2017	8,400	\$204,759	10,619	\$10,619	\$118,979	\$51,085	\$322,704	\$—	\$708,146
Cumulative effect from change in hedge accounting	—	—	—	—	—	27	471	—	498
Balance as of January 1, 2018	8,400	\$204,759	10,619	\$10,619	\$118,979	\$51,112	\$323,175	\$—	\$708,644
Net income:									
Attributable to Farmer Mac	—	—	—	—	—	—	108,080	—	108,080
Other comprehensive income, net of tax	—	—	—	—	—	(26,156)	—	—	(26,156)
Cash dividends:									
Preferred stock	—	—	—	—	—	—	(13,182)	—	(13,182)
Common stock	—	—	—	—	—	—	(24,722)	—	(24,722)
Issuance of Class C Common Stock	—	—	50	50	7	—	—	—	57
Stock-based compensation cost	—	—	—	—	2,518	—	—	—	2,518
Other stock-based award activity	—	—	—	—	(2,682)	—	—	—	(2,682)
Balance as of December 31, 2018	8,400	\$204,759	10,669	\$10,669	\$118,822	\$24,956	\$393,351	\$—	\$752,557

The accompanying notes are an integral part of these consolidated financial statements.

FEDERAL AGRICULTURAL MORTGAGE CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS

	For the Year Ended December 31,		
	2018	2017	2016
	(in thousands)		
Cash flows from operating activities:			
Net income	\$ 108,080	\$ 84,317	\$ 77,300
Adjustments to reconcile net income to net cash provided by operating activities:			
Net amortization of deferred gains, premiums, and discounts on loans, investments, Farmer Mac Guaranteed Securities, and USDA Securities	(1,104)	1,739	1,828
Amortization of debt premiums, discounts and issuance costs	30,207	22,858	31,757
Net change in fair value of trading securities, hedged assets, and financial derivatives	(23,747)	(11,187)	(15,086)
Losses/(gains) on sale of real estate owned	7	(1,748)	(15)
Total provision for losses	335	1,758	1,002
Excess tax benefits related to stock-based awards	946	860	—
Deferred income taxes	2,625	3,221	4,103
Other	—	11	9
Stock-based compensation expense	2,517	2,702	3,343
Purchases of loans held for sale	(25,000)	—	—
Proceeds from the sale of loans held for sale	25,000	—	—
Proceeds from repayment of trading investment securities	—	—	2,212
Proceeds from repayment of loans purchased as held for sale	92,060	70,630	70,087
Net change in:			
Interest receivable	(25,866)	(32,468)	(9,922)
Guarantee and commitment fees receivable	(188)	94	1,318
Other assets	(6,435)	3,641	43,560
Accrued interest payable	21,341	25,702	2,079
Other liabilities	(747)	2,881	(884)
Net cash provided by operating activities	200,031	175,011	212,691
Cash flows from investing activities:			
Purchases of available-for-sale investment securities	(1,221,392)	(979,671)	(1,753,423)
Purchases of held-to-maturity investment securities	—	(45,032)	—
Purchases of Farmer Mac Guaranteed Securities and USDA Securities	(3,470,832)	(2,913,514)	(2,579,980)
Purchases of loans held for investment	(947,495)	(1,266,926)	(1,016,515)
Purchases of defaulted loans	(9,231)	(5,981)	(2,516)
Proceeds from repayment of available-for-sale investment securities	1,242,310	1,326,779	1,725,045
Proceeds from repayment of Farmer Mac Guaranteed Securities and USDA Securities	2,813,041	1,063,178	1,834,672
Proceeds from repayment of loans purchased as held for investment	611,344	435,356	402,897
Proceeds from sale of available-for-sale investment securities	—	10,218	186,769
Proceeds from sale of Farmer Mac Guaranteed Securities	382,929	519,219	609,347
Proceeds from sale of real estate owned	116	8,099	295
Net cash used by investing activities	(599,210)	(1,848,275)	(593,409)
Cash flows from financing activities:			
Proceeds from issuance of discount notes	41,726,788	51,980,890	95,036,368
Proceeds from issuance of medium-term notes	7,692,845	8,600,860	6,519,115
Payments to redeem discount notes	(41,891,576)	(54,064,438)	(97,918,539)
Payments to redeem medium-term notes	(6,834,057)	(4,675,300)	(4,083,450)

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Excess tax benefits related to stock-based awards	—	—	1,428
Payments to third parties on debt securities of consolidated trusts	(131,058)	(101,218)	(82,209)
Proceeds from common stock issuance	7	238	553
Tax payments related to share-based awards	(2,631)	(2,536)	(4,103)
Common stock repurchased	—	—	(9,286)
Investment in subsidiary - non-controlling interest	—	—	53
Dividends paid on common and preferred stock	(37,905)	(28,439)	(24,067)
Net cash provided/(used) by financing activities	522,413	1,710,057	(564,137)
Net increase in cash and cash equivalents	123,234	36,793	(944,855)
Cash and cash equivalents at beginning of period	302,022	265,229	1,210,084
Cash and cash equivalents at end of period	\$425,256	\$ 302,022	\$ 265,229

The accompanying notes are an integral part of these consolidated financial statements.

FEDERAL AGRICULTURAL MORTGAGE CORPORATION AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
1. ORGANIZATION

The Federal Agricultural Mortgage Corporation ("Farmer Mac") is a stockholder-owned, federally chartered instrumentality of the United States established under Title VIII of the Farm Credit Act of 1971, as amended (12 U.S.C. §§ 2279aa et seq.), which is sometimes referred to as Farmer Mac's charter. Farmer Mac was originally created by the United States Congress to provide a secondary market for a variety of loans made to borrowers in rural America. This secondary market is designed to increase the availability of long-term credit at stable interest rates to America's rural communities and to provide rural borrowers with the benefits of capital markets pricing and product innovation. Since Farmer Mac's inception, Congress has expanded Farmer Mac's charter to authorize Farmer Mac to create the USDA Guarantees line of business and to purchase, and guarantee securities backed by, loans made by cooperative lenders to finance electrification and telecommunications systems in rural areas.

Farmer Mac's main secondary market activities are:

- purchasing eligible loans directly from lenders;
- providing advances against eligible loans by purchasing obligations secured by those loans;
- securitizing assets and guaranteeing the payment of principal and interest on the resulting securities that represent interests in, or obligations secured by, pools of eligible loans; and
- issuing long-term standby purchase commitments ("LTSPCs") for eligible loans.

As of December 31, 2018 and 2017, the total outstanding balance in all of Farmer Mac's lines of business was \$19.7 billion and \$19.0 billion, respectively.

Under the Farm & Ranch line of business, Farmer Mac purchases eligible mortgage loans secured by first liens on agricultural real estate, which includes part-time farms and rural housing ("Farm & Ranch loans"). Farmer Mac also guarantees securities representing interests in pools of mortgage loans eligible for the Farm & Ranch line of business, which are referred to as "Farm & Ranch Guaranteed Securities." Farmer Mac also commits to purchase, subject to the applicable LTSPC agreement, eligible Farm & Ranch mortgage loans. To be eligible, loans must meet Farmer Mac's credit underwriting, collateral valuation, documentation, and other specified standards. As of December 31, 2018 and 2017, outstanding loans held by Farmer Mac, loans that either backed off-balance sheet Farm & Ranch Guaranteed Securities or were subject to LTSPCs, and other Farm & Ranch Guaranteed Securities totaled \$7.2 billion and \$6.9 billion, respectively.

Under the USDA Guarantees line of business, Farmer Mac II LLC, a subsidiary of Farmer Mac, purchases the portions of certain agricultural, rural development, business and industry, and community facilities loans guaranteed by the United States Department of Agriculture under the Consolidated Farm and Rural Development Act (7 U.S.C. §§ 1921 et seq.). USDA-guaranteed portions are referred to and presented on the consolidated balance sheets as "USDA Securities." Farmer Mac II LLC also purchases USDA Securities in exchange for issuing securities to third parties backed by those USDA Securities, which are then also guaranteed by Farmer Mac. These issued securities are referred to and presented on the consolidated balance sheets as Farmer Mac Guaranteed USDA Securities. As of December 31, 2018 and 2017, outstanding Farmer Mac Guaranteed USDA Securities and USDA Securities totaled \$2.5 billion and \$2.4 billion, respectively.

Farmer Mac's authorized activities under the Rural Utilities line of business are similar to those conducted under the Farm & Ranch line of business – purchases of, and guarantees of securities backed by, eligible rural utilities loans, as well as the issuance of LTSPCs for pools of eligible rural utilities loans ("Rural Utilities loans"). To be eligible, loans must meet Farmer Mac's credit underwriting and other specified standards. As of December 31, 2018 and 2017, the aggregate outstanding principal balance of Rural Utilities loans held or subject to LTSPCs was \$1.6 billion and \$1.9 billion, respectively.

Under the Institutional Credit line of business, Farmer Mac guarantees and purchases general obligations of lenders that are secured by pools of loans that would be eligible under Farmer Mac's Farm & Ranch, USDA Guarantees, or Rural Utilities lines of business. AgVantage® is a registered trademark of Farmer Mac used to designate Farmer Mac's guarantees of securities related to these general obligations of lenders that are secured by pools of eligible loans and that comprise the Institutional Credit line of business. As of December 31, 2018 and 2017, outstanding securities held or guaranteed by Farmer Mac in its Institutional Credit line of business totaled \$8.4 billion and \$7.9 billion, respectively.

Farm & Ranch Guaranteed Securities, Farmer Mac Guaranteed USDA Securities, and AgVantage Securities are collectively referred to as "Farmer Mac Guaranteed Securities." The assets collateralizing Farmer Mac Guaranteed Securities include (1) loans or loan participation interests eligible for purchase under either the Farm & Ranch or Rural Utilities lines of business or (2) USDA Securities eligible for purchase under the USDA Guarantees line of business. Farmer Mac guarantees the timely payment of principal and interest on the resulting Farmer Mac Guaranteed Securities. Farmer Mac may retain Farmer Mac Guaranteed Securities in its portfolio or sell them to third parties.

Farmer Mac's two principal sources of revenue are:

- interest income earned on assets held on balance sheet, net of related funding costs and interest payments and receipts on financial derivatives; and
- guarantee and commitment fees received in connection with outstanding Farmer Mac Guaranteed Securities and LTSPCs.

Farmer Mac funds its purchases of eligible loan assets and liquidity investment assets primarily by issuing debt obligations of various maturities in the public capital markets. As of December 31, 2018, Farmer Mac had \$1.6 billion of discount notes and \$14.6 billion of medium-term notes outstanding. The proceeds of debt issuance are invested in loan purchases, Farmer Mac Guaranteed Securities, and liquidity investment assets in accordance with policies established by Farmer Mac's board of directors that comply with regulations promulgated by the Farm Credit Administration ("FCA").

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The accounting and reporting policies of Farmer Mac conform with accounting principles generally accepted in the United States of America ("generally accepted accounting principles" or "GAAP"). The preparation of consolidated financial statements in conformity with generally accepted accounting principles requires management to make certain estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities (including, but not limited to, the allowance for loan losses, reserve for losses, other-than-temporary impairment of investment securities, and fair value measurements) as of the date of the consolidated financial statements and the reported amounts of income and expenses during the reporting period. Actual results could differ

from those estimates. The following are the significant accounting policies that Farmer Mac follows in preparing and presenting its consolidated financial statements:

(a) Principles of Consolidation

The consolidated financial statements include the accounts of Farmer Mac and its two subsidiaries during the year: (1) Farmer Mac Mortgage Securities Corporation ("FMMSC"), whose principal activities are to facilitate the purchase and issuance of Farmer Mac Guaranteed Securities; and (2) Farmer Mac II LLC, whose principal activity is the operation of substantially all of the business related to the USDA Guarantees line of business – primarily the acquisition of USDA Securities. The consolidated financial statements also include the accounts of VIEs in which Farmer Mac determined itself to be the primary beneficiary. The accounts of Contour Valuation Services, LLC (which began doing business as AgVisory during first quarter 2016) ("AgVisory"), Farmer Mac's former majority-owned subsidiary, are also included through June 30, 2017. Farmer Mac redeemed its ownership interest in AgVisory on May 1, 2017.

(b) Cash and Cash Equivalents and Statements of Cash Flows

Farmer Mac considers highly liquid investment securities with maturities at the time of purchase of three months or less to be cash equivalents.

The following table sets forth information regarding certain cash and non-cash transactions for the years ended December 31, 2018, 2017, and 2016:

Table 2.1

	For the Years Ended December 31,		
	2018	2017	2016
	(in thousands)		
Cash paid during the period for:			
Interest	\$268,728	\$161,060	\$110,609
Income taxes	30,882	39,500	29,500
Non-cash activity:			
Real estate owned acquired through loan liquidation	128	5,400	—
Loans acquired and securitized as Farmer Mac Guaranteed Securities	382,929	519,219	609,347
Consolidation of Farmer Mac Guaranteed Securities from off-balance sheet to loans held for investment in consolidated trusts and to debt securities of consolidated trusts held by third parties	255,080	363,475	511,393
Purchases of securities - traded not yet settled	(1,400)	1,400	—
Transfers of available-for-sale USDA Securities to held-to-maturity	—	—	1,980,327
Transfers of available-for-sale Farmer Mac Guaranteed Securities to held-to-maturity	—	—	32,824

On October 1, 2016, Farmer Mac transferred \$2.0 billion of USDA Securities and \$32.8 million of Farmer Mac Guaranteed USDA Securities from available-for-sale to held-to-maturity to reflect Farmer Mac's positive intent and ability to hold these securities until maturity or payoff. Farmer Mac transferred these securities at fair value as of the date of the transfer, which resulted in a cost basis adjustment of unrealized appreciation in the amount of \$73.1 million for the USDA Securities and \$0.7 million for the Farmer Mac Guaranteed USDA Securities. The accumulated unrealized appreciation was retained in accumulated other comprehensive income in the amount of \$73.8 million. Farmer Mac accounts for held-to-maturity

securities at amortized cost. Both the cost basis adjustment and accumulated unrealized appreciation are being amortized as adjustments to the yield on the held-to-maturity USDA Securities over the remaining contractual term of the transferred securities.

(c) Investment Securities, Farmer Mac Guaranteed Securities, and USDA Securities

Securities for which Farmer Mac has the intent and ability to hold to maturity are classified as held-to-maturity and are carried at amortized cost. Securities for which Farmer Mac does not have the positive intent and ability to hold to maturity are classified as available-for-sale or trading and are carried at estimated fair value. Unrealized gains and losses on available-for-sale securities are reported as a component of accumulated other comprehensive income in stockholders' equity. For securities classified as trading, unrealized gains and losses are included in earnings. Gains and losses on the sale of available-for-sale and trading securities are determined using the specific identification cost method.

Farmer Mac determines the fair value of investment securities using quoted market prices, when available, and evaluates the securities for other-than-temporary impairment. Farmer Mac determines the fair values of certain investment securities for which quoted market prices are not available, Farmer Mac Guaranteed Securities, and USDA Securities based on the present value of the associated expected future cash flows. In estimating the present value of the expected future cash flows, management is required to make estimates and assumptions. The key estimates and assumptions include discount rates and collateral repayment rates. Premiums, discounts, and other deferred costs are amortized to interest income using the effective interest method.

Farmer Mac generally receives compensation when loans with yield maintenance provisions underlying Farmer Mac Guaranteed Securities prepay. These yield maintenance payments mitigate Farmer Mac's exposure to reinvestment risk and are calculated such that, when reinvested with the prepaid principal, they should generate substantially the same cash flows that would have been generated had the loans not prepaid. Yield maintenance payments are recognized as interest income in the consolidated statements of operations upon receipt.

(d) Loans

Loans for which Farmer Mac has the positive intent and ability to hold for the foreseeable future are classified as held for investment and reported at their unpaid principal balance, net of unamortized purchase discounts or premiums. Loans for which Farmer Mac does not have the positive intent and ability to hold for the foreseeable future are classified as held for sale and reported at the lower of cost or fair value determined on a pooled basis. Farmer Mac de-recognizes sold loans, and recognizes any associated gain or loss, when they have been isolated from Farmer Mac, the buyer has the right to pledge or exchange them, and Farmer Mac does not maintain effective control over them. When Farmer Mac consolidates a trust, it recognizes the loans underlying the trust in the consolidated balance sheets as "Loans held for investment in consolidated trusts, at amortized cost." See Note 2(p) for more information on the accounting policy related to consolidation.

Non-accrual Loans

Non-accrual loans are loans for which it is probable that Farmer Mac will be unable to collect all amounts due according to the contractual terms of the loan agreement and include all loans 90 days or more past due. When a loan becomes 90 days past due, interest accrual on the loan is discontinued and interest

previously accrued is reversed against interest income in the current period. The interest on such loans is accounted for on the cash basis until a loan qualifies for return to accrual status. Loans are returned to accrual status when all the principal and interest payments contractually due are collected and certain performance criteria are met.

Troubled Debt Restructuring ("TDR")

A modification to the contractual terms of a loan that results in granting a concession to a borrower experiencing financial difficulties is considered a TDR. Farmer Mac has granted a concession when, as a result of the restructuring, it does not expect to collect all amounts due in a timely manner, including interest accrued at the original contract rate. In making its determination of whether a borrower is experiencing financial difficulties, Farmer Mac considers several factors, including whether (1) the borrower has declared or is in the process of declaring bankruptcy, (2) there is substantial doubt as to whether the borrower will continue to be a going concern, and (3) the borrower can obtain funds from other sources at an effective interest rate at or near a current market interest rate for debt with similar risk characteristics. Farmer Mac evaluates TDRs similarly to other impaired loans for purposes of the allowance for losses.

(e) Securitization of Loans

Asset securitization involves the transfer of financial assets to another entity in exchange for cash and/or beneficial interests in the assets transferred. Farmer Mac or third parties transfer agricultural real estate mortgage loans or rural utilities loans into trusts that are used as vehicles for the securitization of the transferred loans. The trusts issue Farmer Mac Guaranteed Securities that are beneficial interests in the assets of the trusts, to either Farmer Mac or third party investors. Farmer Mac guarantees the timely payment of principal and interest on the securities issued by the trusts and receives guarantee fees as compensation for its guarantee. Farmer Mac recognizes guarantee fees on the accrual basis over the terms of the Farmer Mac Guaranteed Securities, which generally coincide with the terms of the underlying loans. As such, no guarantee fees are unearned at the end of any reporting period. When Farmer Mac purchases a delinquent loan underlying a Farmer Mac Guaranteed Security, Farmer Mac stops accruing the guarantee fee upon loan purchase.

(f) Real Estate Owned

Real estate owned ("REO") consists of real estate acquired through loan liquidation and is recorded at fair value less estimated selling costs at acquisition. Fair value is determined by appraisal or other appropriate valuation method. Any excess of the recorded investment in the loan over the fair value less estimated selling costs is charged to the allowance for loan losses. After the acquisition, management continues to perform periodic valuations of real estate owned. Declines in the net realizable value (fair value less estimated selling costs) are charged through income and presented in "Real estate owned operating costs, net" on the consolidated statements of operations.

(g) Financial Derivatives

Farmer Mac enters into financial derivative transactions principally to protect against risk from the effects of market price or interest rate movements on the value of certain assets, future cash flows or debt issuance, not for trading or speculative purposes. Farmer Mac enters into interest rate swap contracts principally to adjust the characteristics of its short-term debt to match more closely the cash flow and

duration characteristics of its longer-term loans and other assets, and also to adjust the characteristics of its long-term debt to match more closely the cash flow and duration characteristics of its short-term assets, thereby reducing interest rate risk and, often times, deriving an overall lower effective cost of borrowing than would otherwise be available to Farmer Mac in the conventional debt market. Farmer Mac is required to recognize certain contracts and commitments as derivatives when the characteristics of those contracts and commitments meet the definition of a derivative under GAAP.

Accounting for financial derivatives differs depending on whether a derivative is designated in a hedge accounting relationship. Derivative instruments designated in fair value hedge accounting relationships mitigate exposure to changes in the fair value of assets or liabilities. Derivative instruments designated in cash flow hedge accounting relationships mitigate exposure to the variability in expected future cash flows or other forecasted transactions. In order to qualify for fair value or cash flow hedge accounting treatment, documentation must indicate the intention to designate the derivative as a hedge of a specific asset, or liability, or a future cash flow. Effectiveness of the hedge is assessed before the end of the quarter of inception and monitored over the life of the hedging relationship.

Beginning in first quarter 2018, changes in the fair values of financial derivatives not designated as cash flow or fair value hedges are reported in "(Losses)/gains on financial derivatives" in the consolidated statements of operations. For financial derivatives designated in fair value hedge relationships, changes in the fair values of hedged items related to the risk being hedged are reported in "Net interest income" in the consolidated statements of operations. Interest accruals on derivatives designated in fair value hedge relationships are also recorded in "Net interest income" in the consolidated statements of operations. For financial derivatives designated in cash flow hedge relationships, the unrealized gain or loss on the derivative is recorded in other comprehensive income. Because the hedging instrument is an interest rate swap and the hedged forecasted transactions are future interest payments on variable rate debt, amounts recorded in accumulated other comprehensive income are reclassified to "Total interest expense" in conjunction with the recognition of interest expense on the debt. Before 2018, gains and losses on financial derivatives were included in "(Losses)/gains on financial derivatives" whether or not they were designated in hedge accounting relationships.

Farmer Mac has made an accounting policy election to measure the credit risk of its derivative financial instruments that are subject to netting provisions on a net basis by counterparty portfolio. See Notes 6 and 13 for more information on financial derivatives.

(h) Notes Payable

Notes payable are classified as due within one year or due after one year based on the length of time remaining to their contractual maturities. Debt issuance costs and premiums and discounts are deferred and amortized to interest expense using the effective interest method over the contractual life of the related debt.

(i) Allowance for Loan Losses and Reserve for Losses

Farmer Mac maintains an allowance for losses to cover estimated probable losses incurred as of the balance sheet date on loans held ("allowance for loan losses") and loans underlying LTSPCs and off-balance sheet Farmer Mac Guaranteed Securities ("reserve for losses") based on available information. Disaggregation by commodity type is performed, where appropriate, in analyzing the need for an allowance for losses.

The allowance for losses increases through periodic provisions for loan losses that are charged against net interest income and the reserve for losses increases through provisions for losses that are charged to non-interest expense, and decreases by charge-offs for realized losses, net of recoveries. Negative provisions, or releases from the allowance for losses, generally occur when the estimate of probable losses as of the end of a period is less than the estimate at the beginning of the period. In certain circumstances, for example, when a defaulted loan is purchased out of a guaranteed security or pursuant to an LTSPC, the related reserve for losses is released and a corresponding amount is provided to the allowance for loan losses.

The total allowance for losses consists of a general allowance for losses and a specific allowance for individual impaired loans.

Charge-offs

Farmer Mac records a charge-off against the allowance for losses principally when a loss has been confirmed through the receipt of assets, generally the underlying collateral, in full satisfaction of the loan. The loss equals the excess of the recorded investment in the loan over the fair value of the collateral less estimated selling costs.

General Allowance for Losses

Farmer Mac's methodology for determining its allowance for losses incorporates Farmer Mac's automated loan classification system. That system scores loans based on criteria such as historical repayment performance, indicators of current financial condition, loan seasoning, loan size and loan-to-value ratio. The allowance methodology captures the migration of loan scores across concurrent and overlapping 3-year time horizons and calculates loss rates separately within each loan classification for (1) loans underlying LTSPCs and (2) loans held and loans underlying Farm & Ranch Guaranteed Securities. The calculated loss rates are applied to the current classification distribution of unimpaired loans in Farmer Mac's portfolio to estimate inherent losses, on the assumption that the historical credit losses and trends used to calculate loss rates will continue in the future.

Management evaluates this assumption by considering many relevant factors, including:

- economic conditions;
- geographic and agricultural commodity/product concentrations in the portfolio;
- the credit profile of the portfolio;
- delinquency trends of the portfolio;
- historical charge-off and recovery activities of the portfolio; and
- other factors to capture current portfolio trends and characteristics that differ from historical experience.

Management believes that its use of this methodology produces a reasonable estimate of probable losses, as of the balance sheet date, for all loans held in the Farm & Ranch portfolio and loans underlying off-balance sheet Farm & Ranch Guaranteed Securities and LTSPCs.

Farmer Mac separately evaluates the rural utilities loans it owns to determine if there are any probable losses inherent in those assets.

Specific Allowance for Impaired Loans

Farmer Mac also analyzes certain loans in its portfolio for impairment in accordance with accounting guidance on measuring impairment of individual loans. Farmer Mac's impaired loans generally include loans 90 days or more past due, in foreclosure, restructured, in bankruptcy and certain performing loans that have previously been delinquent or are secured by real estate that produces agricultural commodities or products currently under stress.

Farmer Mac uses a risk-based approach in determining the necessity of obtaining updated appraisals on impaired loans. For example, larger exposures associated with highly improved and specialized collateral will generally receive updated appraisals once the loans are identified as impaired. Updated appraisals are always obtained during the foreclosure process. Depending on the risk factors associated with the loan and underlying collateral, which can vary widely depending on the circumstances of the loan and collateral, this can occur early in the foreclosure process, while in other instances this may occur just before the transfer of title. As part of its routine credit review process, Farmer Mac often will exercise judgment in discounting an appraisal value due to local real estate trends or the condition of the property (e.g., following an inspection by Farmer Mac or the servicer). A property appraisal value may also be discounted based on the market's reaction to Farmer Mac's asking price for sale of the property.

For loans with an updated appraised value, other updated collateral valuation or management's estimate of discounted collateral value, this analysis includes the measurement of the fair value of the underlying collateral for individual loans relative to the total recorded investment, including principal, interest, and advances and net of any charge-offs. In the event that the collateral value does not support the total recorded investment, Farmer Mac specifically provides an allowance for the loan for the difference between the recorded investment and its fair value, less estimated costs to liquidate the collateral. Estimated selling costs are based on historical selling costs incurred by Farmer Mac or management's best estimate of selling costs for a particular property. For the remaining impaired assets without updated valuations, this analysis is performed in the aggregate in consideration of the similar risk characteristics of the assets and historical statistics. Farmer Mac believes this methodology that uses loan classification scores and historical loss experience is a better indication of impairment for these collateral-dependent loans than other valuation methods.

(j) Earnings Per Common Share

Basic earnings per common share ("EPS") is based on the weighted-average number of shares of common stock outstanding. Diluted earnings per common share is based on the weighted-average number of shares of common stock outstanding adjusted to include all potentially dilutive common stock options, stock appreciation rights ("SARs"), and unvested restricted stock awards. The following schedule reconciles basic and diluted EPS for the years ended December 31, 2018, 2017, and 2016:

Table 2.2

	For the Years Ended December 31,								
	2018			2017			2016		
	Net Income	Weighted-Average Shares	Per Share	Net Income	Weighted-Average Shares	Per Share	Net Income	Weighted-Average Shares	Per Share
(in thousands, except per share amounts)									
Basic EPS									
Net income attributable to common stockholders	\$94,898	10,654	\$8.91	\$71,300	10,594	\$6.73	\$64,152	10,477	\$6.12
Effect of dilutive securities ⁽¹⁾									
Stock options, SARs and restricted stock	—	92	(0.08)	—	209	(0.13)	—	269	(0.15)
Diluted EPS	\$94,898	10,746	\$8.83	\$71,300	10,803	\$6.60	\$64,152	10,746	\$5.97

For the years ended December 31, 2018, 2017, and 2016, stock options and SARs of 15,812, 28,579, and 86,907, respectively, were outstanding but not included in the computation of diluted earnings per share of common stock ⁽¹⁾ because they were anti-dilutive. For the years ended December 31, 2018, 2017, and 2016, contingent shares of unvested restricted stock of 13,138, 29,647, and 37,284, respectively, were outstanding but not included in the computation of diluted earnings per share of common stock because performance conditions had not yet been met.

(k) Income Taxes

Deferred federal income tax assets and liabilities are established for temporary differences between financial and taxable income and are measured using the current enacted statutory tax rate. New tax reform legislation was enacted on December 22, 2017. This new tax legislation includes a broad range of tax reform provisions, including a reduction to the corporate tax rate, changes to business expense deductions, and changes to taxes on international earnings. U.S. GAAP requires recognition of the effect of changes in tax law and tax rates as a component of the income tax provision related to continuing operations in the period of enactment of the new legislation. This accounting treatment is also required for deferred taxes that were established through a financial statement component other than continuing operations such as other comprehensive income. Thus, Farmer Mac remeasured its deferred tax assets and liabilities using the newly enacted statutory tax rate of 21% and recognized a one-time, non-cash charge of \$1.4 million to income tax expense during 2017.

Due to the re-measurement of Farmer Mac's deferred tax assets and liabilities using the newly enacted statutory federal income tax rate of 21%, items originally recorded through other comprehensive income do not reflect the new tax rate ("stranded tax effects"). In response, in February 2018, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2018-02 "Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income," which provides entities the option to reclassify these stranded tax effects from accumulated other comprehensive income to retained earnings. Farmer Mac elected to adopt ASU 2018-02 for the year ended December 31, 2017. This change in accounting principle resulted in an increase to "Accumulated other comprehensive income, net of tax" and a corresponding decrease to "Retained earnings" of \$9.1 million.

Income tax expense is equal to the income taxes payable in the current year plus the net change in the deferred tax asset or liability balance.

Farmer Mac evaluates its tax positions quarterly to identify and recognize any liabilities related to uncertain tax positions in its federal income tax returns. Farmer Mac uses a two-step approach in which income tax benefits are recognized if, based on the technical merits of a tax position, it is more likely than not (a probability of greater than 50%) that the tax position would be sustained upon examination by the taxing authority, which includes all related

appeals and litigation process. The amount of tax benefit

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recognized is then measured at the largest amount of tax benefit that is greater than 50% likely to be realized upon settlement with the taxing authority, considering all information available at the reporting date. Farmer Mac's policy for recording interest and penalties associated with uncertain tax positions is to record them as a component of income tax expense. Farmer Mac establishes a valuation allowance for deferred tax assets if it is more likely than not that some portion or all of the deferred tax assets will not be realized.

(l) Stock-Based Compensation

Farmer Mac accounts for its stock-based employee compensation plans using the grant date fair value method of accounting. Farmer Mac measures the cost of employee services received in exchange for an award of equity instruments based on the grant-date fair value of the award determined using the Black-Scholes option pricing model. The cost is recognized over the period during which an employee is required to provide service in exchange for the award. For performance-based grants, Farmer Mac recognizes the grant-date fair value over the vesting period as long as it remains probable that the performance conditions will be met. If the service or performance conditions are not met, Farmer Mac reverses previously recognized compensation expense upon forfeiture.

Farmer Mac recognized \$2.5 million, \$2.7 million, and \$3.3 million of compensation expense related to stock options, SARs, and non-vested restricted stock awards for 2018, 2017, and 2016, respectively.

(m) Comprehensive Income

Comprehensive income represents all changes in stockholders' equity except those resulting from investments by or distributions to stockholders, and is comprised of net income and unrealized gains and losses on available-for-sale securities, certain held-to-maturity securities transferred from the available-for-sale classification, and cash flow hedges, net of related taxes.

The following table presents the changes in accumulated other comprehensive income ("AOCI"), net of tax, by component for the years ended December 31, 2018, 2017, and 2016:

Table 2.3

	Available-for-Sale Securities	Fixed-Maturity Securities	Cash Flow Hedges	Total
	(in thousands)			
Balance as of January 1, 2016	\$(10,035)	\$ (476)	\$ (508)	\$(11,019)
Other comprehensive income before reclassifications	5,481	47,993	1,588	55,062
Amounts reclassified from AOCI	(9,833)	(1,765)	1,313	(10,285)
Net comprehensive (loss)/income	(4,352)	46,228	2,901	44,777
Balance as of December 31, 2016	\$(14,387)	\$ 45,752	\$ 2,393	\$ 33,758
Other comprehensive income before reclassifications	23,925	—	152	24,077
Amounts reclassified from AOCI	(10,917)	(6,064)	1,178	(15,803)
Net comprehensive income/(loss)	13,008	(6,064)	1,330	8,274
Stranded tax effects reclassified from AOCI due to enactment of new tax legislation	(297)	8,548	802	9,053
Balance as of December 31, 2017	\$(1,676)	\$ 48,236	\$ 4,525	\$ 51,085
Cumulative effect from change in hedge accounting	—	—	27	27
Balance as of January 1, 2018	(1,676)	48,236	4,552	51,112
Other comprehensive (loss)/income before reclassifications	(19,151)	—	2,571	(16,580)
Amounts reclassified from AOCI	(4,533)	(4,793)	(250)	(9,576)
Net comprehensive (loss)/income	(23,684)	(4,793)	2,321	(26,156)
Balance as of December 31, 2018	\$(25,360)	\$ 43,443	\$ 6,873	\$ 24,956

The following table presents other comprehensive income activity, the impact on net income of amounts reclassified from each component of AOCI, and the related tax impact for the years ended December 31, 2018, 2017, and 2016:

Table 2.4

	For the Years Ended			2017			2016		
	2018 Before Tax (in thousands)	Provision (Benefit)	After Tax	Before Tax	Provision (Benefit)	After Tax	Before Tax	Provision (Benefit)	After Tax
Other comprehensive income:									
Available-for-sale-securities:									
Unrealized holding (losses)/gains on available-for-sale-securities	\$ (24,241)	\$ (5,090)	\$ (19,151)	\$ 36,809	\$ 12,884	\$ 23,925	\$ 8,433	\$ 2,952	\$ 5,481
Less reclassification adjustments included in:									
Net Interest Income ⁽¹⁾	(5,784)	(1,215)	(4,569)	—	—	—	—	—	—
(Losses)/gains on financial derivatives ⁽¹⁾	—	—	—	(16,845)	(5,897)	(10,948)	(15,375)	(5,381)	(9,994)
(Losses)/gains on sale of available-for-sale investment securities ⁽²⁾	—	—	—	(89)	(31)	(58)	9	3	6
Other income ⁽³⁾	45	9	36	137	48	89	239	84	155
Total	\$ (29,980)	\$ (6,296)	\$ (23,684)	\$ 20,012	\$ 7,004	\$ 13,008	\$ (6,694)	\$ (2,342)	\$ (4,352)
Held-to-maturity securities:									
Change in fair value ⁽⁴⁾	—	—	—	—	—	—	73,835	25,842	47,993
Less reclassification adjustments included in:									
Net interest income ⁽⁵⁾	(6,067)	(1,274)	(4,793)	(9,329)	(3,265)	(6,064)	(2,715)	(950)	(1,765)
Total	\$ (6,067)	\$ (1,274)	\$ (4,793)	\$ (9,329)	\$ (3,265)	\$ (6,064)	\$ 71,120	\$ 24,892	\$ 46,228
Cash flow hedges									
Unrealized gains/(losses) on cash flow hedges	\$ 3,254	\$ 683	\$ 2,571	\$ 233	\$ 81	\$ 152	\$ 2,443	\$ 855	\$ 1,588
Less reclassification adjustments included in:									
Net interest income ⁽⁶⁾	(316)	(66)	(250)	1,813	635	1,178	2,020	707	1,313
Total	\$ 2,938	\$ 617	\$ 2,321	\$ 2,046	\$ 716	\$ 1,330	\$ 4,463	\$ 1,562	\$ 2,901
Other comprehensive (loss)/income	\$ (33,109)	\$ (6,953)	\$ (26,156)	\$ 12,729	\$ 4,455	\$ 8,274	\$ 68,889	\$ 24,112	\$ 44,777

(1) Relates to the amortization of unrealized gains on hedged items prior to the application of fair value hedge accounting.

(2) Represents unrealized gains and losses on sales of available-for-sale investment securities.

(3) Represents amortization of deferred gains related to certain available-for-sale USDA Securities and Farmer Mac Guaranteed USDA Securities.

(4) Represents the accumulated unrealized gain on the USDA Securities and the Farmer Mac Guaranteed Securities transferred from available-for-sale to held-to-maturity.

(5) Relates to the amortization of unrealized gains or losses prior to the reclassification of these securities from available-for-sale to held-to-maturity. The amortization of unrealized gains or losses reported in AOCI for held-to-maturity securities will be offset by the amortization of the premium or discount created from the transfer into held-to-maturity securities, which occurred at fair value. These unrealized gains or losses will be recorded

over the remaining life of the security with no impact on future net income.

(6) Relates to the recognition of unrealized gains and losses on cash flow hedges recorded in AOCI.

(n) Long-Term Standby Purchase Commitments

Farmer Mac accounts for its LTSPCs as guarantees. Commitment fee income represents a reduction of the commitment obligation based on amortization using the actual prepayment experience on the underlying loans. See Note 2(i) for Farmer Mac's policy for estimating probable losses for LTSPCs and Note 12 for more information on the accounting for LTSPCs.

(o) Fair Value Measurement

Farmer Mac defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date and establishes a fair value hierarchy that ranks the quality and reliability of the inputs to valuation techniques used to

measure fair value. The hierarchy gives highest rank to unadjusted quoted prices in active markets for identical assets or liabilities (level 1 measurements) and the lowest rank to unobservable inputs (level 3 measurements).

Farmer Mac's assessment of the significance of the input to the fair value measurement requires judgment and considers factors specific to the financial instrument. Both observable and unobservable inputs may be used to determine the fair value of financial instruments that Farmer Mac has classified within the level 3 category. As a result, the unrealized gains and losses for assets and liabilities within the level 3 category may include changes in fair value that were attributable to both observable (e.g., changes in market interest rates) and unobservable (e.g., changes in projected prepayment rates) inputs. See Note 13 for more information regarding fair value measurement.

(p)Consolidation of Variable Interest Entities

Farmer Mac has interests in various entities that are considered to be VIEs. These interests include investments in securities issued by VIEs, such as Farmer Mac agricultural mortgage-backed securities created pursuant to Farmer Mac's securitization transactions and mortgage and asset-backed trusts that Farmer Mac did not create. The consolidation model uses a qualitative evaluation that requires consolidation of an entity when the reporting enterprise both: (1) has the power to direct matters which significantly impact the activities and success of the entity, and (2) has exposure to benefits and/or losses that could potentially be significant to the entity. The reporting enterprise that meets both these conditions is deemed the primary beneficiary of the VIE. Upon consolidation of a VIE, Farmer Mac accounts for the incremental assets and liabilities initially at their carrying amounts.

The VIEs in which Farmer Mac has a variable interest are limited to securitization trusts. The major factor in determining if Farmer Mac is the primary beneficiary is whether Farmer Mac has the power to direct the activities of the trust that potentially have the most significant impact on the economic performance of the trust. Generally, the ability to make decisions regarding default mitigation is evidence of that power. Farmer Mac determined that it is the primary beneficiary for the securitization trusts related to most Farm & Ranch and all Rural Utilities securitization transactions because of its rights as guarantor under both programs to control the default mitigation activities of the trusts. For certain securitization trusts created when loans subject to LTSPCs were converted to Farm & Ranch Guaranteed Securities, Farmer Mac determined that it was not the primary beneficiary since the power to make decisions regarding default mitigation was shared among unrelated parties. For these trusts, the shared power provisions are substantive with respect to decision-making power and relate to the same activity (i.e., default mitigation). For similar securitization transactions where the power to make decisions regarding default mitigation was shared with a related party, Farmer Mac determined that it was the primary beneficiary because the applicable accounting guidance does not permit parties within a related party group to conclude that the power is shared. In the event that a related party status changes, consolidation or deconsolidation of these securitization trusts could occur.

For those trusts that Farmer Mac is the primary beneficiary, the assets and liabilities are presented on the consolidated balance sheets as "Loans held for investment in consolidated trusts, at amortized cost" and "Debt securities of consolidated trusts held by third parties," respectively. These assets can only be used to satisfy the obligations of the related trust.

For those trusts in which Farmer Mac has a variable interest but is not the primary beneficiary, Farmer Mac's interests are presented as either "Farmer Mac Guaranteed Securities," "USDA Securities," or

"Investment securities" on the consolidated balance sheets. Farmer Mac's involvement in VIEs classified as Farmer Mac Guaranteed Securities or USDA Securities include securitization trusts under the USDA Guarantees line of business and certain trusts related to AgVantage securities. In the case of USDA guaranteed trusts, Farmer Mac is not determined to be the primary beneficiary because it does not have the decision-making power over default mitigation activities. Based on the USDA's program authority over the servicing and default mitigation activities of the USDA guaranteed portions of loans, Farmer Mac believes that the USDA has the power to direct the activities that most significantly impact the trust's economic performance. Farmer Mac does not have exposure to losses that could be significant to the trust and there are no triggers that would result in Farmer Mac superseding the USDA's authority with regard to directing the activities of the trust. For VIEs classified as investment securities, which include auction-rate certificates, asset-backed securities, and government-sponsored enterprise ("GSE")-guaranteed mortgage-backed securities, Farmer Mac is determined not to be the primary beneficiary because of the lack of voting rights or other powers to direct the activities of the trust.

The following tables present, by line of business, details about the consolidation of VIEs:

Table 2.5

	Consolidation of Variable Interest Entities					
	As of December 31, 2018					
	Farm & Ranch	USDA Guarantees	Rural Utilities	Institutional Credit	Corporate	Total
	(in thousands)					
On-Balance Sheet:						
Consolidated VIEs:						
Loans held for investment in consolidated trusts, at amortized cost	\$1,517,101	\$ —	\$ —	\$ —		—\$1,517,101
Debt securities of consolidated trusts held by third parties ⁽¹⁾	1,528,957	—	—	—	—	1,528,957
Unconsolidated VIEs:						
Farmer Mac Guaranteed Securities:						
Carrying value ⁽²⁾	—	27,627	—	—	—	27,627
Maximum exposure to loss ⁽³⁾	—	27,383	—	—	—	27,383
Investment securities:						
Carrying value ⁽⁴⁾	—	—	—	—	1,000,942	1,000,942
Maximum exposure to loss ^{(3) (4)}	—	—	—	—	1,003,968	1,003,968
Off-Balance Sheet:						
Unconsolidated VIEs:						
Farmer Mac Guaranteed Securities:						
Maximum exposure to loss ^{(3) (5)}	135,862	367,684	—	—	—	503,546
⁽¹⁾ Includes borrower remittances of \$11.9 million. The borrower remittances had not been passed through to third party investors as of December 31, 2018.						
⁽²⁾ Includes \$0.2 million of unamortized premiums and discounts and fair value adjustments related to the USDA Guarantees line of business.						
⁽³⁾ Farmer Mac uses unpaid principal balance and outstanding face amount of investment securities to represent maximum exposure to loss.						
⁽⁴⁾ Includes auction-rate certificates, asset-backed securities, and government-sponsored enterprise ("GSE")-guaranteed mortgage-backed securities.						
⁽⁵⁾ The amount under the Farm & Ranch line of business relates to unconsolidated trusts where Farmer Mac determined it was not the primary beneficiary due to shared power with an unrelated party.						

Consolidation of Variable Interest Entities
As of December 31, 2017
Farm & Ranch USDA Guarantees Rural Utilities Institutional Credit Corporate
(in thousands)

On-Balance Sheet:						
Consolidated VIEs:						
Loans held for investment in consolidated trusts, at amortized cost	\$1,399,827	\$	—\$	—\$	—\$	—\$1,399,827
Debt securities of consolidated trusts held by third parties ⁽¹⁾	1,404,945	—	—	—	—	1,404,945
Unconsolidated VIEs:						
Farmer Mac Guaranteed Securities:						
Carrying value ⁽²⁾	—	30,300	—	—	—	30,300
Maximum exposure to loss ⁽³⁾	—	29,980	—	—	—	29,980
Investment securities:						
Carrying value ⁽⁴⁾	—	—	—	—	783,964	783,964
Maximum exposure to loss ^{(3) (4)}	—	—	—	—	783,916	783,916
Off-Balance Sheet:						
Unconsolidated VIEs:						
Farmer Mac Guaranteed Securities:						
Maximum exposure to loss ^{(3) (5)}	333,511	254,217	—	—	—	587,728

(1) Includes borrower remittances of \$5.1 million, which have not been passed through to third party investors as of December 31, 2017.

(2) Includes \$0.3 million of unamortized premiums and discounts and fair value adjustments related to the USDA Guarantees line of business.

(3) Farmer Mac uses unpaid principal balance and the outstanding face amount of investment securities to represent maximum exposure to loss.

(4) Includes auction-rate certificates, asset-backed securities, and GSE-guaranteed mortgage-backed securities.

(5) The amount under the Farm & Ranch line of business relates to unconsolidated trusts where Farmer Mac determined it was not the primary beneficiary due to shared power with an unrelated party.

(q) New Accounting Standards

In February 2016, the FASB issued Accounting Standards Update ("ASU") 2016-02, "Leases (Topic 842)," which provides new guidance intended to improve financial reporting about leasing transactions. The ASU requires organizations that lease assets to recognize on the balance sheet the assets and liabilities for the rights and obligations created by those leases. The ASU also requires new disclosures to help investors and other financial statement users better understand the amount, timing, and uncertainty of cash flows arising from leases. The new standard is effective for fiscal years and interim periods within those fiscal years beginning after December 15, 2018. The adoption of the new guidance will not have a material effect on Farmer Mac's financial position, results of operations, or cash flows.

In June 2016, the FASB issued ASU 2016-13, "Financial Instruments—Credit Losses (Topic 326)," which will require entities to measure all expected credit losses for financial assets held at the reporting date based on historical experience, current conditions, and reasonable and supportable forecasts. Entities will be required to use forward-looking information to form their credit loss estimates. The ASU will also require enhanced disclosures to help users of financial statements better understand significant estimates and judgments used in estimating credit losses, as well as the credit quality and underwriting standards of an entity's portfolio. The new standard is effective for fiscal years and interim periods within those fiscal years, beginning after December 15, 2019. Early adoption will

be permitted for all entities for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2018. Farmer Mac is currently developing its accounting policy, planning for changes to its loss estimation methodologies, and evaluating the impact that the new guidance will have on its consolidated financial statements. That

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impact will primarily result from the new requirement to recognize all expected losses rather than just incurred losses as of the reporting date.

In March 2017, the FASB issued ASU 2017-08, "Receivables—Nonrefundable Fees and Other Costs (Subtopic 310-20): Premium Amortization on Purchased Callable Debt Securities," which shortens the amortization period for certain callable debt securities held at a premium by requiring the premium to be amortized to the earliest call date. The ASU does not require an accounting change for securities held at a discount. The new standard is effective for fiscal years and interim periods within those fiscal years, beginning after December 15, 2019. Farmer Mac does not expect that adoption of the new guidance will have a material effect on Farmer Mac's financial position, results of operations, or cash flows.

In first quarter 2018, Farmer Mac adopted ASU 2017-12, "Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities," which amends hedge accounting recognition and presentation requirements to better align a reporting entity's risk management activities and hedge accounting. The new guidance reduces the complexity and simplifies the application of hedge accounting by eliminating the requirement to separately measure and report hedge ineffectiveness and by requiring the entire change in the fair value of a hedging instrument to be presented in the same income statement line as the hedged item. The cumulative-effect adjustment to retained earnings as of January 1, 2018 reflected application of the new guidance and did not have a material effect on Farmer Mac's financial position, results of operations, or cash flows.

In August 2018, the FASB issued ASU 2018-13, "Fair Value Measurement (Topic 820): Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement," which removes or modifies certain disclosures and adds new disclosures. The new requirements are designed to improve the effectiveness of disclosures in the notes to the financial statements. The new standard is effective for fiscal years and interim periods within those fiscal years, beginning after December 15, 2019. Farmer Mac does not expect that adoption of the new guidance will have a material effect on Farmer Mac's financial position, results of operations, or cash flows.

In August 2018, the FASB issued ASU 2018-15, "Intangibles - Goodwill and Other Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That is a Service Contract," which requires the application of the same criteria for capitalization of implementation costs as for an arrangement that has a software license. The new guidance also prescribes the balance sheet, income statement, and cash flows classifications of the capitalized implementation costs and related amortization expense, and requires additional quantitative and qualitative disclosures. The new standard is effective for fiscal years and interim periods within those fiscal years, beginning after December 15, 2019. Farmer Mac does not expect that adoption of this guidance will have a material effect on Farmer Mac's financial position, results of operations, or cash flows.

In October 2018, the FASB issued ASU 2018-16, "Derivatives and Hedging (Topic 815): Inclusion of the Secured Overnight Financing Rate (SOFR) Overnight Index Swap (OIS) Rate as a Benchmark Interest Rate for Hedge Accounting Purposes," which permits the use of the OIS rate based on SOFR as a U.S. benchmark interest rate for hedge accounting purposes. The new guidance is intended to facilitate the transition from LIBOR to SOFR as a benchmark interest rate in the coming years. Because Farmer Mac already adopted ASU 2017-12, the new standard is effective for fiscal years and interim periods within those fiscal years, beginning after December 15, 2018. Farmer Mac does not currently hold any financial instruments that use SOFR as the benchmark interest rate. Therefore, this guidance will not have an

immediate impact on Farmer Mac's financial position, results of operations, or cash flows. However, as companies migrate from the use of LIBOR to SOFR, the adoption of this guidance will have a material effect on Farmer Mac's financial position, results of operations, and cash flows in future years.

(r) Reclassifications

Certain reclassifications of prior period information were made to conform to the current period presentation.

3. RELATED PARTY TRANSACTIONS

Farmer Mac considers an entity to be a related party if (1) the entity holds at least 5% of a class of Farmer Mac voting common stock or (2) the institution has an affiliation with a Farmer Mac director and conducts material business with Farmer Mac. As provided by Farmer Mac's statutory charter, only banks, insurance companies, and other financial institutions or similar entities may hold Farmer Mac's Class A voting common stock and only institutions of the Farm Credit System may hold Farmer Mac's Class B voting common stock. Farmer Mac's statutory charter also provides that Class A stockholders elect five members of Farmer Mac's 15-member board of directors and that Class B stockholders elect five members of the board of directors. Farmer Mac generally requires financial institutions to own a requisite amount of common stock, based on the size and type of institution, to participate in the Farm & Ranch line of business. As a result of these requirements, Farmer Mac conducts business with related parties in the normal course of Farmer Mac's business. All related party transactions were conducted with terms and conditions comparable to those available to any other participant in Farmer Mac's lines of business not related to Farmer Mac.

Zions First National Bank:

Farmer Mac considers Zions First National Bank and its affiliates ("Zions") a related party due to the ownership by Zions of approximately 31.2% of Farmer Mac's Class A voting common stock. The following transactions occurred between Farmer Mac and Zions during 2018, 2017, and 2016:

Table 3.1

	For the Year Ended December 31,		
	2018	2017	2016
	(in thousands)		
Unpaid Principal Balance:			
Purchases:			
Loans	\$ 114,719	\$ 126,449	\$ 153,140
USDA Securities	19,120	20,368	16,600
Sales of Farmer Mac Guaranteed Securities	68,721	128,924	273,586

The purchases of loans from Zions under the Farm & Ranch line of business represented approximately 11.9%, 11.2%, and 15.9% of Farm & Ranch loan purchases for the years ended December 31, 2018, 2017, and 2016, respectively, and 8.2%, 7.5% and 11.2%, respectively, of total new Farm & Ranch business volume. The purchases of USDA Securities from Zions under the USDA Guarantees line of business represented approximately 4.2%, 3.8%, and 3.4% of purchases in that line of business for the years ended December 31, 2018, 2017, and 2016, respectively. Outstanding Farm & Ranch loans, USDA Securities,

and AgVantage securities purchased from Zions represented 4.7% and 5.0%, respectively, of Farmer Mac's outstanding business volume as of December 31, 2018 and 2017.

Zions retained servicing fees of \$11.6 million, \$11.5 million, and \$9.9 million in 2018, 2017, and 2016, respectively, for its work as a Farmer Mac servicer.

National Rural Utilities Cooperative Financial Corporation:

Farmer Mac considers the National Rural Utilities Cooperative Financial Corporation ("CFC") a related party because of its ownership of approximately 7.9% of Farmer Mac's Class A voting common stock. The following transactions occurred between Farmer Mac and CFC during 2018, 2017, and 2016:

Table 3.2

Farmer Mac Loan Purchases and Guarantees

	For the Year Ended December 31,		
	2018	2017	2016
	(in thousands)		
Unpaid Principal Balance:			
Loans	\$ 11,645	\$ 137,341	\$ 50,491
On-balance sheet AgVantage Securities	675,000	350,000	250,000
Off-balance sheet revolving floating rate AgVantage facility	300,000	—	—
LTSPCs	—	—	441,404
Total purchases and guarantees	\$ 986,645	\$ 487,341	\$ 741,895

The transactions with CFC represented 100% of Farmer Mac's volume of loan purchases and LTSPC transactions under the Rural Utilities line of business for 2018, 2017, and 2016, and represented 29.5%, 14.7%, and 11.9% of AgVantage securities volume under the Institutional Credit line of business for 2018, 2017, and 2016, respectively, and represented 19.1%, 10.3%, and 16.7% of total purchases, guarantees, and LTSPCs for 2018, 2017, and 2016, respectively. Of Farmer Mac's total outstanding business volume as of December 31, 2018 and 2017, Rural Utilities loans, loans under LTSPCs, and AgVantage securities issued by CFC represented 23.6% and 24.6%, respectively. For the years ended December 31, 2018, 2017, and 2016, Farmer Mac earned guarantee fees of \$0.1 million.

Farmer Mac had interest receivable of \$9.4 million and \$5.2 million as of December 31, 2018 and 2017, respectively, and earned interest income of \$76.8 million, \$43.9 million, and \$27.6 million during 2018, 2017, and 2016, respectively, related to its AgVantage transactions with CFC.

As of December 31, 2018 and 2017, Farmer Mac had \$0.1 million and \$0.2 million, respectively, of commitment fees receivable from CFC and earned commitment fees of \$1.9 million, \$2.2 million, and \$2.0 million, respectively for 2018, 2017, and 2016.

CFC retained servicing fees of \$3.6 million, \$3.5 million and \$3.3 million in 2018, 2017, and 2016, respectively, for its work as a Farmer Mac central servicer.

AgFirst Farm Credit Bank:

Farmer Mac has a related party relationship with AgFirst Farm Credit Bank ("AgFirst") resulting from AgFirst being a holder of approximately 16.8% of Farmer Mac's Class B voting common stock.

AgFirst entered into \$26.6 million, \$40.0 million and \$36.4 million of LTSPC transactions in 2018, 2017, and 2016, respectively, and the aggregate balance of LTSPCs outstanding as of December 31, 2018 and 2017 was \$340.5 million and \$353.8 million, respectively. Farmer Mac received from AgFirst \$1.2 million, \$1.1 million, and \$1.1 million in commitment fees in 2018, 2017, and 2016, respectively, and had \$0.1 million of commitment fees receivable as of both December 31, 2018 and 2017.

AgFirst owns certain securities backed by rural housing loans. Farmer Mac guarantees the last ten percent of losses (based on the original principal balance at the time of pooling) from each loan in the pool backing those securities. As of December 31, 2018 and 2017, the outstanding balance of those securities owned by AgFirst was \$8.6 million and \$11.5 million, respectively. Farmer Mac received guarantee fees of \$33,000, \$38,000, and \$45,000 in 2018, 2017, and 2016, respectively, on those securities.

Farm Credit Bank of Texas:

Farmer Mac has a related party relationship with Farm Credit Bank of Texas resulting from the bank being a holder of approximately 7.7% of Farmer Mac Class B voting common stock and because a member of Farmer Mac's board of directors has an affiliation with that entity. Farmer Mac received from Farm Credit Bank of Texas commitment fees of \$1.0 million, \$1.0 million, and \$1.1 million in 2018, 2017, and 2016, respectively. The aggregate amount of LTSPCs outstanding with Farm Credit Bank of Texas as of December 31, 2018 and 2017 was \$226.5 million and \$250.3 million, respectively. In 2018, 2017, and 2016, Farm Credit Bank of Texas retained \$0.2 million, \$0.2 million, and \$0.3 million, respectively, in servicing fees for its work as a Farmer Mac central servicer.

Other Related Party Transactions:

Farmer Mac purchased \$39.5 million, \$28.5 million, and \$24.7 million in loans from First Dakota National Bank in 2018, 2017, and 2016, respectively. Farmer Mac entered into \$3.0 million, \$0.4 million, and \$0.0 million of new USDA Securities in 2018, 2017, and 2016, respectively, with First Dakota National Bank. First Dakota National Bank retained servicing fees of \$1.4 million, \$1.2 million, and \$1.1 million in 2018, 2017, and 2016, respectively, for its work as a Farmer Mac servicer. Farmer Mac purchased \$2.0 million, \$5.4 million, and \$1.3 million in USDA Securities from Bath State Bank in 2018, 2017, and 2016, respectively. These institutions had a related party relationship with Farmer Mac because a member of Farmer Mac's board of directors is affiliated with each of those entities.

Farmer Mac owned \$70 million of subordinated debt issued by CoBank as of December 31, 2016. During 2017, the subordinated debt was called and redeemed by CoBank. Farmer Mac has a related party relationship with CoBank because CoBank is a major holder (32.6%) of Farmer Mac Class B voting common stock and because a member of Farmer Mac's board of directors has an affiliation with that entity.

4. INVESTMENT SECURITIES

The following tables set forth information about Farmer Mac's investment securities as of December 31, 2018 and 2017:

Table 4.1

	As of December 31, 2018					Fair Value
	Amount Outstanding (in thousands)	Unamortized Premium/(Discount)	Amortized Cost	Unrealized Gains	Unrealized Losses	
Available-for-sale:						
Floating rate auction-rate certificates backed by Government guaranteed student loans	\$ 19,700	\$ —	\$ 19,700	\$ —	\$ (985)	\$ 18,715
Floating rate asset-backed securities	28,940	(136)	28,804	2	(128)	28,678
Floating rate Government/GSE guaranteed mortgage-backed securities	1,379,472	1,528	1,381,000	721	(4,267)	1,377,454
Fixed rate GSE guaranteed mortgage-backed securities ⁽¹⁾	384	1	385	18	—	403
Fixed rate U.S. Treasuries	797,913	(4,882)	793,031	119	(548)	792,602
Total available-for-sale	2,226,409	(3,489)	2,222,920	860	(5,928)	2,217,852
Held-to-maturity:						
Fixed rate Government/GSE guaranteed mortgage-backed securities	45,032	—	45,032	562	—	45,594
Total investment securities	\$ 2,271,441	\$ (3,489)	\$ 2,267,952	\$ 1,422	\$ (5,928)	\$ 2,263,446

⁽¹⁾ During second quarter 2018, the remaining premium of an interest-only security was fully amortized because the issuer called the security upon full prepayment of the underlying mortgage loan that collateralized the security.

	As of December 31, 2017					Fair Value
	Amount Outstanding (in thousands)	Unamortized Premium/(Discount)	Amortized Cost	Unrealized Gains	Unrealized Losses	
Available-for-sale:						
Floating rate auction-rate certificates backed by Government guaranteed student loans	\$ 19,700	\$ —	\$ 19,700	\$ —	\$ (886)	\$ 18,814
Floating rate asset-backed securities	34,462	(154)	34,308	22	(120)	34,210
Floating rate Government/GSE guaranteed mortgage-backed securities	1,289,123	2,217	1,291,340	2,215	(3,368)	1,290,187
Fixed rate GSE guaranteed mortgage-backed securities ⁽¹⁾	451	2,138	2,589	2,230	—	4,819
Fixed rate senior agency debt	100,000	—	100,000	—	(49)	99,951
Fixed rate U.S. Treasuries	770,852	(1,836)	769,016	—	(1,592)	767,424
Total available-for-sale	2,214,588	2,365	2,216,953	4,467	(6,015)	2,215,405
Held-to-maturity:						
	45,032	—	45,032	532	—	45,564

Fixed rate Government/GSE guaranteed
mortgage-backed securities

Total investment securities	\$2,259,620	\$ 2,365	\$2,261,985	\$ 4,999	\$(6,015)	\$2,260,969
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⁽¹⁾ Fair value includes \$4.3 million of an interest-only security with a notional amount of \$143.7 million.

Farmer Mac did not sell any securities from its available-for-sale investment portfolio during the year ended December 31, 2018. During the year ended December 31, 2017, Farmer Mac received proceeds of \$10.2 million from the sale of securities from its available-for-sale portfolio, resulting in gross realized gains of \$0.1 million. During the year ended December 31, 2016, Farmer Mac received proceeds of

\$186.8 million from the sale of securities from its available-for-sale investment portfolio, resulting in gross realized gains of \$0.1 million and gross realized losses of \$0.1 million.

As of December 31, 2018 and 2017, unrealized losses on available-for-sale investment securities were as follows:

Table 4.2

	As of December 31, 2018			
	Available-for-Sale Securities			
	Unrealized loss position for less than 12 months		Unrealized loss position for more than 12 months	
	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
	(dollars in thousands)			
Floating rate auction-rate certificates backed by Government guaranteed student loans	\$—	\$—	\$ 18,715	\$(985)
Floating rate asset-backed securities	6,456	(38)	19,058	(90)
Floating rate Government/GSE guaranteed mortgage-backed securities	927,416	(2,907)	196,416	(1,360)
Fixed rate U.S. Treasuries	499,581	(336)	81,597	(212)
Total	\$1,433,453	\$(3,281)	\$ 315,786	\$(2,647)
Number of securities in loss position		72		48
	As of December 31, 2017			
	Available-for-Sale Securities			
	Unrealized loss position for less than 12 months		Unrealized loss position for more than 12 months	
	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
	(in thousands)			
Floating rate auction-rate certificates backed by Government guaranteed student loans	\$—	\$—	\$ 18,814	\$(886)
Floating rate asset-backed securities	—	—	23,145	(120)
Floating rate Government/GSE guaranteed mortgage-backed securities	292,522	(2,337)	221,641	(1,031)
Fixed rate U.S. Treasuries	742,442	(1,572)	24,983	(20)
Fixed rate senior agency debt	—	—	99,951	(49)
Total	\$1,034,964	\$(3,909)	\$ 388,534	\$(2,106)
Number of securities in loss position		40		51

The unrealized losses presented above are principally due to a general widening of market spreads and an increase in the levels of interest rates from the dates of acquisition to December 31, 2018 and 2017, as applicable. The resulting decrease in fair values reflects an increase in the perceived risk by the financial markets related to those securities. As of December 31, 2018 and 2017, all of the investment securities in an unrealized loss position either were backed by the full faith and credit of the U.S. government or had credit ratings of at least "AA+."

Securities in unrealized loss positions for 12 months or longer have a fair value as of December 31, 2018 that is, on average, approximately 99.2% of their amortized cost basis. Farmer Mac believes that all of

these unrealized losses are recoverable within a reasonable period of time by way of maturity or changes in credit spreads. Accordingly, Farmer Mac has concluded that none of the unrealized losses on these available-for-sale investment securities are other-than-temporary impairment as of December 31, 2018 and 2017.

As of December 31, 2018, Farmer Mac owned \$45.0 million of held-to-maturity investment securities at amortized cost with a fair value of \$45.6 million and a weighted average yield of 3.5%. As of December 31, 2017, Farmer Mac owned \$45.0 million of held-to-maturity investment securities at amortized cost with a fair value of \$45.6 million and a weighted average yield of 2.5%. Farmer Mac did not own any trading investment securities as of December 31, 2018 and 2017.

The amortized cost, fair value, and weighted-average yield of available-for-sale investment securities by remaining contractual maturity as of December 31, 2018 are set forth below. Asset-backed and mortgage-backed securities are included based on their final maturities, although the actual maturities may differ due to prepayments of the underlying assets.

Table 4.3

	As of December 31, 2018		
	Available-for-Sale Securities		
	Amortized Cost	Fair Value	Weighted- Average Yield
	(dollars in thousands)		
Due within one year	\$767,989	\$767,536	1.29%
Due after one year through five years	217,450	217,443	2.76%
Due after five years through ten years	646,531	644,361	2.72%
Due after ten years	590,950	588,512	2.92%
Total	\$2,222,920	\$2,217,852	2.28%

5. FARMER MAC GUARANTEED SECURITIES AND USDA SECURITIES

The following tables set forth information about on-balance sheet Farmer Mac Guaranteed Securities and USDA Securities as of December 31, 2018 and 2017:

Table 5.1

	As of December 31, 2018					
	Unpaid Principal Balance (in thousands)	Unamortized Premium/(Discount)	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Held-to-maturity:						
AgVantage	\$2,069,185	\$ (194)	\$2,068,991	\$2,637	\$(11,948)	\$2,059,680
Farmer Mac Guaranteed USDA Securities	27,383	244	27,627	98	—	27,725
Total Farmer Mac Guaranteed Securities	2,096,568	50	2,096,618	2,735	(11,948)	2,087,405
USDA Securities	2,110,963	55,211	2,166,174	—	(62,227)	2,103,947
Total held-to-maturity	\$4,207,531	\$ 55,261	\$4,262,792	\$ 2,735	\$(74,175)	\$4,191,352
Available-for-sale:						
AgVantage	\$6,003,733	\$ (204)	\$6,003,529	\$22,335	\$(51,367)	\$5,974,497
Trading:						
USDA Securities	\$9,591	\$ 701	\$10,292	\$ 20	\$(313)	\$9,999
	As of December 31, 2017					
	Unpaid Principal Balance (in thousands)	Unamortized Premium/(Discount)	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Held-to-maturity:						
AgVantage	\$2,096,754	\$ (779)	\$2,095,975	\$2,011	\$(11,429)	\$2,086,557
Farmer Mac Guaranteed USDA Securities	29,980	319	30,299	108	(73)	30,334
Total Farmer Mac Guaranteed Securities	2,126,734	(460)	2,126,274	2,119	(11,502)	2,116,891
USDA Securities	2,055,050	62,800	2,117,850	—	(54,969)	2,062,881
Total held-to-maturity	\$4,181,784	\$ 62,340	\$4,244,124	\$ 2,119	\$(66,471)	\$4,179,772
Available-for-sale:						
AgVantage	\$5,496,569	\$ (182)	\$5,496,387	\$21,838	\$(46,311)	\$5,471,914
Trading:						
USDA Securities	\$12,966	\$ 922	\$13,888	\$ 28	\$(401)	\$13,515

As of December 31, 2018 and 2017, unrealized losses on held-to-maturity and available-for-sale on-balance sheet Farmer Mac Guaranteed Securities and USDA Securities were as follows:

Table 5.2

		As of December 31, 2018			
		Held-to-Maturity and Available-for-Sale Securities			
		Unrealized loss position for less than 12 months		Unrealized loss position for more than 12 months	
		Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
(dollars in thousands)					
Held-to-maturity:					
AgVantage		\$669,610	\$(1,760)	\$976,318	\$(10,188)
USDA Securities		38,203	(696)	2,065,743	(61,531)
Total held-to-maturity		\$707,813	\$(2,456)	\$3,042,061	\$(71,719)
Available-for-sale:					
AgVantage		\$1,480,423	\$(9,364)	\$1,599,679	\$(42,003)
		As of December 31, 2017			
		Held-to-Maturity and Available-for-Sale Securities			
		Unrealized loss position for less than 12 months		Unrealized loss position for more than 12 months	
		Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
(in thousands)					
Held-to-maturity:					
AgVantage		\$1,304,160	\$(8,094)	\$351,664	\$(3,335)
Farmer Mac Guaranteed	USDA Securities	24,721	(73)	—	—
USDA Securities		451	(2)	2,062,429	(54,967)
Total held-to-maturity		\$1,329,332	\$(8,169)	\$2,414,093	\$(58,302)
Available-for-sale:					
AgVantage		\$1,273,965	\$(8,819)	\$1,759,377	\$(37,492)

The unrealized losses presented above are principally due to higher interest rates from the date of acquisition to December 31, 2018 and 2017, as applicable. The unrealized losses on the held-to-maturity USDA Securities as of both December 31, 2018 and 2017 reflect their increased cost basis resulting from their transfer to held-to-maturity as of October 1, 2016.

The credit exposure related to Farmer Mac's USDA Guarantees line of business is covered by the full faith and credit guarantee of the United States.

The unrealized losses from AgVantage securities were on 38 and 36 available-for-sale securities as of December 31, 2018 and 2017, respectively. There were 43 and 23 held-to-maturity AgVantage securities with an unrealized loss as of December 31, 2018 and 2017, respectively. As of December 31, 2018, 21 available-for-sale AgVantage securities had been in a loss position for more than 12 months. As of

December 31, 2017, 16 available-for-sale AgVantage securities had been in a loss position for more than 12 months. Farmer Mac has concluded that none of the unrealized losses on its held-to-maturity Farmer Mac Guaranteed Securities and USDA Securities and available-for-sale Farmer Mac Guaranteed Securities are other-than-temporary impaired as of either December 31, 2018 or December 31, 2017. Farmer Mac does not intend to sell these securities, and it is not more likely than not that Farmer Mac will be required to sell the securities before recovery of the amortized cost basis.

During the years ended December 31, 2018, 2017 and 2016, Farmer Mac realized no gains or losses from the sale of Farmer Mac Guaranteed Securities and USDA Securities.

The amortized cost, fair value, and weighted-average yield of available-for-sale and held-to-maturity Farmer Mac Guaranteed Securities and USDA Securities by remaining contractual maturity as of December 31, 2018 are set forth below. The balances presented are based on their final maturities, although the actual maturities may differ due to prepayments of the underlying assets.

Table 5.3

	As of December 31, 2018			
	Available-for-Sale Securities			
	Amortized Cost	Fair Value	Weighted- Average Yield	
	(dollars in thousands)			
Due within one year	\$618,461	\$618,825	2.87	%
Due after one year through five years	2,889,110	2,887,325	3.12	%
Due after five years through ten years	1,248,615	1,239,658	3.21	%
Due after ten years	1,247,343	1,228,689	3.61	%
Total	\$6,003,529	\$5,974,497	3.22	%
	As of December 31, 2018			
	Held-to-Maturity Securities			
	Amortized Cost	Fair Value	Weighted- Average Yield	
	(dollars in thousands)			
Due within one year	\$762,474	\$759,480	2.11	%
Due after one year through five years	1,388,053	1,379,827	3.04	%
Due after five years through ten years	212,283	205,952	3.39	%
Due after ten years	1,899,982	1,846,093	3.57	%
Total	\$4,262,792	\$4,191,352	3.12	%

As of December 31, 2018, Farmer Mac owned trading USDA Securities with an amortized cost of \$10.3 million, a fair value of \$10.0 million, and a weighted-average yield of 5.21 percent. As of December 31, 2017, Farmer Mac owned trading USDA Securities with an amortized cost of \$13.9 million, a fair value of \$13.5 million, and a weighted-average yield of 5.33 percent.

6. FINANCIAL DERIVATIVES

Farmer Mac enters into financial derivative transactions principally to protect against risk from the effects of market price or interest rate movements on the value of certain assets, future cash flows, or debt issuance, and not for trading or speculative purposes. Certain financial derivatives are designated as fair value hedges of fixed rate assets, primarily classified as available-for-sale, to protect against fair value changes in the assets related to a benchmark interest rate (e.g., LIBOR). Other financial derivatives are designated as cash flow hedges to mitigate the volatility of future interest rate payments on floating rate debt.

Farmer Mac manages the interest rate risk related to loans it has committed to acquire, but has not yet permanently funded, through the use of forward sale contracts on the debt of other GSEs and futures contracts involving U.S. Treasury securities. Farmer Mac uses forward sale contracts on GSE securities to reduce its interest rate exposure to changes in both U.S. Treasury rates and spreads on Farmer Mac debt. The notional amounts of these contracts are determined based on a duration-matched hedge ratio between the hedged item and the hedge instrument. Gains or losses generated by these hedge transactions are expected to offset changes in funding costs. All financial derivatives are recorded on the balance sheet at fair value as a freestanding asset or liability.

Effective first quarter 2018, Farmer Mac adopted ASU 2017-12, "Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities." This ASU reduces the complexity of hedge accounting by eliminating the requirement to separately measure and report hedge ineffectiveness and by requiring the entire change in the fair value of a hedging instrument to be presented in the same income statement line as the income or expense effect from the hedged item. Upon the adoption of the ASU, Farmer Mac elected to retrospectively designate the hedged risk of its fair value hedges as the risk of changes in fair value resulting from changes in the benchmark interest rate component of the contractual coupon cash flows. Farmer Mac made this election for its fair value hedges designated upon the inception of the hedging instruments. For fair value hedges designated after the inception of the hedging instruments, Farmer Mac continues to designate the hedged risk as the risk of changes in fair value based on total contractual coupon cash flows. The adoption of the new guidance did not have a material effect on Farmer Mac's financial position, results of operations, or cash flows.

The following tables summarize information related to Farmer Mac's financial derivatives on a gross basis without giving consideration to master netting arrangements as of December 31, 2018 and 2017:

Table 6.1

	As of December 31, 2018			Weighted- Average Pay Rate	Weighted- Average Receive Rate	Weighted- Average Forward Price	Weighted- Average Remaining Term (in years)
	Notional Amount	Fair Value Asset	(Liability)				
(dollars in thousands)							
Fair value hedges:							
Interest rate swaps:							
Pay fixed non-callable	\$3,097,084	\$3,004	\$(4,326)	2.42%	2.58%		9.75
Receive fixed non-callable	2,031,200	885	(4,512)	2.49%	1.94%		1.68
Cash flow hedges:							
Interest rate swaps:							
Pay fixed non-callable	373,000	2,441	(99)	2.40%	2.83%		6.12
No hedge designation:							
Interest rate swaps:							
Pay fixed non-callable	316,664	796	(10,399)	3.69%	2.52%		6.25
Receive fixed non-callable	2,347,371	—	—	2.37%	2.10%		0.86
Basis swaps	1,770,026	421	(130)	2.45%	2.49%		1.27
Treasury futures	20,400	—	(188)			121.09	
Credit valuation adjustment		(60)	21				
Total financial derivatives	\$9,955,745	\$7,487	\$(19,633)				
Collateral pledged		(1,778)	47,018				
Net amount		\$5,709	\$27,385				

As of December 31, 2017							
	Fair Value			Weighted- Average Pay Rate	Weighted- Average Receive Rate	Weighted- Average Forward Price	Weighted- Average Remaining Term (in years)
	Notional Amount	Asset	(Liability)				
(dollars in thousands)							
Fair value hedges:							
Interest rate swaps:							
Pay fixed non-callable	\$2,086,347	\$5,240	\$(5,990)	1.88%	1.40%		5.46
Receive fixed non-callable	1,559,700	110	(4,033)	1.38%	1.45%		1.68
Cash flow hedges:							
Interest rate swaps:							
Pay fixed non-callable	365,500	1,402	(138)	2.16%	1.74%		5.84
No hedge designation:							
Interest rate swaps:							
Pay fixed non-callable	345,333	339	(16,352)	3.79%	1.40%		6.68
Receive fixed non-callable	3,409,916	—	—	1.25%	1.24%		0.92
Basis swaps	1,053,500	18	(106)	1.33%	1.42%		0.91
Treasury futures	40,000	—	(36)			123.96	
Credit valuation adjustment		(16)	56				
Total financial derivatives	\$8,860,296	\$7,093	\$(26,599)				
Collateral pledged		—	24,926				
Net amount		\$7,093	\$(1,673)				

As of December 31, 2018, Farmer Mac expects to reclassify \$1.7 million after tax from accumulated other comprehensive income to earnings over the next twelve months. This amount could differ from amounts actually recognized due to changes in interest rates, hedge de-designations, and the addition of other hedges after December 31, 2018. During the years ended December 31, 2018 and 2017, there were no gains or losses from interest rate swaps designated as cash flow hedges reclassified to earnings because it became probable that the original forecasted transaction would not occur.

The following table summarizes the net income/(expense) recognized in the consolidated statements of operations related to derivatives for the years ended December 31, 2018, 2017, and 2016:

Table 6.2

	For the Year Ended December 31, 2018				
	Net Income/(Expense) Recognized in Consolidated Statement of Operations on Derivatives				
	Net Interest Income			Non-Interest	
	Interest Income			Income	
	Farmer				
	Mac	Interest	Total	(Losses)/gains	Total
	Guaranteed	Income	Interest	on financial	
	Securities	Loans	Expense	derivatives	
	and				
	USDA				
	Securities				
	(in thousands)				
Total amounts presented in the consolidated statement of operations:	\$290,953	\$198,152	\$(369,848)	\$ (3,687)	\$115,570
Income/(expense) related to interest settlements on fair value hedging relationships:					
Recognized on derivatives	1,861	(630)	(7,995)	—	(6,764)
Recognized on hedged items	65,238	6,284	(36,837)	—	34,685
Discount amortization recognized on hedged items	—	—	(668)	—	(668)
Income/(expense) related to interest settlements on fair value hedging relationships	\$67,099	\$5,654	\$(45,500)	\$ —	\$27,253
Gains/(losses) on fair value hedging relationships:					
Recognized on derivatives	(20,279)	5,031	835	—	(14,413)
Recognized on hedged items	21,460	(5,243)	3,137	—	19,354
Gains/(losses) on fair value hedging relationships	\$1,181	\$(212)	\$3,972	\$ —	\$4,941
Expense related to interest settlements on cash flow hedging relationships:					
Interest settlements reclassified from AOCI into net income on derivatives	—	—	316	—	316
Recognized on hedged items	—	—	(9,182)	—	(9,182)
Discount amortization recognized on hedged items	—	—	(6)	—	(6)
Expense recognized on cash flow hedges	\$—	\$—	\$(8,872)	\$ —	\$(8,872)
Losses on financial derivatives not designated in hedge relationships:					
Gains on interest rate swaps	—	—	—	7,206	7,206
Interest expense on interest rate swaps	—	—	—	(10,920)	(10,920)
Treasury futures	—	—	—	27	27
	\$—	\$—	\$—	\$ (3,687)	\$(3,687)

Losses on financial derivatives not designated in hedge relationships

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For the Year Ended December 31, 2017
 Net Income/(Expense) Recognized in Consolidated
 Statement of Operations on Derivatives

	Net Interest Income		Non-Interest Income		
	Interest Income	Farmer Mac Interest Guaranteed Securities and USDA Securities	Total Interest Expense	(Losses)/gains on financial derivatives	Total
(in thousands)					
Total amounts presented in the consolidated statement of operations	\$203,796	\$162,150	\$(242,885)	\$ 753	\$123,814
Income/(expense) related to interest settlements on fair value hedging relationships:					
Recognized on derivatives	(10,346)	(1,141)	2,642	—	(8,845)
Recognized on hedged items	46,389	3,379	(14,283)	—	35,485
Discount amortization recognized on hedged items	—	—	(345)	—	(345)
Income/(expense) related to interest settlements on fair value hedging relationships	\$36,043	\$2,238	\$(11,986)	\$ —	\$26,295
Losses on fair value hedging relationships:					
Recognized on derivatives ⁽¹⁾	—	—	—	1,694	1,694
Recognized on hedged items	—	—	—	(2,413)	(2,413)
Losses on fair value hedging relationships	\$—	\$—	\$—	\$ (719)	\$(719)
Expense related to interest settlements on cash flow hedging relationships:					
Interest settlements reclassified from AOCI into net income on derivatives	\$—	\$—	\$(1,974)	\$ —	\$(1,974)
Recognized on hedged items	—	—	(4,133)	—	(4,133)
Discount amortization recognized on hedged items	—	—	(5)	—	(5)
Losses recognized in income for hedge ineffectiveness	—	—	—	(320)	(320)
Expense recognized on cash flow hedges	\$—	\$—	\$(6,112)	\$ (320)	\$(6,432)
Gains on financial derivatives not designated in hedging relationships:					
Gains on interest rate swaps	\$—	\$—	\$—	\$ 12,240	\$12,240
Interest expense on interest rate swaps	—	—	—	(10,200)	(10,200)
Agency forwards	—	—	—	(588)	(588)
Treasury futures	—	—	—	340	340
Gains on financial derivatives not designated in hedge relationships	\$—	\$—	\$—	\$ 1,792	\$1,792

⁽¹⁾ Included in the assessment of hedge effectiveness as of December 31, 2017, but excluded from the amounts in the table, were gains of \$0.1 million for the year ended December 31, 2017, attributable to the fair value of the swaps

at the inception of the hedging relationship. Accordingly, the amount recognized as hedge ineffectiveness for the year ended December 31, 2017 were gains of \$0.6 million.

For the Year Ended December 31, 2016
 Net Income/(Expense) Recognized in Consolidated
 Statement of Operations on Derivatives

	Net Interest Income		Non-Interest Income		
	Interest Income	Farmer Mac Interest Guaranteed Securities and USDA Securities	Total Interest Expense	(Losses)/gains on financial derivatives	Total
(in thousands)					
Total amounts presented in the consolidated statement of operations	\$ 150,281	\$ 134,577	\$(171,626)	\$ 2,311	\$ 115,543
Income/(expense) related to interest settlements on fair value hedging relationships:					
Recognized on derivatives	(15,494)	(1,011)	132	—	(16,373)
Recognized on hedged items	35,169	2,063	—	—	37,232
Discount amortization recognized on hedged items	—	—	—	—	—
Income/(expense) related to interest settlements on fair value hedging relationships	\$ 19,675	\$ 1,052	\$ 132	\$ —	\$ 20,859
Gains on fair value hedging relationships:					
Recognized on derivatives ⁽¹⁾	—	—	—	25,365	25,365
Recognized on hedged items	—	—	—	(20,322)	(20,322)
Gains on fair value hedging relationships	\$—	\$—	\$—	\$ 5,043	\$ 5,043
Expense related to interest settlements on cash flow hedging relationships:					
Interest settlements reclassified from AOCI into net income on derivatives	\$—	\$—	\$(2,126)	\$ —	\$(2,126)
Recognized on hedged items	—	—	(1,437)	—	(1,437)
Discount amortization recognized on hedged items	—	—	(1)	—	(1)
Losses recognized in income for hedge ineffectiveness	—	—	—	(353)	(353)
Expense recognized on cash flow hedges	\$—	\$—	\$(3,564)	\$ (353)	\$(3,917)
Losses on financial derivatives not designated in hedging relationships:					
Gains on interest rate swaps	\$—	\$—	\$—	\$ 9,489	\$ 9,489
Interest expense on interest rate swaps	—	—	—	(11,480)	(11,480)
Agency forwards	—	—	—	(226)	(226)
Treasury futures	—	—	—	(162)	(162)
Losses on financial derivatives not designated in hedge relationships	\$—	\$—	\$—	\$ (2,379)	\$(2,379)

⁽¹⁾ Included in the assessment of hedge effectiveness as of December 31, 2016, but excluded from the amounts in the table, were losses of \$5.2 million for the year ended December 31, 2016, attributable to the fair value of the swaps

at the inception of the hedging relationship. Accordingly, the amounts recognized as hedge ineffectiveness for the year ended December 31, 2016 were gains of \$0.2 million.

The following table shows the carrying amount and associated cumulative basis adjustment related to the application of hedge accounting that is included in the carrying amount of hedged assets and liabilities in fair value hedging relationships as of December 31, 2018 and 2017:

Table 6.3

	Carrying Amount of Hedged Assets/(Liabilities)		Hedged Items in Fair Value Relationship Cumulative Amount of Fair Value Hedging Adjustments included in the Carrying Amount of the Hedged Assets/(Liabilities)	
	December 31, 2018	December 31, 2017	December 31, 2018	December 31, 2017
	(in thousands)			
Farmer Mac Guaranteed Securities, Available-for-Sale, at fair value	\$2,882,919	\$1,928,220	\$(906)	\$(22,853)
Loans held for investment, at amortized cost	194,617	149,304	(5,287)	(189)
Notes Payable, due after one year ⁽¹⁾⁽²⁾	(2,021,356)	(1,552,935)	8,785	5,836

⁽¹⁾ Carrying amount represents amortized cost.

⁽²⁾ Includes \$0.3 million of hedging adjustments on a discontinued hedging relationship.

As of December 31, 2018 and 2017, Farmer Mac's credit exposure to interest rate swap counterparties, excluding netting arrangements and any adjustment for nonperformance risk, but including accrued interest, was \$51.3 million and \$28.5 million, respectively; however, including netting arrangements and accrued interest, Farmer Mac's credit exposure was \$3.1 million and \$0.5 million as of December 31, 2018 and 2017, respectively. As of December 31, 2018, Farmer Mac held \$0.7 million of cash and \$1.1 million of investment securities as collateral for its derivatives in net asset positions resulting in uncollateralized net asset positions of \$1.4 million. As of December 31, 2017, Farmer Mac held no cash collateral for its derivatives in net asset positions, resulting in uncollateralized net asset positions of \$0.5 million.

As of December 31, 2018 and 2017, the fair value of Farmer Mac's derivatives in a net liability position including accrued interest but excluding netting arrangements and any adjustment for nonperformance risk, was \$78.4 million and \$58.2 million, respectively; however, including netting arrangements and accrued interest, the fair value of Farmer Mac's derivatives in a net liability position at the counterparty level was \$13.9 million and \$28.0 million as of December 31, 2018 and 2017, respectively. Farmer Mac posted cash of \$0 and \$47.0 million of investment securities as of December 31, 2018 and posted cash of \$0.1 million and \$24.8 million investment securities as of December 31, 2017. Farmer Mac records posted cash as a reduction in the outstanding balance of cash and cash equivalents and an increase in the balance of prepaid expenses and other assets. Any investment securities posted as collateral are included in the investment securities balances on the consolidated balance sheets. If Farmer Mac had breached certain provisions of the derivative contracts as of December 31, 2018 and 2017, it could have been required to settle its obligations under the agreements or post additional collateral of none and \$3.1 million, respectively. As of December 31, 2018 and 2017, there were no financial derivatives in a net payable position where Farmer Mac was required to pledge collateral which the counterparty had the right to sell or repledge.

For certain derivatives, Farmer Mac clears interest rate swaps through a clearinghouse, the Chicago Mercantile Exchange ("CME"). Farmer Mac posts initial and variation margin to this clearinghouse through which centrally-cleared derivatives and futures contracts are traded. These collateral postings expose Farmer Mac to institutional credit risk in the event that either the clearinghouse or the futures commission merchant that Farmer Mac uses to post collateral to the clearinghouse fails to meet its

obligations. Conversely, the use of centrally-cleared derivatives mitigates Farmer Mac's credit risk to individual counterparties because clearinghouses assume the credit risk among counterparties in centrally-cleared derivatives transactions. Of Farmer Mac's \$9.9 billion notional amount of interest rate swaps outstanding as of December 31, 2018, \$8.5 billion were cleared through the swap clearinghouse. Of Farmer Mac's \$8.8 billion notional amount of interest rate swaps outstanding as of December 31, 2017, \$7.9 billion were cleared through the swap clearinghouse.

7. NOTES PAYABLE

Farmer Mac's borrowings consist of discount notes and medium-term notes, both of which are unsecured general obligations of Farmer Mac. Discount notes generally have original maturities of 1.0 year or less, whereas medium-term notes generally have maturities of 0.5 years to 15.0 years.

The following tables set forth information related to Farmer Mac's borrowings as of December 31, 2018 and 2017:

Table 7.1

	December 31, 2018		Average Outstanding	
	Outstanding as of December 31	Weighted- Average Rate	Amount	Weighted- Average Rate
	(dollars in thousands)			
Due within one year:				
Discount notes	\$1,586,385	2.35 %	\$1,432,470	1.83 %
Medium-term notes	1,826,380	2.29 %	1,977,445	1.83 %
Current portion of long-term notes	4,344,285	1.93 %		
Total due within one year	\$7,757,050	2.10 %		
Due after one year:				
Medium-term notes due in:				
2020	\$3,090,405	2.11 %		
2021	2,220,651	2.41 %		
2022	859,470	2.19 %		
2023	881,738	2.88 %		
Thereafter	1,434,383	3.34 %		
Total due after one year	8,486,647	2.48 %		
Total	\$16,243,697	2.30 %		

	December 31, 2017			
	Outstanding as of December 31		Average Outstanding During the Year	
	Amount	Weighted- Average Rate	Amount	Weighted- Average Rate
	(dollars in thousands)			
Due within one year:				
Discount notes	\$1,724,969	1.20 %	\$2,262,582	0.86 %
Medium-term notes	2,560,211	1.27 %	2,885,966	1.04 %
Current portion of long-term notes	3,804,646	1.23 %		
Total due within one year	\$8,089,826	1.24 %		
Due after one year:				
Medium-term notes due in:				
2019	\$2,644,734	1.48 %		
2020	1,842,143	1.68 %		
2021	849,263	1.85 %		
2022	790,564	2.03 %		
Thereafter	1,306,086	3.05 %		
Total due after one year	7,432,790	1.91 %		
Total	\$15,522,616	1.56 %		

The maximum amount of Farmer Mac's discount notes outstanding at any month end during each of the years ended December 31, 2018 and 2017 was \$1.6 billion and \$3.3 billion, respectively.

Callable medium-term notes give Farmer Mac the option to redeem the debt at par value on a specified call date or at any time on or after a specified call date. The following table summarizes by maturity date the amounts and costs for Farmer Mac debt callable in 2019 as of December 31, 2018:

Table 7.2

Debt Callable in 2019 as of
December 31, 2018

	Amount	Weighted-Average Rate	
	(dollars in thousands)		
Maturity:			
2020	\$ 239,327	2.13	%
2021	409,629	2.38	%
2022	165,810	2.31	%
2023	253,758	3.14	%
Thereafter	294,720	3.27	%
Total	\$ 1,363,244	2.66	%

The following schedule summarizes the earliest interest rate reset date of total borrowings outstanding as of December 31, 2018, including callable and non-callable medium-term notes, assuming callable notes are redeemed at the initial call date:

Table 7.3

	Earliest Interest Rate Reset Date of Borrowings Outstanding	
	Amount	Weighted-Average Rate
	(dollars in thousands)	
Debt with interest rate resets in:		
2019	\$9,668,398	2.20%
2020	2,210,866	1.94%
2021	1,565,748	2.32%
2022	788,504	2.16%
2023	836,768	2.88%
Thereafter	1,173,413	3.43%
Total	\$16,243,697	2.30%

During 2018 and 2017, Farmer Mac called \$0.0 million and \$24.0 million of callable medium-term notes, respectively.

Authority to Borrow from the U.S. Treasury

Farmer Mac's statutory charter authorizes it to borrow up to \$1.5 billion from the U.S. Treasury through the issuance of debt obligations to the U.S. Treasury. Any funds borrowed from the U.S. Treasury may be used solely for the purpose of fulfilling Farmer Mac's guarantee obligations. Any debt obligations issued by Farmer Mac under this authority would bear interest at a rate determined by the U.S. Treasury, taking into consideration the average rate on outstanding marketable obligations of the United States as of the last day of the last calendar month ending before the date of the purchase of the obligations from Farmer Mac. The charter requires Farmer Mac to repurchase any of its debt obligations held by the U.S. Treasury within a reasonable time. As of December 31, 2018, Farmer Mac had not used this borrowing authority and does not expect to use this borrowing authority in the future.

Gains on Repurchase of Outstanding Debt

No outstanding debt repurchases were made in 2018, 2017, or 2016.

8. LOANS AND ALLOWANCE FOR LOSSES

Loans

Farmer Mac classifies loans as either held for investment or held for sale. Loans held for investment are recorded at the unpaid principal balance, net of unamortized premium or discount and other cost adjustments. Loans held for sale are reported at the lower of cost or fair value determined on a pooled basis. As of December 31, 2018 and 2017, Farmer Mac had no loans held for sale. The following table displays the composition of the loan balances as of December 31, 2018 and 2017:

Table 8.1

	As of December 31, 2018			As of December 31, 2017		
	Unsecuritized	In Consolidated	Total	Unsecuritized	In Consolidated	Total
	Trusts			Trusts		
	(in thousands)					
Farm & Ranch	\$3,071,222	\$ 1,517,101	\$4,588,323	\$2,798,906	\$ 1,399,827	\$4,198,733
Rural Utilities	938,843	—	938,843	1,076,291	—	1,076,291
Total unpaid principal balance ⁽¹⁾	4,010,065	1,517,101	5,527,166	3,875,197	1,399,827	5,275,024
Unamortized premiums, discounts, and other cost basis adjustments	(5,097)	—	(5,097)	(1,442)	—	(1,442)
Total loans	4,004,968	1,517,101	5,522,069	3,873,755	1,399,827	5,273,582
Allowance for loan losses	(5,565)	(1,452)	(7,017)	(5,493)	(1,303)	(6,796)
Total loans, net of allowance	\$3,999,403	\$ 1,515,649	\$5,515,052	\$3,868,262	\$ 1,398,524	\$5,266,786

⁽¹⁾ Unpaid principal balance is the basis of presentation in disclosures of outstanding balances for Farmer Mac's lines of business.

Allowance for Losses

Farm & Ranch

Farmer Mac maintains an allowance for losses presented in two components on its consolidated balance sheets: (1) an allowance for loan losses to account for estimated probable losses on loans held, and (2) a reserve for losses to account for estimated probable losses on loans underlying LTSPCs and off-balance sheet Farmer Mac Guaranteed Securities (excluding AgVantage securities). Farmer Mac's total allowance for losses was \$9.2 million as of December 31, 2018 and \$8.9 million as of December 31, 2017. See Note 12 for more information about off-balance sheet Farmer Mac Guaranteed Securities and LTSPCs.

The following is a summary of the changes in the total allowance for losses for each year in the three-year period ended December 31, 2018:

Table 8.2

	Allowance for Loan Losses	Reserve for Losses	Total Allowance for Losses
	(in thousands)		
Balance as of December 31, 2015	\$4,480	\$ 2,083	\$ 6,563
Provision for/(release of) losses	1,065	(63)	1,002
Charge-offs	(130)	—	(130)
Balance as of December 31, 2016	\$5,415	\$ 2,020	\$ 7,435
Provision for/(release of) losses	1,708	50	1,758
Charge-offs	(327)	—	(327)
Balance as of December 31, 2017	\$6,796	\$ 2,070	\$ 8,866
Provision for/(release of) losses	238	97	335
Charge-offs	(17)	—	(17)
Balance as of December 31, 2018	\$7,017	\$ 2,167	\$ 9,184

The total allowance for losses has increased because of increased loan volume within Farmer Mac's Farm & Ranch portfolio. The total allowance for losses in the Farm & Ranch portfolio, as a percentage of outstanding loan volume, has remained consistent in recent years. The total provision for losses decreased by \$1.4 million during 2018 as compared to 2017 primarily due to decreased loan growth year-over-year and modestly improved credit quality in the Farm & Ranch portfolio.

During 2017, the net provisions to the allowance for loan losses recorded were primarily attributable to (1) an increase in the general allowance due to overall net volume growth in on-balance sheet Farm & Ranch loans, and (2) an increase in the specific allowance for certain impaired on-balance sheet crop and permanent planting loans resulting from both an increase in the outstanding loan balance of such loans and downgrades in risk ratings on some of those loans. The net provision to the reserve for losses recorded during 2017 was primarily attributable to an increase in the general reserve due to downgrades in risk ratings on certain unimpaired Agricultural Storage and Processing loans underlying LTSPCs.

During 2016, the provisions to its allowance for loan losses recorded were attributable to an increase in the general allowance due to overall net volume growth in on-balance sheet Farm & Ranch loans and downgrades in risk ratings for certain loans. The releases to the reserve for losses recorded during the year ended December 31, 2016 were attributable to the release of a specific reserve on an impaired livestock loan underling an LTSPC that was required to be removed from the LTPSC pool by the originator during 2016.

The following tables present the changes in the total allowance for losses for the years ended December 31, 2018, 2017, and 2016 by commodity type:

Table 8.3

	For the Year Ended December 31, 2018						
	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	Total
	(in thousands)						
Beginning Balance	\$4,081	\$ 2,469	\$ 1,211	\$ 481	\$ 606	\$ 18	\$8,866
Provision for/(release of) losses	313	(343)	249	10	114	(8)	335
Charge-offs	—	—	—	(17)	—	—	(17)
Ending Balance	\$4,394	\$ 2,126	\$ 1,460	\$ 474	\$ 720	\$ 10	\$9,184
	For the Year Ended December 31, 2017						
	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	Total
	(in thousands)						
Beginning Balance	\$3,365	\$ 1,723	\$ 1,375	\$ 405	\$ 533	\$ 34	\$7,435
Provision for/(release of) losses	944	816	(151)	92	73	(16)	1,758
Charge-offs	(228)	(70)	(13)	(16)	—	—	(327)
Ending Balance	\$4,081	\$ 2,469	\$ 1,211	\$ 481	\$ 606	\$ 18	\$8,866
	For the Year Ended December 31, 2016						
	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	Total
	(in thousands)						
Beginning Balance	\$2,791	\$ 931	\$ 1,781	\$ 408	\$ 649	\$ 3	\$6,563
Provision for/(release of) losses	574	792	(406)	127	(116)	31	1,002
Charge-offs	—	—	—	(130)	—	—	(130)
Ending Balance	\$3,365	\$ 1,723	\$ 1,375	\$ 405	\$ 533	\$ 34	\$7,435

The following tables present the unpaid principal balances of loans held and loans underlying LTSPCs and off-balance sheet Farmer Mac Guaranteed Securities (excluding AgVantage securities) and the related total allowance for losses by impairment method and commodity type as of December 31, 2018 and 2017:

Table 8.4

As of December 31, 2018							
	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	Total
	(in thousands)						
Ending Balance:							
Collectively evaluated for impairment:							
On-balance sheet	\$2,452,803	\$952,719	\$705,752	\$329,070	\$ 12,097	\$4,477	\$4,456,918
Off-balance sheet	1,239,094	515,520	624,522	166,907	73,084	3,286	2,622,413
Total	\$3,691,897	\$1,468,239	\$1,330,274	\$495,977	\$ 85,181	\$7,763	\$7,079,331
Individually evaluated for impairment:							
On-balance sheet	\$66,432	\$36,333	\$21,361	\$7,278	\$ —	\$—	\$131,404
Off-balance sheet	13,298	5,249	3,737	883	—	69	23,236
Total	\$79,730	\$41,582	\$25,098	\$8,161	\$ —	\$69	\$154,640
Total Farm & Ranch loans:							
On-balance sheet	\$2,519,235	\$989,052	\$727,113	\$336,348	\$ 12,097	\$4,477	\$4,588,322
Off-balance sheet	1,252,392	520,769	628,259	167,790	73,084	3,355	2,645,649
Total	\$3,771,627	\$1,509,821	\$1,355,372	\$504,138	\$ 85,181	\$7,832	\$7,233,971
Allowance for Losses:							
Collectively evaluated for impairment:							
On-balance sheet	\$2,120	\$822	\$731	\$303	\$ 84	\$4	\$4,064
Off-balance sheet	668	170	207	29	636	5	1,715
Total	\$2,788	\$992	\$938	\$332	\$ 720	\$9	\$5,779
Individually evaluated for impairment:							
On-balance sheet	\$1,329	\$1,065	\$437	\$122	\$ —	\$—	\$2,953
Off-balance sheet	277	69	85	20	—	1	452
Total	\$1,606	\$1,134	\$522	\$142	\$ —	\$1	\$3,405
Total Farm & Ranch loans:							
On-balance sheet	\$3,449	\$1,887	\$1,168	\$425	\$ 84	\$4	\$7,017
Off-balance sheet	945	239	292	49	636	6	2,167
Total	\$4,394	\$2,126	\$1,460	\$474	\$ 720	\$10	\$9,184

As of December 31, 2017

	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	Total
	(in thousands)						
Ending Balance:							
Collectively evaluated for impairment:							
On-balance sheet	\$2,344,821	\$794,478	\$635,768	\$269,337	\$13,023	\$9,030	\$4,066,457
Off-balance sheet	1,236,392	532,666	678,642	155,627	45,738	4,981	2,654,046
Total	\$3,581,213	\$1,327,144	\$1,314,410	\$424,964	\$58,761	\$14,011	\$6,720,503
Individually evaluated for impairment:							
On-balance sheet	\$67,828	\$38,180	\$17,766	\$7,858	\$—	\$644	\$132,276
Off-balance sheet	8,904	2,239	2,782	806	—	76	14,807
Total	\$76,732	\$40,419	\$20,548	\$8,664	\$—	\$720	\$147,083
Total Farm & Ranch loans:							
On-balance sheet	\$2,412,649	\$832,658	\$653,534	\$277,195	\$13,023	\$9,674	\$4,198,733
Off-balance sheet	1,245,296	534,905	681,424	156,433	45,738	5,057	2,668,853
Total	\$3,657,945	\$1,367,563	\$1,334,958	\$433,628	\$58,761	\$14,731	\$6,867,586
Allowance for Losses:							
Collectively evaluated for impairment:							
On-balance sheet	\$2,104	\$1,101	\$738	\$287	\$44	\$11	\$4,285
Off-balance sheet	546	305	231	48	562	5	1,697
Total	\$2,650	\$1,406	\$969	\$335	\$606	\$16	\$5,982
Individually evaluated for impairment:							
On-balance sheet	\$1,207	\$1,006	\$172	\$126	\$—	\$—	\$2,511
Off-balance sheet	224	57	70	20	—	2	373
Total	\$1,431	\$1,063	\$242	\$146	\$—	\$2	\$2,884
Total Farm & Ranch loans:							
On-balance sheet	\$3,311	\$2,107	\$910	\$413	\$44	\$11	\$6,796
Off-balance sheet	770	362	301	68	562	7	2,070
Total	\$4,081	\$2,469	\$1,211	\$481	\$606	\$18	\$8,866

The following tables present by commodity type the unpaid principal balances, recorded investment, and specific allowance for losses related to impaired loans and the recorded investment in loans on nonaccrual status as of December 31, 2018 and 2017:

Table 8.5

	As of December 31, 2018						
	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	Total
	(in thousands)						
Impaired Loans:							
With no specific allowance:							
Recorded investment	\$20,734	\$3,592	\$5,764	\$1,922	\$	—\$	—\$32,012
Unpaid principal balance	20,632	3,573	5,737	1,912	—	—	31,854
With a specific allowance:							
Recorded investment ⁽¹⁾	59,335	38,176	19,443	6,276	—	70	123,300
Unpaid principal balance	59,098	38,009	19,361	6,249	—	69	122,786
Associated allowance	1,606	1,134	522	142	—	1	3,405
Total:							
Recorded investment	80,069	41,768	25,207	8,198	—	70	155,312
Unpaid principal balance	79,730	41,582	25,098	8,161	—	69	154,640
Associated allowance	1,606	1,134	522	142	—	1	3,405
Recorded investment of loans on nonaccrual status ⁽²⁾	\$26,611	\$21,349	\$8,803	\$4,645	\$	—\$	—\$61,408

Impairment analysis was performed in the aggregate in consideration of similar risk characteristics of the assets

⁽¹⁾ and historical statistics on \$120.9 million (78%) of impaired loans as of December 31, 2018, which resulted in a specific allowance of \$2.7 million.

⁽²⁾ Includes \$41.8 million of loans that are less than 90 days delinquent but which have not met Farmer Mac's performance criteria for returning to accrual status.

	As of December 31, 2017						
	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	Total
	(in thousands)						
Impaired Loans:							
With no specific allowance:							
Recorded investment	\$14,417	\$3,272	\$11,171	\$1,953	\$	—\$644	\$31,457
Unpaid principal balance	14,418	3,273	11,172	1,953	—	644	31,460
With a specific allowance:							
Recorded investment ⁽¹⁾	62,309	37,143	9,376	6,710	—	76	115,614
Unpaid principal balance	62,314	37,146	9,376	6,711	—	76	115,623
Associated allowance	1,431	1,063	242	146	—	2	2,884
Total:							
Recorded investment	76,726	40,415	20,547	8,663	—	720	147,071
Unpaid principal balance	76,732	40,419	20,548	8,664	—	720	147,083
Associated allowance	1,431	1,063	242	146	—	2	2,884
	\$27,630	\$25,701	\$5,333	\$4,929	\$	—\$	\$63,593

Recorded investment of loans on nonaccrual status⁽²⁾

Impairment analysis was performed in the aggregate in consideration of similar risk characteristics of the assets⁽¹⁾ and historical statistics on \$113.2 million (77%) of impaired loans as of December 31, 2017, which resulted in a specific allowance of \$2.7 million.

⁽²⁾ Includes \$15.7 million of loans that are less than 90 days delinquent but which have not met Farmer Mac's performance criteria for returning to accrual status.

The following table presents by commodity type the average recorded investment and interest income recognized on impaired loans for the years ended December 31, 2018 and 2017:

Table 8.6

	December 31, 2018						Total
	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	
	(in thousands)						
For the Year Ended:							
Average recorded investment in impaired loans	\$74,804	\$44,461	\$24,523	\$8,758	\$	—\$231	\$152,777
Income recognized on impaired loans	1,219	1,687	299	241	—	—	3,446
	December 31, 2017						Total
	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	
	(in thousands)						
For the Year Ended:							
Average recorded investment in impaired loans	\$71,154	\$37,597	\$15,913	\$8,135	\$	—\$381	\$133,180
Income recognized on impaired loans	696	530	238	289	—	—	1,753

The impact of TDRs on Farmer Mac's allowance for loan losses was immaterial for the years ended December 31, 2018 and 2017.

When particular criteria are met, such as the default of the borrower, Farmer Mac becomes entitled to purchase the defaulted loans underlying Farmer Mac Guaranteed Securities (commonly referred to as "removal-of account" provisions). Farmer Mac records all such defaulted loans at their unpaid principal balance during the period in which Farmer Mac becomes entitled to purchase the loans and, therefore, regains effective control over the transferred loans. In accordance with the terms of all LTSPCs, Farmer Mac acquires loans that are either 90 days or 120 days delinquent (depending on the provisions of the applicable agreement) upon the request of the counterparty. After purchase, these defaulted loans are treated as nonaccrual loans and, therefore, interest is accounted for on the cash basis. Any decreases in expected cash flows are recognized as impairment.

The following tables present information related to Farmer Mac's acquisition of defaulted loans for the years ended December 31, 2018, 2017, and 2016 and the outstanding balances and carrying amounts of all such loans as of December 31, 2018 and 2017:

Table 8.7

	For the Year Ended December 31, 2018 2017 2016 (\$ in thousands)		
Unpaid principal balance at acquisition date:			
Loans underlying LTSPCs	\$1,483	\$311	\$398
Loans underlying off-balance sheet Farmer Mac Guaranteed Securities (excluding AgVantage securities)	7,748	5,670	2,118
Total unpaid principal balance at acquisition date	9,231	5,981	2,516
Contractually required payments receivable	9,325	6,018	2,544
Impairment recognized subsequent to acquisition	26	60	208
Release of allowance for all outstanding acquired defaulted loans	—	171	67
Number of defaulted loans purchased	16	13	8
	As of		
	December 31, 2018	December 31, 2017	
	(in thousands)		
Outstanding balance	\$23,464	\$18,866	
Carrying amount	22,694	17,691	

Net credit losses and 90-day delinquencies as of and for the periods indicated for loans held and loans underlying off-balance sheet securities representing interests in pools of eligible Farm & Ranch loans ("Farm & Ranch Guaranteed Securities") and LTSPCs are presented in the table below. As of December 31, 2018, there were no delinquencies and no probable losses inherent in Farmer Mac's Rural Utilities loan portfolio and Farmer Mac had not experienced credit losses on any Rural Utilities loans.

Table 8.8

	90-Day Delinquencies ⁽¹⁾ As of		Net Credit (Recoveries)/Losses For the Year Ended		
	December 31, 2018	December 31, 2017	December 31, 2018	December 31, 2017	December 31, 2016
(in thousands)					
On-balance sheet assets:					
Farm & Ranch:					
Loans	\$19,577	\$47,881	\$40	\$ (1,397)	\$ 154
Total on-balance sheet	\$19,577	\$47,881	\$40	\$ (1,397)	\$ 154
Off-balance sheet assets:					
Farm & Ranch:					
LTSPCs	\$7,304	\$ 563	\$—	\$ —	\$ —
Total off-balance sheet	\$7,304	\$ 563	\$—	\$ —	\$ —
Total	\$26,881	\$48,444	\$40	\$ (1,397)	\$ 154

Includes loans and loans underlying off-balance sheet Farm & Ranch Guaranteed Securities and LTSPCs that are (1) 90 days or more past due, in foreclosure, or in bankruptcy with at least one missed payment, excluding loans performing under either their original loan terms or a court-approved bankruptcy plan.

Of the \$19.6 million of on-balance sheet loans reported as 90-day delinquencies as of December 31, 2018, \$0.1 million were loans subject to "removal-of-account" provisions. Of the \$47.9 million of on-balance sheet loans reported as 90-day delinquencies as of December 31, 2017, \$0.3 million were loans subject to "removal-of-account" provisions.

Rural Utilities

No allowance for losses has been provided for Farmer Mac's Rural Utilities line of business based on the performance of the loans in this line of business and the credit quality of the collateral supporting these loans, as well as Farmer Mac's counterparty risk analysis. As of December 31, 2018, there were no delinquencies or probable losses inherent in Farmer Mac's Rural Utilities loans held or underlying LTSPCs.

Credit Quality Indicators

The following tables present credit quality indicators related to Farm & Ranch loans held and loans underlying LTSPCs and off-balance sheet Farm & Ranch Guaranteed Securities as of December 31, 2018 and 2017:

Table 8.9

	As of December 31, 2018						
	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	Total
	(in thousands)						
Credit risk profile by internally assigned grade ⁽¹⁾							
On-balance sheet:							
Acceptable	\$2,381,853	\$937,793	\$679,253	\$321,345	\$10,604	\$4,477	\$4,335,325
Special mention ⁽²⁾	71,096	14,926	26,499	7,725	1,493	—	121,739
Substandard ⁽³⁾	66,286	36,333	21,361	7,278	—	—	131,258
Total on-balance sheet	\$2,519,235	\$989,052	\$727,113	\$336,348	\$12,097	\$4,477	\$4,588,322
Off-Balance Sheet:							
Acceptable	\$1,128,787	\$469,479	\$577,708	\$162,730	\$71,959	\$2,656	\$2,413,319
Special mention ⁽²⁾	62,430	36,778	30,703	1,023	—	—	130,934
Substandard ⁽³⁾	61,175	14,512	19,848	4,037	1,125	699	101,396
Total off-balance sheet	\$1,252,392	\$520,769	\$628,259	\$167,790	\$73,084	\$3,355	\$2,645,649
Total Ending Balance:							
Acceptable	\$3,510,640	\$1,407,272	\$1,256,961	\$484,075	\$82,563	\$7,133	\$6,748,644
Special mention ⁽²⁾	133,526	51,704	57,202	8,748	1,493	—	252,673
Substandard ⁽³⁾	127,461	50,845	41,209	11,315	1,125	699	232,654
Total	\$3,771,627	\$1,509,821	\$1,355,372	\$504,138	\$85,181	\$7,832	\$7,233,971

Commodity analysis of past due loans⁽¹⁾

On-balance sheet	\$8,345	\$2,997	\$4,059	\$4,176	\$—	\$—	\$19,577
Off-balance sheet	6,476	197	—	631	—	—	7,304
90 days or more past due	\$14,821	\$3,194	\$4,059	\$4,807	\$—	\$—	\$26,881

(1) Amounts represent unpaid principal balance of risk-rated loans, which is the basis Farmer Mac uses to analyze its portfolio, and recorded investment of past due loans.

(2) Assets in the "Special mention" category generally have potential weaknesses due to performance issues but are currently considered to be adequately secured.

(3) Substandard assets have a well-defined weakness or weaknesses and there is a distinct possibility that some loss will be sustained if deficiencies are not corrected.

As of December 31, 2017

	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	Total
(in thousands)							
Credit risk profile by internally assigned grade ⁽¹⁾							
On-balance sheet:							
Acceptable	\$2,274,912	\$771,600	\$617,527	\$260,854	\$13,023	\$9,030	\$3,946,946
Special mention ⁽²⁾	70,063	22,878	18,405	8,483	—	—	119,829
Substandard ⁽³⁾	67,674	38,180	17,602	7,858	—	644	131,958
Total on-balance sheet	\$2,412,649	\$832,658	\$653,534	\$277,195	\$13,023	\$9,674	\$4,198,733
Off-Balance Sheet							
Acceptable	\$1,132,196	\$478,573	\$634,633	\$150,906	\$42,723	\$4,294	\$2,443,325
Special mention ⁽²⁾	76,778	26,134	31,451	1,647	—	169	136,179
Substandard ⁽³⁾	36,322	30,198	15,340	3,880	3,015	594	89,349
Total off-balance sheet	\$1,245,296	\$534,905	\$681,424	\$156,433	\$45,738	\$5,057	\$2,668,853
Total Ending Balance:							
Acceptable	\$3,407,108	\$1,250,173	\$1,252,160	\$411,760	\$55,746	\$13,324	\$6,390,271
Special mention ⁽²⁾	146,841	49,012	49,856	10,130	—	169	256,008
Substandard ⁽³⁾	103,996	68,378	32,942	11,738	3,015	1,238	221,307
Total	\$3,657,945	\$1,367,563	\$1,334,958	\$433,628	\$58,761	\$14,731	\$6,867,586

Commodity analysis of past due loans⁽¹⁾

On-balance sheet	\$21,702	\$18,833	\$3,835	\$3,511	\$—	\$—	\$47,881
Off-balance sheet	151	—	—	412	—	—	563
90 days or more past due	\$21,853	\$18,833	\$3,835	\$3,923	\$—	\$—	\$48,444

(1) Amounts represent unpaid principal balance of risk-rated loans, which is the basis Farmer Mac uses to analyze its portfolio, and recorded investment of past due loans.

(2) Assets in the "Special mention" category generally have potential weaknesses due to performance issues but are currently considered to be adequately secured.

(3) Substandard assets have a well-defined weakness or weaknesses and there is a distinct possibility that some loss will be sustained if deficiencies are not corrected.

Concentrations of Credit Risk

The following table sets forth the geographic and commodity/collateral diversification, the range of original loan-to-value ratios, and the range in the size of borrower exposure for all Farm & Ranch loans held and loans underlying off-balance sheet Farm & Ranch Guaranteed Securities and LTSPCs as of December 31, 2018 and 2017:

Table 8.10

	As of	
	December	December
	31, 2018	31, 2017
	(in thousands)	
By commodity/collateral type:		
Crops	\$3,771,627	\$3,657,945
Permanent plantings	1,509,821	1,367,563
Livestock	1,355,372	1,334,958
Part-time farm	504,138	433,628
Ag. Storage and Processing	85,181	58,761
Other	7,832	14,731
Total	\$7,233,971	\$6,867,586
By geographic region ⁽¹⁾ :		
Northwest	\$855,596	\$740,991
Southwest	2,273,184	2,093,213
Mid-North	2,296,073	2,244,094
Mid-South	883,279	908,603
Northeast	332,370	296,264
Southeast	593,469	584,421
Total	\$7,233,971	\$6,867,586
By original loan-to-value ratio:		
0.00% to 40.00%	\$1,333,790	\$1,322,422
40.01% to 50.00%	1,811,166	1,733,671
50.01% to 60.00%	2,530,484	2,385,605
60.01% to 70.00%	1,244,823	1,150,914
70.01% to 80.00% ⁽²⁾	289,427	248,799
80.01% to 90.00% ⁽²⁾	24,281	26,175
Total	\$7,233,971	\$6,867,586
By size of borrower exposure ⁽³⁾ :		
Less than \$1,000,000	\$2,431,296	\$2,379,596
\$1,000,000 to \$4,999,999	2,755,996	2,627,617
\$5,000,000 to \$9,999,999	916,422	867,574
\$10,000,000 to \$24,999,999	601,349	584,896
\$25,000,000 and greater	528,908	407,903
Total	\$7,233,971	\$6,867,586

Geographic regions: Northwest (AK, ID, MT, OR, WA, WY); Southwest (AZ, CA, CO, HI, NM, NV, UT);

⁽¹⁾ Mid-North (IA, IL, IN, MI, MN, NE, ND, SD, WI); Mid-South (AR, KS, LA, MO, OK, TX); Northeast (CT, DE, KY, MA, MD, ME, NH, NJ, NY, OH, PA, RI, VA, VT, WV); Southeast (AL, FL, GA, MS, NC, SC, TN).

⁽²⁾ Primarily part-time farm loans. Loans with original loan-to-value ratios of greater than 80% are required to have private mortgage insurance.

⁽³⁾ Includes multiple loans to the same borrower or borrower-related entities.

The original loan-to-value ratio is calculated by dividing the loan principal balance at the time of guarantee, purchase, or commitment by the appraised value at the date of loan origination or, when

available, the updated appraised value at the time of guarantee, purchase, or commitment. Current loan-to-value ratios may be higher or lower than the original loan-to-value ratios.

9. EQUITY

Common Stock

Farmer Mac has three classes of common stock outstanding:

Class A voting common stock, which may be held only by banks, insurance companies, and other financial institutions or similar entities that are not institutions of the Farm Credit System. By federal statute, no holder of Class A voting common stock may directly or indirectly be a beneficial owner of more than 33% of the outstanding shares of Class A voting common stock.

Class B voting common stock, which may be held only by institutions of the Farm Credit System. There are no restrictions on the maximum holdings of Class B voting common stock.

Class C non-voting common stock, which has no ownership restrictions.

During 2018, 2017, and 2016, Farmer Mac paid a quarterly dividend of \$0.58, \$0.36, and \$0.26, respectively, per share on all classes of its common stock. Farmer Mac's ability to declare and pay dividends on its common stock could be restricted if it fails to comply with applicable capital requirements.

Farmer Mac's board of directors approved a share repurchase program during third quarter 2015 authorizing Farmer Mac to repurchase up to \$25.0 million of its outstanding Class C non-voting common stock for two years. In August 2017, Farmer Mac's board of directors approved the continuation of the share repurchase program on its existing terms through August 2019 for the repurchase of up to \$5.4 million of Farmer Mac's outstanding Class C non-voting common stock. This is the amount that was remaining under the share repurchase program that Farmer Mac's board of directors originally authorized in third quarter 2015 for the repurchase of up to \$25 million of outstanding Class C non-voting common stock. Farmer Mac did not repurchase any shares during 2018 or 2017 under this program. As of December 31, 2018 and December 31, 2017, Farmer Mac had repurchased approximately 668,000 shares of Class C non-voting common stock at a cost of approximately \$19.6 million under the share repurchase program.

Preferred Stock

On January 17, 2013, Farmer Mac issued 2.4 million shares of 5.875% Non-Cumulative Preferred Stock, Series A (the "Series A Preferred Stock"). On March 25, 2014, Farmer Mac issued 3.0 million shares of 6.875% Non-Cumulative Preferred Stock, Series B (the "Series B Preferred Stock"). On June 20, 2014, Farmer Mac issued 3.0 million shares of 6.000% Fixed-to-Floating Rate Non-Cumulative Preferred Stock, Series C (the "Series C Preferred Stock"). The Series A Preferred Stock, the Series B Preferred Stock, and the Series C Preferred Stock (collectively referred to as the "Outstanding Preferred Stock") each has a par value of \$25.00 per share and a liquidation preference of \$25.00 per share. The Series A Preferred Stock and the Series B Preferred Stock pay an annual dividend rate of 5.875% and 6.875%, respectively, for the life of the securities. The Series C Preferred Stock pays an annual dividend rate of 6.000% from the date of issuance to and including the quarterly payment date occurring on July 17, 2024, and thereafter, at a floating rate equal to three-month LIBOR plus 3.26%. Farmer Mac has the right, but not the obligation, to

redeem the Series A Preferred Stock at any time on and after January 17, 2018, the Series B Preferred Stock at any time on and after April 17, 2019, and the Series C Preferred Stock at any time on and after July 18, 2024, all at a price equal to the then-applicable liquidation preference. Dividends on all series of Outstanding Preferred Stock are non-cumulative, which means that if Farmer Mac's board of directors has not declared a dividend before the applicable dividend payment date for any dividend period, such dividend will not be paid or cumulate, and Farmer Mac will have no obligation to pay dividends for such dividend period, whether or not dividends on any series of Outstanding Preferred Stock are declared for any future dividend period. Farmer Mac incurred direct costs of \$1.7 million related to the issuance of the Series A Preferred Stock, direct costs of \$1.9 million related to the issuance of the Series B Preferred Stock, and direct costs of \$1.6 million related to the issuance of the Series C Preferred Stock. As of December 31, 2018, Farmer Mac had 2.4 million shares of Series A Preferred Stock outstanding, 3.0 million shares of Series B Preferred Stock outstanding, and 3.0 million of Series C Preferred Stock outstanding.

For 2018, 2017 and 2016, Farmer Mac paid the following quarterly dividends on its outstanding preferred stock:

\$0.3672 per share on its 5.875% Non-Cumulative Preferred Stock, Series A;

\$0.4297 per share on its 6.875% Non-Cumulative Preferred Stock, Series B; and

\$0.3750 per share on its 6.000% Fixed-to-Floating Rate Non-Cumulative Preferred Stock, Series C.

Farmer Mac's ability to declare and pay dividends on its preferred stock could be restricted if it fails to comply with applicable capital requirements. Farmer Mac's preferred stock is included as a component of core capital for regulatory and statutory capital compliance measurements.

Equity-Based Incentive Compensation Plans

Farmer Mac's Amended and Restated 2008 Omnibus Incentive Compensation Plan authorizes the grant of restricted stock, stock options, and SARs, among other alternative forms of equity-based compensation, to Farmer Mac's directors, officers, and employees. SARs awarded to officers and employees vest annually in thirds. Farmer Mac has not granted SARs to directors since 2008. If not exercised or cancelled earlier due to the termination of employment, SARs granted to officers or employees expire after 10 years from the grant date. For all SARs granted, the exercise price is equal to the closing price of Farmer Mac's Class C non-voting common stock on the date of grant. SARs granted during 2018 have an exercise price of \$86.15 per share, SARs granted during 2017 have an exercise price of \$60.84 per share, and SARs granted during 2016 have an exercise price of \$35.75 per share. During 2018, 2017, and 2016, restricted stock awards were granted to directors with a vesting period of one year, to officers with a vesting period of three years provided certain performance targets are met, to officers vesting annually in thirds, and to employees with a vesting period of three years. During 2018, a restricted stock award was also granted to Farmer Mac's President and Chief Executive Officer, which will "cliff" vest on March 31, 2021 if he is still employed by Farmer Mac on that date.

The following tables summarize stock options, SARs, and non-vested restricted stock activity for the years ended December 31, 2018, 2017, and 2016:

Table 9.1

	For the Year Ended December 31,					
	2018		2017		2016	
	Stock Options and SARs	Weighted-Average Exercise Price	Stock Options and SARs	Weighted-Average Exercise Price	Stock Options and SARs	Weighted-Average Exercise Price
Outstanding, beginning of year	163,272	\$ 32.95	367,535	\$ 30.18	747,573	\$ 26.68
Granted	10,122	86.15	24,657	60.84	51,975	35.75
Exercised	(48,434)	30.06	(111,278)	31.47	(431,346)	24.77
Canceled	—	—	(117,642)	31.55	(667)	35.60
Outstanding, end of year	124,960	38.38	163,272	32.95	367,535	30.18
Exercisable at end of year	95,675	31.41	93,085	28.57	208,274	27.41

	For the Year Ended December 31,					
	2018		2017		2016	
	Non-vested Restricted Stock	Weighted-Average Grant Date Fair Value	Non-vested Restricted Stock	Weighted-Average Grant Date Fair Value	Non-vested Restricted Stock	Weighted-Average Grant Date Fair Value
Outstanding, beginning of year	95,015	\$ 44.39	138,497	\$ 34.63	132,651	\$ 32.12
Granted	32,070	84.03	45,828	59.79	76,617	36.33
Canceled	(1,098)	86.15	(28,815)	42.15	(1,360)	35.75
Vested and issued	(45,834)	42.12	(60,495)	34.77	(69,411)	31.69
Outstanding, end of year	80,153	60.98	95,015	44.39	138,497	34.63

The cancellations of stock options, SARs, and non-vested restricted stock during 2018, 2017, and 2016 were due to unvested awards terminating in accordance with the provisions of the applicable equity compensation plans or award agreements upon directors' or employees' departures from Farmer Mac.

Farmer Mac generally receives cash when stock options are exercised. Cash is not received from exercises of SARs or the vesting and issuance of restricted stock. Farmer Mac received no cash from the exercise of stock options during 2018, \$0.2 million during 2017, and \$0.5 million during 2016. During 2018, 2017, and 2016, the reduction of income taxes payable as a result of the deduction for the exercise of stock options and SARs and the vesting or accelerated tax elections of restricted stock was \$1.5 million, \$2.6 million, and \$3.6 million, respectively. During both 2018 and 2017, Farmer Mac recognized \$0.9 million, respectively, of tax benefits recognized in income tax expense associated with stock compensation activity.

During 2018, 2017, and 2016, Farmer Mac recorded a net decrease to additional paid-in capital of \$2.7 million, \$2.6 million, and \$3.1 million, respectively, related to stock-based compensation awards.

Farmer Mac has a policy that permits directors of Farmer Mac to elect to receive shares of Class C non-voting common stock in lieu of cash retainers. During 2018, Farmer Mac issued 174 shares of Class C non-voting common stock with a fair value of \$14,000 to the 4 directors who made that election. During 2017, Farmer Mac issued 698 shares of Class C non-voting common stock with a fair value of \$41,000 to the 4 directors who made that election. During 2016, Farmer Mac issued 1,130 shares of Class C non-voting common stock with a fair value of \$41,000 to the 4 directors who made that election.

As of December 31, 2018, Farmer Mac had no stock options outstanding. The following tables summarize information regarding SARs and non-vested restricted stock outstanding as of December 31, 2018:

Table 9.2

Range of Exercise Prices	Outstanding		Exercisable		Vested or Expected to Vest	
	SARs	Weighted-Average Remaining Contractual Life	SARs	Weighted-Average Remaining Contractual Life	SARs	Weighted-Average Remaining Contractual Life
\$10.00 - \$24.99	16,000	2.6 years	16,000	2.6 years	16,000	2.6 years
25.00 - 39.99	86,462	6.1 years	76,629	5.9 years	86,462	6.1 years
40.00 - 54.99	—	0.0 years	—	0.0 years	—	0.0 years
55.00 - 69.99	12,376	8.3 years	3,046	8.3 years	12,376	8.3 years
70.00 - 84.99	—	0.0 years	—	0.0 years	—	0.0 years
85.00 - 99.99	10,122	9.3 years	—	0.0 years	10,122	9.3 years
	124,960		95,675		124,960	

Weighted-Average Grant-Date Fair Value	Outstanding		Expected to Vest	
	Non-vested Restricted Stock	Weighted-Average Remaining Contractual Life	Non-vested Restricted Stock	Weighted-Average Remaining Contractual Life
\$35.00 - \$49.99	27,505	0.3 years	27,505	0.3 years
50.00 - 64.99	21,848	1.3 years	21,848	1.3 years
65.00 - 79.99	3,578	2.2 years	3,578	2.2 years
80.00 - 94.99	27,222	1.6 years	27,222	1.6 years
	80,153		80,153	

As of December 31, 2018 and 2017, the intrinsic value of options, SARs, and non-vested restricted stock outstanding, exercisable, and vested or expected to vest was \$7.9 million and \$14.8 million, respectively. During 2018, 2017, and 2016, the total intrinsic value of options and SARs exercised was \$3.0 million, \$3.8 million, and \$7.6 million, respectively. As of December 31, 2018, there was \$2.6 million of total unrecognized compensation cost related to non-vested SARs and restricted stock awards. This cost is expected to be recognized over a weighted-average period of 1.7 years.

The weighted-average grant date fair values of options, SARs, and restricted stock awards granted in 2018, 2017, and 2016 were \$69.38, \$44.93, and \$25.11 per share, respectively. Under the fair value-based

method of accounting for stock-based compensation cost, Farmer Mac recognized compensation expense of \$2.5 million, \$2.7 million, and \$3.3 million during 2018, 2017, and 2016, respectively.

The fair values of stock options and SARs were estimated using the Black-Scholes option pricing model based on the following assumptions:

Table 9.3

	For the Year Ended December 31,		
	2018	2017	2016
Risk-free interest rate	2.7%	2.3%	1.5%
Expected years until exercise	6 years	6 years	5 years
Expected stock volatility	33.0%	34.8%	34.7%
Dividend yield	2.7%	2.4%	2.9%

The risk-free interest rates used in the model were based on the U.S. Treasury yield curve in effect at the grant date. Farmer Mac used historical data to estimate the timing of option exercises and stock option cancellation rates used in the model. Expected volatilities were based on historical volatility of Farmer Mac's Class C non-voting common stock. The dividend yields were based on the expected dividends as a percentage of the value of Farmer Mac's Class C non-voting common stock on the grant date.

Because restricted stock awards will be issued upon vesting regardless of the stock price, expected stock volatility is not considered in determining grant date fair value. Restricted stock awards also accrue dividends which are paid at vesting. The weighted-average grant date fair value of the restricted stock awarded in 2018, 2017, and 2016 was \$84.03, \$59.79, and \$36.33 per share, respectively, which is based on the closing price of the stock on the date granted.

Capital Requirements

Farmer Mac is subject to the following capital requirements:

Statutory minimum capital requirement – Farmer Mac's statutory minimum capital level is an amount of core capital (stockholders' equity less accumulated other comprehensive income) equal to the sum of 2.75% of Farmer Mac's aggregate on-balance sheet assets, as calculated for regulatory purposes, plus 0.75% of the aggregate off-balance sheet obligations of Farmer Mac, specifically including:

the unpaid principal balance of outstanding Farmer Mac Guaranteed Securities;

instruments issued or guaranteed by Farmer Mac that are substantially equivalent to Farmer Mac Guaranteed Securities, including LTSPCs; and

other off-balance sheet obligations of Farmer Mac.

Statutory critical capital requirement – Farmer Mac's critical capital level is an amount of core capital equal to 50% of the total minimum capital requirement at that time.

Risk-based capital requirement – Farmer Mac's charter directs the Farm Credit Administration ("FCA"), an independent agency in the executive branch of the United States government that regulates Farmer Mac, to establish a risk-based capital stress test for Farmer Mac, using specified stress-test parameters.

Farmer Mac is required to comply with the higher of the minimum capital requirement and the risk-based capital requirement. As of both December 31, 2018 and 2017, the minimum capital requirement was greater than the risk-based capital requirement. Farmer Mac's ability to declare and pay dividends could be restricted if it fails to comply with applicable capital requirements.

As of December 31, 2018, Farmer Mac's minimum capital requirement was \$545.0 million and its core capital level was \$727.6 million, which was \$182.6 million above the minimum capital requirement as of that date. As of December 31, 2017, Farmer Mac's minimum capital requirement was \$520.3 million and its core capital level was \$657.1 million, which was \$136.8 million above the minimum capital requirement as of that date.

In accordance with FCA's rule on Farmer Mac's capital planning, and as part of Farmer Mac's capital plan, Farmer Mac has adopted a policy for maintaining a sufficient level of Tier 1 capital (consisting of retained earnings, paid-in-capital, common stock, and qualifying preferred stock) and imposing restrictions on Tier 1-eligible dividends and any discretionary bonus payments in the event that this capital falls below specified thresholds.

10. INCOME TAXES

Farmer Mac is subject to federal corporate income taxes but is exempt from state and local corporate income taxes. The components of the federal corporate income tax expense for the years ended December 31, 2018, 2017, and 2016 were as follows:

Table 10.1

	For the Year Ended December 31,		
	2018	2017	2016
	(in thousands)		
Current income tax expense	\$ 25,317	\$ 43,148	\$ 37,954
Deferred income tax expense	2,625	3,221	4,103
Income tax expense	\$ 27,942	\$ 46,369	\$ 42,057

A reconciliation of income tax at the statutory federal corporate income tax rate to the income tax expense for the years ended December 31, 2018, 2017, and 2016 is as follows:

Table 10.2

	For the Year Ended December 31,		
	2018	2017	2016
	(dollars in thousands)		
Tax expense at statutory rate	\$28,564	\$45,740	\$41,775
Re-measurement of net deferred tax asset due to enactment of new tax legislation	—	1,365	—
Excess tax benefits related to stock-based awards	(946)	(860)	—
Valuation allowance	—	4	21
Other	324	120	261
Income tax expense	\$27,942	\$46,369	\$42,057
Statutory tax rate	21.0 %	35.0 %	35.0 %

The components of the deferred tax assets and liabilities as of December 31, 2018 and 2017 were as follows:

Table 10.3

	As of December 31,	
	2018	2017
	(in thousands)	
Deferred tax assets:		
Basis differences related to financial derivatives	\$ 7,614	\$ 6,800
Basis differences related to hedged items	1,810	5,661
Allowance for losses	1,929	1,862
Compensation and Benefits	967	778
Stock-based compensation	623	532
Capital loss carryforwards and other-than-temporary impairment	36	36
Valuation allowance	(36)	(36)
Other	121	74
Total deferred tax assets	13,064	15,707
Deferred tax liability:		
Unrealized gains on securities	4,807	12,376
Unrealized gains on cash flow hedges	1,827	1,203
Other	61	80
Total deferred tax liability	6,695	13,659
Net deferred tax asset	\$ 6,369	\$ 2,048

A valuation allowance is required to reduce a deferred tax asset to an amount that is more likely than not to be realized. Future realization of the tax benefit from a deferred tax asset depends on the existence of sufficient taxable income of the appropriate character. After the evaluation of both positive and negative objective evidence regarding the likelihood that its deferred tax assets will be realized, Farmer Mac established a valuation allowance of \$36,000 as of both December 31, 2018 and 2017, which was attributable to capital loss carryforwards on investment securities. Farmer Mac did not establish a valuation allowance for the remainder of its deferred tax assets because it believes it is more likely than not that those deferred tax assets will be realized. In determining its deferred tax asset valuation allowance, Farmer Mac considered its taxable income of the appropriate character (for example, ordinary income or capital gain) within the carryback and carryforward periods available under the tax law and the impact of possible tax planning strategies. As of December 31, 2018, no capital loss carryforwards expired. As of December 31, 2018, the amount of capital loss carryforwards was \$0.2 million. These capital loss carryforwards will expire in 2021.

Deferred tax assets are measured at rates in effect when they arise. To the extent rates change, the deferred tax asset will be adjusted to reflect the new rate. A reduction in corporate tax rates would result in a reduction in the value of the deferred tax asset. The Tax Cuts and Jobs Act was enacted on December 22, 2017. This new legislation provides for significant changes to the U.S. Internal Revenue Code of 1986, as amended, that was in effect through the end of 2017 and includes a reduction of the federal corporate income tax rate from 35% to 21%, which became effective January 1, 2018. As a result of this reduction in the federal corporate income tax rate, Farmer Mac re-measured its net deferred tax asset at the newly enacted 21% federal corporate income tax rate and thus reduced its value by \$1.4 million. Accordingly, Farmer Mac recorded an increase to income tax expense of \$1.4 million, or an increase of 1.04%, in Farmer Mac's effective tax rate for 2017.

As of December 31, 2018 and 2017, Farmer Mac did not identify any uncertain tax positions.

Farmer Mac did not incur unrecognized tax benefits for the years ended December 31, 2018, 2017, and 2016.

Tax years 2016 through 2018 remain subject to examination.

11. EMPLOYEE BENEFITS

Farmer Mac makes contributions to a defined contribution retirement plan for all of its employees. Farmer Mac contributed 13.2% of the lesser of an employee's gross salary and the maximum compensation permitted under the Economic Growth and Tax Relief Reconciliation Act of 2001 ("EGTRRA") (\$275,000 for 2018, \$270,000 for 2017, and \$265,000 for 2016), plus 5.7% of the difference between: (1) the lesser of the gross salary and the amount established under EGTRRA and (2) the Social Security Taxable Wage Base. Employees are fully vested after having been employed for approximately 3 years. Expenses for this plan for the years ended December 31, 2018, 2017, and 2016 were \$1.8 million, \$1.5 million, and \$1.3 million, respectively.

Farmer Mac established a Nonqualified Deferred Compensation Plan (the "NQDC Plan") for its executive officers effective May 1, 2017. Under the NQDC Plan, Farmer Mac credits the account of each participant each calendar year with an amount equal to 18.9% of the difference between: (1) the amount established under EGTRRA and (2) a participant's gross annual base salary, which for purposes of calculating employer credits under the NQDC Plan is capped at \$700,000 for Farmer Mac's Chief Executive Officer and \$500,000 for all other participants. This fixed contribution percentage is the same formula used for determining employer contributions to Farmer Mac's defined contribution retirement plan based on an employee's gross annual base salary that is above the amount established under EGTRRA for that year. Expenses for the NQDC Plan were \$0.1 million for both the years ended December 31, 2018 and 2017.

12. GUARANTEES AND LONG-TERM STANDBY PURCHASE COMMITMENTS

Farmer Mac offers two credit enhancement alternatives to direct loan purchases that allow approved lenders the ability to retain the cash flow benefits of their loans and increase their liquidity and lending capacity: (1) Farmer Mac Guaranteed Securities, which are available through each of the Farm & Ranch, USDA Guarantees, Rural Utilities, and Institutional Credit lines of business, and (2) LTSPCs, which are available through the Farm & Ranch or the Rural Utilities lines of business. LTSPCs and securitization trusts where Farmer Mac is not the primary beneficiary result in the creation of off-balance sheet obligations for Farmer Mac. Farmer Mac records, at the inception of an off-balance sheet guarantee or LTSPC, a liability for the fair value of its obligation to stand ready to perform under the terms of each guarantee or LTSPC and an asset that is equal to the fair value of the fees that will be received over the life of each guarantee or LTSPC. The fair values of the guarantee obligation and asset at inception are based on the present value of expected cash flows using management's best estimate of certain key assumptions, which include prepayment speeds, forward yield curves, and discount rates commensurate with the risks involved. Because the cash flows of these instruments may be interest rate path dependent, these values and projected discount rates are derived using a Monte Carlo simulation model. The guarantee obligation and corresponding asset are later amortized into guarantee and commitment fee income in relation to the decrease in the unpaid principal balance on the underlying agricultural real estate mortgage and rural utilities loans.

The contractual terms of Farmer Mac's off-balance sheet guarantees and LTSPCs range from less than 1 year to 30 years. However, the actual term of each guarantee or LTSPC may be significantly less than the contractual term based on the prepayment characteristics of the related loans. Farmer Mac's maximum potential exposure under these off-balance sheet guarantees and LTSPCs is comprised of the unpaid principal balance of the underlying loans. Guarantees issued or modified on or after January 1, 2003 are recorded in the consolidated balance sheets. Farmer Mac's maximum potential exposure was \$4.0 billion as of both December 31, 2018 and 2017. Farmer Mac's maximum potential exposure for guarantees issued before January 1, 2003, which are not recorded on the consolidated balance sheets, was \$23.8 million and \$28.0 million as of December 31, 2018 and 2017, respectively. The maximum exposure from these guarantees and LTSPCs is not representative of the actual loss Farmer Mac is likely to incur, based on historical loss experience. In the event Farmer Mac was required to make payments under its guarantees or LTSPCs, Farmer Mac would have the right to enforce the terms of the loans, and in the event of default, would have access to the underlying collateral. For information on Farmer Mac's methodology for determining the reserve for losses for its financial guarantees, see Note 2(j) and Note 8. The following table presents changes in Farmer Mac's guarantee and commitment obligations in the consolidated balance sheets for the years ended December 31, 2018, 2017, and 2016:

Table 12.1

	For the Year Ended December 31,		
	2018	2017	2016
	(in thousands)		
Beginning balance, January 1	\$ 38,400	\$ 37,282	\$ 38,609
Additions to the guarantee and commitment obligation ⁽¹⁾	6,202	7,683	6,725
Amortization of the guarantee and commitment obligation	(5,919)	(6,565)	(8,052)
Ending balance, December 31	\$ 38,683	\$ 38,400	\$ 37,282

⁽¹⁾ Represents the fair value of the guarantee and commitment obligation at inception.

Off-Balance Sheet Farmer Mac Guaranteed Securities

Agricultural real estate mortgage loans, rural utilities loans, and other related assets may be placed into trusts to securitize the transferred assets and the Farmer Mac-guaranteed beneficial interests in the trusts are sold to investors. Farmer Mac is obligated under its guarantee to ensure that the investors receive timely payments of principal and interest based on the underlying loans, regardless of whether the trust has actually received such scheduled loan payments. As consideration for Farmer Mac's assumption of the credit risk on these securities, Farmer Mac receives guarantee fees that are recognized as earned on an accrual basis over the life of the loans and based upon the outstanding balance of the Farmer Mac Guaranteed Security.

Farmer Mac is required to perform under its obligation when the underlying loans for the off-balance sheet Farmer Mac Guaranteed Securities do not make their scheduled installment payments. When a loan underlying a Farm & Ranch Guaranteed Security becomes 90 days or more past due, Farmer Mac may, in its sole discretion, repurchase the loan from the trust and generally does repurchase such loans, thereby reducing the principal balance of the outstanding Farm & Ranch Guaranteed Security.

The following table presents the maximum principal amount of potential undiscounted future payments that Farmer Mac could be required to make under all off-balance sheet Farmer Mac Guaranteed Securities

as of December 31, 2018 and 2017, not including offsets provided by any recourse provisions, recoveries from third parties, or collateral for the underlying loans:

Table 12.2

Outstanding Balance of Off-Balance Sheet Farmer Mac Guaranteed Securities

	As of December 31, 2018	As of December 31, 2017
	(in thousands)	
Farm & Ranch:		
Guaranteed Securities ⁽¹⁾	\$ 135,862	\$ 333,511
USDA Guarantees:		
Farmer Mac Guaranteed USDA Securities	367,684	254,217
Institutional Credit:		
AgVantage Securities	9,898	11,556
Revolving floating rate AgVantage facility ⁽²⁾	300,000	300,000
Total off-balance sheet Farmer Mac Guaranteed Securities	\$ 813,444	\$ 899,284

During fourth quarter 2018, Farmer Mac repurchased the 100% participation interests in loans underlying a pool of \$134.1 million in Farm & Ranch Guaranteed Securities at par, thereby redeeming the corresponding Farm & Ranch Guaranteed Securities from their sole security holder. Farmer Mac repurchased these participation interests at the request of the sole security holder in exchange for the termination of the participation interests and the reconveyance of all beneficial interest in the loans to the sole security holder that owned the loans in which the participation interests had been issued. The resulting pool of Farm & Ranch loans was concurrently added under LTSPCs. The commitment fee Farmer Mac receives on these loans added under LTSPCs is the same as the guarantee fee Farmer Mac had been earning on the Farm & Ranch Guaranteed Securities.

- (1) Relates to a revolving floating rate AgVantage facility subject to specified contractual terms. Farmer Mac receives a fixed fee based on the full dollar amount of the facility.

If Farmer Mac repurchases a loan that is collateral for a Farmer Mac Guaranteed Security, Farmer Mac would have the right to enforce the terms of the loan, and in the event of a default, would have access to the underlying collateral. Farmer Mac typically recovers its investment in the defaulted loans purchased either through borrower payments, loan payoffs, payments by third parties, or foreclosure and sale of the property securing the loans.

Farmer Mac has recourse to the USDA for any amounts advanced for the timely payment of principal and interest on Farmer Mac Guaranteed USDA Securities. That recourse is the USDA guarantee, a full-faith-and-credit obligation of the United States that becomes enforceable if a lender fails to repurchase the USDA-guaranteed portion from its owner within 30 days after written demand from the owner when (a) the borrower under the guaranteed loan is in default not less than 60 days in the payment of any principal or interest due on the USDA-guaranteed portion, or (b) the lender has failed to remit to the owner the payment made by the borrower on the USDA-guaranteed portion or any related loan subsidy within 30 days after the lender's receipt of the payment.

Eligible loans and other eligible assets may be placed into trusts that are used as vehicles for the securitization of the transferred assets and the Farmer Mac-guaranteed beneficial interests in the trusts are sold to investors. The following table summarizes the significant cash flows received from and paid to trusts used for Farmer Mac securitizations:

Table 12.3

	For the Year Ended December 31,		
	2018	2017	2016
	(in thousands)		
Proceeds from new securitizations	\$382,929	\$519,219	\$609,347
Guarantee fees received	1,920	2,610	3,552
Purchases of assets from the trusts	(7,748)	(5,670)	(2,118)

Farmer Mac has recorded a liability for its obligation to stand ready under the guarantee in the guarantee and commitment obligation on the consolidated balance sheets. This liability approximated \$2.8 million as of December 31, 2018 and \$3.6 million as of December 31, 2017. As of December 31, 2018 and 2017, the weighted-average remaining maturity of all loans underlying off-balance sheet Farmer Mac Guaranteed Securities, excluding AgVantage securities, was 10.3 years and 10.0 years, respectively. As of December 31, 2018 and 2017, the weighted-average remaining maturity of the off-balance sheet AgVantage securities was 5.0 years and 0.8 years, respectively.

Long-Term Standby Purchase Commitments

An LTSPC is a commitment by Farmer Mac to purchase eligible loans from an identified pool of loans under specified circumstances set forth in the applicable agreement, either for cash or in exchange for Farmer Mac Guaranteed Securities, on one or more undetermined future dates. As consideration for its assumption of the credit risk on loans underlying an LTSPC, Farmer Mac receives a commitment fee payable monthly in arrears.

An LTSPC permits a lender to nominate from its portfolio an identified pool of loans for participation in the Farm & Ranch or the Rural Utilities line of business, which are retained in the lender's portfolio and serviced by the lender. Farmer Mac reviews the loan pool to confirm that it conforms to Farmer Mac's underwriting standards. Upon Farmer Mac's approval of the eligible loans, the lender effectively transfers the credit risk on those loans to Farmer Mac, thereby reducing the lender's credit and concentration risk exposures and, consequently, its regulatory capital requirements and its loss reserve requirements. Credit risk is transferred through Farmer Mac's commitment to purchase the identified loans from the counterparty based on Farmer Mac's original credit review and acceptance of the credit risk on the loans.

The specific events or circumstances that would require Farmer Mac to purchase some or all of the loans subject to LTSPCs include: (1) the failure of the borrower under any loan to make installment payments under that loan for a period of either 90 days or 120 days (depending on the provisions of the applicable agreement); or (2) the determination by the holder of the LTSPC to sell or exchange some or all of the loans under the LTSPC to Farmer Mac.

Farmer Mac purchases loans subject to an LTSPC at:

par if the loans become delinquent for either 90 days or 120 days (depending on the agreement) or are in material non-monetary default, with accrued and unpaid interest on the defaulted loans payable out of any future loan payments or liquidation proceeds; or fair value or in exchange for Farm & Ranch Guaranteed Securities (in the Farm & Ranch line of business, if the loans are not delinquent), in accordance with the terms of the applicable agreement.

The maximum principal amount of potential undiscounted future payments that Farmer Mac could be requested to make under all LTSPCs, not including offsets provided by any recourse provisions, recoveries from third parties, or collateral for the underlying loans, was \$3.2 billion and \$3.1 billion as of December 31, 2018 and 2017, respectively.

As of both December 31, 2018 and 2017, the weighted-average remaining maturity of all loans underlying LTSPCs was 15.3 years. For those LTSPCs issued or modified on or after January 1, 2003, Farmer Mac has recorded a liability for its obligation to stand ready under the commitment in the guarantee and commitment obligation on the consolidated balance sheets. This liability approximated \$35.9 million as of December 31, 2018 and \$34.8 million as of December 31, 2017.

Commitments

Farmer Mac enters into mandatory and optional delivery commitments to purchase loans. Most loan purchase commitments entered into by Farmer Mac are mandatory commitments, in which Farmer Mac charges a fee to extend or cancel the commitment. As of December 31, 2018 and 2017, commitments to purchase Farm & Ranch loans and USDA Guarantees totaled \$37.1 million and \$46.3 million, respectively, all of which were mandatory commitments. As of December 31, 2017, there were \$8.0 million commitments to purchase Rural Utilities loans. Any optional loan purchase commitments are sold forward under optional commitments to deliver Farmer Mac Guaranteed Securities that may be canceled by Farmer Mac without penalty.

Rental expense for Farmer Mac's office space for each of the years ended December 31, 2018, 2017, and 2016 was \$2.0 million, \$1.6 million, and \$1.3 million, respectively. The future minimum lease payments under Farmer Mac's non-cancellable leases for its office space and other contractual obligations as of December 31, 2018 are as follows:

Table 12.4

	Future Minimum Lease Payments (in thousands)	Other Contractual Obligations
2019	\$1,944	\$ 1,965
2020	1,937	1,110
2021	1,977	233
2022	2,021	—
2023	1,995	—
Thereafter	1,311	—
Total	\$11,185	\$ 3,308

Other contractual obligations in the table above include minimum amounts due under non-cancellable agreements to purchase goods or services that are enforceable and legally binding and specify all significant terms. These agreements include, among others, agreements for the provision of consulting services, information technology support, equipment maintenance, and financial analysis software and services. The amounts actually paid under these agreements will likely be higher due to the variable components of some of these agreements under which the ultimate obligation owed is determined by reference to actual usage or hours worked.

13. FAIR VALUE DISCLOSURES

Fair Value Measurement

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date (also referred to as an exit price). In determining fair value, Farmer Mac uses various valuation approaches, including market and income based approaches. The fair value hierarchy requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. When available, the fair value of Farmer Mac's financial instruments is based on quoted market prices, valuation techniques that use observable market-based inputs, or unobservable inputs that are corroborated by market data. Pricing information obtained from third parties is internally validated for reasonableness before use in the consolidated financial statements. Farmer Mac's accounting policies for fair value measurement are discussed in Note 2(o).

Fair value measurements related to financial instruments that are reported at fair value in the consolidated financial statements each period are referred to as recurring fair value measurements. Fair value measurements related to financial instruments that are not reported at fair value each period but are subject to fair value adjustments in certain circumstances are referred to as nonrecurring fair value measurements.

Fair Value Classification and Transfers

The fair value hierarchy ranks the quality and reliability of the information used to determine fair values. The hierarchy gives highest priority to unadjusted quoted prices in active markets for identical assets or liabilities and the lowest priority to unobservable inputs. The following three levels are used to classify fair value measurements:

- Level 1 Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities.
- Level 2 Quoted prices in markets that are not active or financial instruments for which all significant inputs are observable, either directly or indirectly.
- Level 3 Prices or valuations that require unobservable inputs that are significant to the fair value measurement.

Farmer Mac performs a detailed analysis of the assets and liabilities carried at fair value to determine the appropriate level based on the transparency of the inputs used in the valuation techniques. In certain cases, the inputs used to measure fair value may fall into different levels of the fair value hierarchy. In such cases, an instrument's level within the fair value hierarchy is based on the lowest level of input that is significant to the fair value measurement. Farmer Mac's assessment of the significance of a particular

input to the fair value measurement of an instrument requires judgment and consideration of factors specific to the instrument. While Farmer Mac believes its valuation methods are appropriate and consistent with those of other market participants, using different methodologies or assumptions to determine fair value could result in a materially different estimate of fair value for some financial instruments.

The following is a description of the fair value techniques used for instruments measured at fair value as well as the general classification of those instruments under the valuation hierarchy described above.

Recurring Fair Value Measurements and Classification

Available-for-Sale and Trading Investment Securities

The fair value of investments in U.S. Treasuries is based on unadjusted quoted prices in active markets. Farmer Mac classifies these fair value measurements as "Level 1."

For a significant portion of Farmer Mac's investment portfolio, including most asset-backed securities, senior agency debt securities, and Government/GSE guaranteed mortgage-backed securities, fair value is primarily determined using a reputable and nationally recognized third-party pricing service. The prices obtained are non-binding and generally representative of recent market trades. The fair value of certain asset-backed and Government guaranteed mortgage-backed securities are estimated based on quotations from brokers or dealers. Farmer Mac corroborates its primary valuation source by obtaining a secondary price from another independent third-party pricing service. Farmer Mac classifies these fair value measurements as "Level 2."

For certain investment securities that are thinly traded or not quoted, Farmer Mac estimates fair value using internally-developed models that employ a discounted cash flow approach. Farmer Mac maximizes the use of observable market data, including prices of financial instruments with similar maturities and characteristics, interest rate yield curves, measures of volatility, and prepayment rates. Farmer Mac generally considers a market to be thinly traded or not quoted if the following conditions exist: (1) there are few transactions for the financial instruments; (2) the prices in the market are not current; (3) the price quotes vary significantly either over time or among independent pricing services or dealers; or (4) there is limited availability of public market information. Farmer Mac classifies these fair value measurements as "Level 3."

Available-for-Sale and Trading Farmer Mac Guaranteed Securities and USDA Securities

Farmer Mac estimates the fair value of its Farmer Mac Guaranteed Securities and USDA Securities by discounting the projected cash flows of these instruments at projected interest rates. The fair values are based on the present value of expected cash flows using management's best estimate of certain key assumptions, which include prepayment speeds, forward yield curves, and discount rates commensurate with the risks involved. Farmer Mac classifies these fair value measurements as Level 3 because there is limited market activity and therefore little or no price transparency. On a sample basis, Farmer Mac corroborates the fair value of its Farmer Mac Guaranteed Securities and USDA Securities by obtaining a secondary valuation from an independent third-party service.

Financial Derivatives

The fair value of exchange-traded U.S. Treasury futures is based on unadjusted quoted prices for identical financial instruments. Farmer Mac classifies these fair value measurements as Level 1.

Farmer Mac's derivative portfolio consists primarily of interest rate swaps and forward sales contracts on the debt of other GSEs. Farmer Mac estimates the fair value of these financial instruments primarily based upon the counterparty valuations. Farmer Mac internally values its derivative portfolio using a discounted cash flow valuation technique and obtains a secondary valuation for certain interest rate swaps to corroborate the counterparty valuations. Farmer Mac also regularly reviews the counterparty valuations as part of the collateral exchange process. Farmer Mac classifies these fair value measurements as Level 2.

Certain basis swaps are non-standard interest rate swap structures and are therefore internally modeled using significant assumptions and unobservable inputs, resulting in Level 3 classification. Farmer Mac uses a discounted cash flow valuation technique, using management's best estimate of certain key assumptions, which include prepayment speeds, forward yield curves, and discount rates commensurate with the risks involved.

Nonrecurring Fair Value Measurements and Classification

Loans Held for Investment

Certain loans in Farmer Mac's held for investment loan portfolio are measured at fair value when they are determined to be impaired. For these impaired loans, the fair value of the loan generally is based on the fair value of the underlying property, which is determined by recent third-party appraisals. Farmer Mac uses net realizable value (fair value less estimated costs to sell) as a reasonable estimate of fair value and classifies the fair values as Level 3 measurements in the tables below.

When recent third-party appraisals are not available, Farmer Mac measures loan impairment in the aggregate in consideration of the similar risk characteristics of the assets and historical statistics, and does not include these impaired loans in the tables below.

Real Estate Owned

Farmer Mac initially records REO properties at net realizable value and subsequently measures them at the lower of carrying value or net realizable value. The fair value of the REO generally is based on third-party appraisals. Farmer Mac classifies the REO fair values as Level 3 measurements. Farmer Mac uses net realizable value as a reasonable estimate of fair value in the tables below.

Fair Value Classification and Transfers

As of December 31, 2018, Farmer Mac's assets and liabilities recorded at fair value included financial instruments valued at \$6.0 billion whose fair values were estimated by management in the absence of readily determinable fair values (i.e., level 3). These financial instruments measured as Level 3 represented 32% of total assets and 73% of financial instruments measured at fair value as of December 31, 2018. As of December 31, 2017, Farmer Mac's assets and liabilities recorded at fair value included financial instruments valued at \$5.5 billion whose fair values were estimated by management in the absence of readily determinable fair values. These financial instruments measured as level 3

represented 31% of total assets and 71% of financial instruments measured at fair value as of December 31, 2017.

Transfers in and/or out of the different levels within the fair value hierarchy are based on the fair values of the assets and liabilities as of the beginning of the reporting period. During 2018, there were no transfers within fair value hierarchy for fair value measurements of Farmer Mac's investment securities, Farmer Mac Guaranteed Securities, USDA Securities, and financial derivatives. During 2017, there was one transfer within the fair value hierarchy from Level 2 to Level 3 for the fair value measurement of a fixed-rate GSE guaranteed mortgage-backed security (interest-only security). The transfer to Level 3 was because unobservable inputs became significant to the overall estimate of the fair value of the security as of March 31, 2017. There were no transfers within the fair value hierarchy for fair value measurements of Farmer Mac's investment securities, Farmer Mac Guaranteed Securities, USDA Securities, and financial derivatives during 2016. See Note 2(b) and Note 5 for information about the transfer of available-for-sale USDA and Farmer Mac Guaranteed USDA securities to held-to-maturity as of October 1, 2016.

The following tables present information about Farmer Mac's assets and liabilities measured at fair value on a recurring and non-recurring basis as of December 31, 2018 and 2017, respectively, and indicate the fair value hierarchy of the valuation techniques used by Farmer Mac to determine such fair value:

Table 13.1

Assets and Liabilities Measured at Fair Value as of December 31, 2018

	Level 1	Level 2	Level 3	Total
	(in thousands)			
Recurring:				
Assets:				
Investment Securities:				
Available-for-sale:				
Floating rate auction-rate certificates backed by Government guaranteed student loans	\$—	\$—	\$18,715	\$18,715
Floating rate asset-backed securities	—	28,678	—	28,678
Floating rate Government/GSE guaranteed mortgage-backed securities	—	1,377,454	—	1,377,454
Fixed rate GSE guaranteed mortgage-backed securities	—	403	—	403
Fixed rate U.S. Treasuries	792,602	—	—	792,602
Total Investment Securities	792,602	1,406,535	18,715	2,217,852
Farmer Mac Guaranteed Securities:				
Available-for-sale:				
AgVantage	—	—	5,974,497	5,974,497
Total Farmer Mac Guaranteed Securities	—	—	5,974,497	5,974,497
USDA Securities:				
Trading	—	—	9,999	9,999
Total USDA Securities	—	—	9,999	9,999
Financial derivatives	—	7,487	—	7,487
Total Assets at fair value	\$792,602	\$1,414,022	\$6,003,211	\$8,209,835
Liabilities:				
Financial derivatives	\$188	\$19,445	\$—	\$19,633
Total Liabilities at fair value	\$188	\$19,445	\$—	\$19,633
Non-recurring:				
Assets:				
Loans held for investment	\$—	\$—	\$317	\$317
REO	—	—	128	128
Total Non-recurring Assets at fair value	\$—	\$—	\$445	\$445

Assets and Liabilities Measured at Fair Value as of December 31, 2017

	Level 1 (in thousands)	Level 2	Level 3	Total
Recurring:				
Assets:				
Investment Securities:				
Available-for-sale:				
Floating rate auction-rate certificates backed by Government guaranteed student loans	\$—	\$—	\$18,814	\$18,814
Floating rate asset-backed securities	—	34,210	—	34,210
Floating rate Government/GSE guaranteed mortgage-backed securities	—	1,290,187	—	1,290,187
Fixed rate GSE guaranteed mortgage-backed securities	—	486	4,333	4,819
Fixed rate senior agency debt	—	99,951	—	99,951
Fixed rate U.S. Treasuries	767,424	—	—	767,424
Total available-for-sale	767,424	1,424,834	23,147	2,215,405
Farmer Mac Guaranteed Securities:				
Available-for-sale:				
AgVantage	—	—	5,471,914	5,471,914
Total Farmer Mac Guaranteed Securities	—	—	5,471,914	5,471,914
USDA Securities:				
Trading	—	—	13,515	13,515
Total USDA Securities	—	—	13,515	13,515
Financial derivatives	—	7,093	—	7,093
Total Assets at fair value	\$767,424	\$1,431,927	\$5,508,576	\$7,707,927
Liabilities:				
Financial derivatives	\$36	\$26,563	\$—	\$26,599
Total Liabilities at fair value	\$36	\$26,563	\$—	\$26,599
Non-recurring:				
Assets:				
Loans held for investment	\$—	\$—	\$508	\$508
Total Non-recurring Assets at fair value	\$—	\$—	\$508	\$508

The following tables present additional information about assets and liabilities measured at fair value on a recurring basis for which Farmer Mac has used significant unobservable inputs to determine fair value. Net transfers in and/or out of Level 3 are based on the fair values of the assets and liabilities as of the beginning of the reporting period. There were no liabilities measured at fair value using significant unobservable inputs during the years ended December 31, 2018 and 2017.

Table 13.2

Level 3 Assets and Liabilities Measured at Fair Value for the Year Ended December 31, 2018

	Beginning Balance	Cumulative Effect from Change in Hedge Accounting	Purchases	Sales	Settlements	Realized and Unrealized (Losses)/Gains included in Income	Unrealized (Losses) included in Other Comprehen- sive Income	Ending Balance
(in thousands)								
Recurring:								
Assets:								
Investment Securities:								
Available-for-sale:								
Floating rate auction-rate certificates backed by Government guaranteed student loans	\$18,814	—	\$—	\$—	\$—	\$—	\$(99)	\$18,715
Fixed rate GSE guaranteed mortgage-backed securities	4,333	—	—	—	(2,137)	(2,092)	(104)	—
Total available-for-sale	23,147	—	—	—	(2,137)	(2,092)	(203)	18,715
Farmer Mac Guaranteed Securities:								
Available-for-sale:								
AgVantage	5,471,914	487	2,177,546	—	(1,670,402)	21,459	(26,507)	5,974,497
Total available-for-sale	5,471,914	487	2,177,546	—	(1,670,402)	21,459	(26,507)	5,974,497
USDA Securities:								
Available-for-sale	—	—	127,850	(127,850)	—	—	—	—
Trading ⁽¹⁾	13,515	—	—	—	(3,597)	81	—	9,999
Total USDA Securities	13,515	—	127,850	(127,850)	(3,597)	81	—	9,999
Total Assets at fair value	\$5,508,576	\$ 487	\$2,305,396	\$(127,850)	\$(1,676,136)	\$ 19,448	\$(26,710)	\$6,003,211

(1)

Includes unrealized gains of \$0.1 million attributable to assets still held as of December 31, 2018 that are recorded in "Gains/(losses) on trading securities."

Level 3 Assets and Liabilities Measured at Fair Value for the Year Ended December 31, 2017

	Beginning Balance	Transfers in	Purchases	Sales	Settlements	Realized and Unrealized (Losses) included in Income	Unrealized Gains/(Losses) included in Other Comprehen-sive Income	Ending Balance
(in thousands)								
Recurring:								
Assets:								
Investment Securities:								
Available-for-sale:								
Floating rate auction-rate certificates backed by Government guaranteed student loans	\$17,730	\$—	\$—	\$—	\$—	\$—	\$ 1,084	\$18,814
Fixed rate GSE guaranteed mortgage-backed securities	\$—	\$ 7,041	\$—	\$—	\$(444)	\$—	\$ (2,264)	\$4,333
Total available-for-sale	17,730	7,041	—	—	(444)	—	(1,180)	23,147
Farmer Mac Guaranteed Securities:								
Available-for-sale:								
AgVantage	4,853,685	—	1,134,132	—	(526,650)	(7,625)	18,372	5,471,914
Total available-for-sale	4,853,685	—	1,134,132	—	(526,650)	(7,625)	18,372	5,471,914
USDA Securities:								
Available-for-sale								
Trading ⁽¹⁾	20,388	—	155,744	(155,744)	—	—	—	—
Total USDA Securities	20,388	—	155,744	(155,744)	(6,849)	(24)	—	13,515
Total Assets at fair value	\$4,891,803	\$ 7,041	\$1,289,876	\$(155,744)	\$(533,943)	\$(7,649)	\$ 17,192	\$5,508,576

(1) Includes unrealized gains of \$0.1 million attributable to assets still held as of December 31, 2017 that are recorded in "Gains/(losses) on trading securities."

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Level 3 Assets and Liabilities Measured at Fair Value for the Year Ended December 31, 2016

	Beginning Balance	Purchases	Sales	Settlements	Realized and Unrealized Gains/(Losses) included in Income	Unrealized (Losses)/Gains Other Comprehen- sive Income	Transfers Out	Ending Balance
(in thousands)								
Recurring:								
Assets:								
Investment Securities:								
Available-for-sale:								
Floating rate auction-rate certificates backed by Government guaranteed student loans	\$44,924	\$—	\$(26,806)	\$—	\$6	\$(394)	—	\$17,730
Total available-for-sale	44,924	—	(26,806)	—	6	(394)	—	17,730
Trading:								
Floating rate asset-backed securities ⁽¹⁾	491	—	—	(2,213)	1,722	—	—	\$—
Total Trading	491	—	—	(2,213)	1,722	—	—	—
Total Investment Securities	45,415	—	(26,806)	(2,213)	1,728	(394)	—	17,730
Farmer Mac Guaranteed Securities:								
Available-for-sale:								
AgVantage	4,121,244	1,430,392	—	(706,446)	(20,944)	29,439	—	4,853,685
Farmer Mac Guaranteed USDA Securities ⁽²⁾	31,361	4,100	—	(3,240)	—	603	(32,824)	—
Total available-for-sale	4,152,605	1,434,492	—	(709,686)	(20,944)	30,042	(32,824)	4,853,685
USDA Securities:								
Available-for-sale	1,888,344	391,240	(97,954)	(237,262)	—	35,959	(1,980,327)	—
Trading ⁽³⁾	28,975	—	—	(8,325)	(262)	—	—	20,388
Total USDA Securities	1,917,319	391,240	(97,954)	(245,587)	(262)	35,959	(1,980,327)	20,388
Total Assets at fair value	\$6,115,339	\$1,825,732	\$(124,760)	\$(957,486)	\$(19,478)	\$65,607	\$(2,013,151)	\$4,891,803

(1) None of the unrealized gains are attributable to assets still held as of December 31, 2016 and are recorded in "Gains/(losses) on trading securities."

(2) Includes \$32.8 million of Farmer Mac Guaranteed USDA Securities and \$2.0 billion of USDA Securities transferred from available-for-sale to held-to-maturity on October 1, 2016.

- (3) Includes unrealized losses of \$0.3 million attributable to assets still held as of December 31, 2016 that are recorded in "Gains/(losses) on trading securities."

The following tables present additional information about the significant unobservable inputs, such as discount rates and constant prepayment rates ("CPR"), used in the fair value measurements categorized in level 3 of the fair value hierarchy as of December 31, 2018 and 2017.

Table 13.3

Financial Instruments	As of December 31, 2018			
	Fair Value (in thousands)	Valuation Technique	Unobservable Input	Range (Weighted-Average)
Assets:				
Investment securities:				
Floating rate auction-rate certificates backed by Government guaranteed student loans	\$18,715	Indicative bids	Range of broker quotes	95.0% - 95.0% (95.0%)
Farmer Mac Guaranteed Securities:				
AgVantage	\$5,974,497	Discounted cash flow	Discount rate	3.0% - 4.4% (3.3%)
USDA Securities	\$9,999	Discounted cash flow	Discount rate	3.2% - 5.2% (4.9%)
			CPR	7% - 17% (16%)
As of December 31, 2017				
Financial Instruments	Fair Value (in thousands)	Valuation Technique	Unobservable Input	Range (Weighted-Average)
Assets:				
Investment securities:				
Floating rate auction-rate certificates backed by Government guaranteed student loans	\$18,814	Indicative bids	Range of broker quotes	95.5% - 95.5% (95.5%)
Fixed rate GSE guaranteed mortgage-backed securities	\$4,333	Discounted cash flow	Discount rate	2.9%
Farmer Mac Guaranteed Securities:				
AgVantage	\$5,471,914	Discounted cash flow	Discount rate	2.1% - 3.4% (2.4%)
USDA Securities	\$13,515	Discounted cash flow	Discount rate	3.6% - 5.4% (5.0%)
			CPR	7% - 19% (17%)

The significant unobservable inputs used in the fair value measurements of Farmer Mac Guaranteed Securities and USDA Securities are prepayment rates and discount rates commensurate with the risks involved. Typically, significant increases (decreases) in any of these inputs in isolation may result in materially lower (higher) fair value measurements. Generally, in a rising interest rate environment, Farmer Mac would expect average discount rates to increase and would likely expect a corresponding decrease in forecasted prepayment rates. Conversely, in a declining interest rate environment, Farmer Mac would expect average discount rates to decrease and would likely expect a corresponding increase in forecasted prepayment rates. Prepayment rates are not presented in the table above for AgVantage securities because they generally do not pay down principal based on amortization schedules but instead typically have fixed maturity dates when the secured general obligations are due.

Disclosures on Fair Value of Financial Instruments

The following table sets forth the estimated fair values and carrying values for financial assets, liabilities, and guarantees and commitments as of December 31, 2018 and 2017:

Table 13.4

	As of December 31, 2018		As of December 31, 2017	
	Fair Value	Carrying Amount	Fair Value	Carrying Amount
(in thousands)				
Financial assets:				
Cash and cash equivalents	\$425,256	\$425,256	\$302,022	\$302,022
Investment securities	2,263,446	2,262,884	2,260,969	2,260,437
Farmer Mac Guaranteed Securities	8,061,903	8,071,115	7,588,806	7,598,188
USDA Securities	2,113,946	2,176,173	2,076,396	2,131,365
Loans	5,512,781	5,515,052	5,279,225	5,266,786
Financial derivatives	7,487	7,487	7,093	7,093
Guarantee and commitment fees receivable:				
LTSPCs	37,461	36,870	33,871	35,718
Farmer Mac Guaranteed Securities	3,424	3,496	4,323	4,177
Financial liabilities:				
Notes payable:				
Due within one year	7,744,388	7,757,050	8,079,309	8,089,826
Due after one year	8,473,558	8,486,647	7,445,545	7,432,790
Debt securities of consolidated trusts held by third parties	1,501,754	1,528,957	1,386,652	1,404,945
Financial derivatives	19,633	19,633	26,599	26,599
Guarantee and commitment obligations:				
LTSPCs	36,471	35,880	32,976	34,824
Farmer Mac Guaranteed Securities	2,731	2,803	3,722	3,576

The carrying value of cash and cash equivalents is a reasonable estimate of their approximate fair value and is classified as Level 1. Investment securities primarily are valued based on unadjusted quoted prices in active markets and are classified as Level 2. Farmer Mac internally models the fair value of its loan portfolio, including loans held for investment and loans held for investment in consolidated trusts, Farmer Mac Guaranteed Securities, and USDA Securities by discounting the projected cash flows of these instruments at projected interest rates. The fair values are based on the present value of expected cash flows using management's best estimate of certain key assumptions, which include prepayment speeds, forward yield curves and discount rates commensurate with the risks involved. These fair value measurements do not take into consideration the fair value of the underlying property and are classified as Level 3. Financial derivatives primarily are valued using unadjusted counterparty valuations and are classified as Level 2. The fair value of the guarantee fees receivable/obligation and debt securities of consolidated trusts are estimated based on the present value of expected future cash flows of the underlying mortgage assets using management's best estimate of certain key assumptions, which include prepayments speeds, forward yield curves, and discount rates commensurate with the risks involved and are classified as Level 3. Notes payable are valued by discounting the expected cash flows of these instruments using a yield curve derived from market prices observed for similar agency securities and are also classified as Level 3. Because the cash flows of Farmer Mac's financial instruments may be interest rate path dependent, estimated fair values and projected discount rates for Level 3 financial instruments

are derived using a Monte Carlo simulation model. Different market assumptions and estimation methodologies could significantly affect estimated fair value amounts.

14. BUSINESS SEGMENT REPORTING

Farmer Mac's operations consist of four operating segments – Farm & Ranch, USDA Guarantees, Rural Utilities, and Institutional Credit. The Institutional Credit segment comprises Farmer Mac's purchases and guarantees of AgVantage securities related to general obligations of lenders that are secured by pools of eligible loans.

Farmer Mac uses these four segments to manage business risk, and each segment is based on distinct products and distinct business activities. In addition to these four operating segments, a corporate segment is presented. That segment represents activity in Farmer Mac's investment portfolio and other corporate activities. Each operating segment's financial results include directly attributable revenues and expenses. Corporate charges for administrative expenses that are not directly attributable to an operating segment are allocated to each segment based on headcount.

Farmer Mac uses core earnings to measure corporate economic performance and develop financial plans because, in management's view, core earnings is a useful alternative measure in understanding Farmer Mac's economic performance, transaction economics, and business trends. Core earnings principally differs from net income attributable to common stockholders by excluding the effects of fair value fluctuations, which are not expected to have a cumulative net impact on financial condition or results of operations reported in accordance with generally accepted accounting principles if the related financial instruments are held to maturity, as is generally expected. Core earnings also differs from net income attributable to common stockholders by excluding specified infrequent or unusual transactions that Farmer Mac believes are not indicative of future operating results and that may not reflect the trends and economic financial performance of Farmer Mac's core business. This corporate economic performance measure may not be comparable to similarly labeled measures disclosed by other companies.

The financial information presented below reflects the accounts of Farmer Mac and its subsidiaries on a consolidated basis. Accordingly, the core earnings for Farmer Mac's reportable operating segments will differ from the stand-alone financial statements of Farmer Mac's subsidiaries. These differences will be due to various factors, including the exclusion of unrealized gains and losses related to fair value changes of trading assets and financial derivatives, as well as the allocation of certain expenses such as dividends and interest expense related to the issuance of capital and the issuance of indebtedness managed at the corporate level. The allocation of general and administrative expenses that are not directly attributable to an operating segment may also result in differences.

The following tables present core earnings for Farmer Mac's operating segments and a reconciliation to consolidated net income for the years ended December 31, 2018, 2017, and 2016:

Table 14.1

Core Earnings by Business Segment

For the Year Ended December 31, 2018

	Farm & Ranch (in thousands)	USDA Guarantees	Rural Utilities	Institutional Credit	Corporate	Reconciling Adjustments	Consolidated Net Income
Net interest income	\$62,951	\$20,554	\$12,505	\$69,321	\$9,105	\$—	\$174,436
Less: reconciling adjustments ⁽¹⁾⁽²⁾⁽³⁾	(9,889)	(2,499)	(922)	(7,884)	(2,047)	23,241	—
Net effective spread	53,062	18,055	11,583	61,437	7,058	23,241	—
Guarantee and commitment fees ⁽²⁾	17,976	797	1,599	360	—	(6,756)	13,976
Other income/(expense) ⁽³⁾	1,371	20	33	—	(913)	(2,747)	(2,236)
Non-interest income/(loss)	19,347	817	1,632	360	(913)	(9,503)	11,740
Provision for loan losses	(238)	—	—	—	—	—	(238)
Provision for reserve for losses	(97)	—	—	—	—	—	(97)
Other non-interest expense	(19,026)	(5,309)	(3,062)	(8,011)	(14,411)	—	(49,819)
Non-interest expense ⁽⁴⁾	(19,123)	(5,309)	(3,062)	(8,011)	(14,411)	—	(49,916)
Core earnings before income taxes	53,048	13,563	10,153	53,786	(8,266)	13,738	⁽⁵⁾ 136,022
Income tax (expense)/benefit	(11,140)	(2,848)	(2,133)	(11,295)	2,361	(2,887)	(27,942)
Core earnings before preferred stock dividends and attribution of income to non-controlling interest	41,908	10,715	8,020	42,491	(5,905)	10,851	⁽⁵⁾ 108,080
Preferred stock dividends	—	—	—	—	(13,182)	—	(13,182)
Segment core earnings/(losses)	\$41,908	\$10,715	\$8,020	\$42,491	\$(19,087)	\$10,851	⁽⁵⁾ \$94,898
Total assets at carrying value	\$4,701,736	\$2,240,906	\$945,282	\$8,089,410	\$2,716,994	\$—	\$18,694,328
Total on- and off-balance sheet program assets at principal balance ⁽¹⁾	\$7,233,972	\$2,515,620	\$1,592,115	\$8,382,817	—	—	\$19,724,524

Excludes the amortization of premiums and discounts on assets consolidated at fair value, originally included in interest income, to reflect core earnings amounts.

(2) Includes the reclassification of interest income and interest expense from consolidated trusts owned by third parties to guarantee and commitment fees, to reflect management's view that the net interest income Farmer Mac earns is effectively a guarantee fee.

(3) Includes the reclassification of interest expense related to interest rate swaps not designated as hedges, which are included in "(Losses)/gains on financial derivatives" on the consolidated financial statements, to determine the effective funding cost for each operating segment.

(4) Includes directly attributable costs and an allocation of indirectly attributable costs based on employee headcount.

(5) Net adjustments to reconcile to the corresponding income measures: core earnings before income taxes reconciled to income before income taxes; core earnings before preferred stock dividends and attribution of income to non-controlling interest reconciled to net income; and segment core earnings reconciled to net income attributable to common stockholders.

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Core Earnings by Business Segment

For the Year Ended December 31, 2017

	Farm & Ranch (in thousands)	USDA Guarantees	Rural Utilities	Institutional Credit	Corporate	Reconciling Adjustments	Consolidated Net Income
Net interest income	\$54,290	\$21,106	\$11,598	\$59,842	\$10,811	\$ —	\$ 157,647
Less: reconciling adjustments ⁽¹⁾⁽²⁾⁽³⁾⁽⁴⁾	(8,922)	(2,287)	(539)	(3,505)	(1,091)	16,344	—
Net effective spread	45,368	18,819	11,059	56,337	9,720	16,344	—
Guarantee and commitment fees ⁽²⁾	17,175	456	1,914	805	—	(6,236)	14,114
Other income ⁽³⁾⁽⁵⁾	2,449	43	20	—	171	715	3,398
Non-interest income/(loss)	19,624	499	1,934	805	171	(5,521)	17,512
Provision for loan losses	(1,708)	—	—	—	—	—	(1,708)
Provision for reserve for losses	(50)	—	—	—	—	—	(50)
Other non-interest expense	(16,554)	(4,384)	(2,430)	(6,439)	(12,908)	—	(42,715)
Non-interest expense ⁽⁶⁾	(16,604)	(4,384)	(2,430)	(6,439)	(12,908)	—	(42,765)
Core earnings before income taxes	46,680	14,934	10,563	50,703	(3,017)	10,823	⁽⁷⁾ 130,686
Income tax (expense)/benefit	(16,338)	(5,227)	(3,696)	(17,746)	1,792	(5,154)	(46,369)
Core earnings before preferred stock dividends and attribution of income to non-controlling interest	30,342	9,707	6,867	32,957	(1,225)	5,669	⁽⁷⁾ 84,317
Preferred stock dividends	—	—	—	—	(13,182)	—	(13,182)
Non-controlling interest	—	—	—	—	165	—	165
Segment core earnings/(losses)	\$ 30,342	\$ 9,707	\$ 6,867	\$ 32,957	\$ (14,242)	\$ 5,669	⁽⁷⁾ \$ 71,300
Total assets at carrying value	\$4,274,693	\$2,195,189	\$1,088,986	\$7,627,749	\$2,605,657	\$ —	\$ 17,792,274
Total on- and off-balance sheet program assets at principal balance	\$6,867,586	\$2,352,214	\$1,882,633	\$7,904,878	—	—	\$ 19,007,311

(1) Excludes the amortization of premiums and discounts on assets consolidated at fair value, originally included in interest income, to reflect core earnings amounts.

Includes the reclassification of interest income and interest expense from consolidated trusts owned by third parties
(2) to guarantee and commitment fees, to reflect management's view that the net interest income Farmer Mac earns is effectively a guarantee fee.

(3) Includes the reclassification of interest expense related to interest rate swaps not designated as hedges, which are included in "(Losses)/gains on financial derivatives" on the consolidated financial statements, to determine the effective funding cost for each operating segment.

Effective in fourth quarter 2017, Farmer Mac revised its methodology for calculating net effective spread, a component of core earnings, to also include the net effects of gains/(losses) due to terminations or net settlements
(4) on financial derivatives. All prior period information has been recast to reflect the revised methodology. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Use of Non-GAAP Measures—Net Effective Spread."

Includes reconciling adjustments for fair value adjustments on financial derivatives and trading assets. Also
(5) includes a reconciling adjustment related to the recognition of deferred gains over the estimated lives of certain Farmer Mac Guaranteed Securities and USDA Securities.

(6) Includes directly attributable costs and an allocation of indirectly attributable costs based on employee headcount. Net adjustments to reconcile to the corresponding income measures: core earnings before income taxes reconciled to income before income taxes; core earnings before preferred stock dividends and attribution of income to
(7) non-controlling interest reconciled to net income; and segment core earnings reconciled to net income attributable to common stockholders.

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Core Earnings by Business Segment

For the Year Ended December 31, 2016

	Farm & Ranch (in thousands)	USDA Guarantees	Rural Utilities	Institutional Credit	Corporate	Reconciling Adjustments	Consolidated Net Income
Net interest income	\$47,219	\$21,865	\$11,739	\$48,756	\$10,695	\$—	\$140,274
Less: reconciling adjustments ⁽¹⁾⁽²⁾⁽³⁾⁽⁴⁾	(7,729)	(3,210)	(1,771)	(3,184)	(1,308)	17,202	—
Net effective spread	39,490	18,655	9,968	45,572	9,387	17,202	—
Guarantee and commitment fees ⁽²⁾	15,542	101	1,694	1,833	—	(4,302)	14,868
Other income ⁽³⁾⁽⁵⁾	539	222	2	—	1,322	3,515	5,600
Non-interest income/(loss)	16,081	323	1,696	1,833	1,322	(787)	20,468
Provision for loan losses	(1,065)	—	—	—	—	—	(1,065)
Provision for reserve for losses	63	—	—	—	—	—	63
Other non-interest expense	(16,206)	(4,200)	(2,856)	(3,786)	(13,335)	—	(40,383)
Non-interest expense ⁽⁶⁾	(16,143)	(4,200)	(2,856)	(3,786)	(13,335)	—	(40,320)
Core earnings before income taxes	38,363	14,778	8,808	43,619	(2,626)	16,415	⁽⁷⁾ 119,357
Income tax (expense)/benefit	(13,428)	(5,173)	(3,083)	(15,265)	636	(5,744)	(42,057)
Core earnings before preferred stock dividends and attribution of income to non-controlling interest	24,935	9,605	5,725	28,354	(1,990)	10,671	⁽⁷⁾ 77,300
Preferred stock dividends	—	—	—	—	(13,182)	—	(13,182)
Non-controlling interest	—	—	—	—	34	—	34
Segment core earnings/(losses)	\$24,935	\$9,605	\$5,725	\$28,354	\$(15,138)	\$10,671	⁽⁷⁾ \$64,152
Total assets at carrying value	\$3,582,098	\$2,096,503	\$1,012,014	\$6,008,574	\$2,906,831	\$—	\$15,606,020
Total on- and off-balance sheet program assets at principal balance	\$6,139,304	\$2,094,375	\$1,878,110	\$7,287,686	—	—	\$17,399,475

(1) Excludes the amortization of premiums and discounts on assets consolidated at fair value, originally included in interest income, to reflect core earnings amounts.

Includes the reclassification of interest income and interest expense from consolidated trusts owned by third parties
(2) to guarantee and commitment fees, to reflect management's view that the net interest income Farmer Mac earns is effectively a guarantee fee.

(3) Includes the reclassification of interest expense related to interest rate swaps not designated as hedges, which are included in "(Losses)/gains on financial derivatives" on the consolidated financial statements, to determine the effective funding cost for each operating segment.

Effective in fourth quarter 2017, Farmer Mac revised its methodology for calculating net effective spread, a component of core earnings, to also include the net effects of gains/(losses) due to terminations or net settlements
(4) on financial derivatives. All prior period information has been recast to reflect the revised methodology. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Use of Non-GAAP Measures—Net Effective Spread."

Includes reconciling adjustments for fair value adjustments on financial derivatives and trading assets. Also
(5) includes a reconciling adjustment related to the recognition of deferred gains over the estimated lives of certain Farmer Mac Guaranteed Securities and USDA Securities.

(6) Includes directly attributable costs and an allocation of indirectly attributable costs based on staffing.
Net adjustments to reconcile to the corresponding income measures: core earnings before income taxes reconciled
(7) to income before income taxes; core earnings before preferred stock dividends and attribution of income to non-controlling interest reconciled to net income; and segment core earnings reconciled to net income attributable to common stockholders.

15. QUARTERLY FINANCIAL INFORMATION (UNAUDITED)

Table 15.1

	2018 Quarter Ended			
	Dec. 31	Sept. 30	June 30	Mar. 31
	(in thousands, except per share amounts)			
Interest income:				
Interest income	\$146,453	\$142,615	\$135,670	\$119,546
Interest expense	104,237	97,557	91,737	76,317
Net interest income	42,216	45,058	43,933	43,229
Provision for loan losses	(146)	(99)	(424)	431
Net interest income after provision for loan losses	42,070	44,959	43,509	43,660
Non-interest income:				
Guarantee and commitment fees	3,506	3,490	3,481	3,499
(Losses)/gains on financial derivatives	(2,999)	628	2,534	(3,850)
Gains/(losses) on trading assets	57	(3)	11	16
(Losses)/gains on sale of real estate owned	—	(41)	34	—
Other income	118	365	320	574
Non-interest income	682	4,439	6,380	239
Non-interest expense	13,703	11,650	12,921	11,642
Income before income taxes	29,049	37,748	36,968	32,257
Income tax expense	6,193	7,979	7,332	6,438
Net income	22,856	29,769	29,636	25,819
Net income attributable to Farmer Mac	22,856	29,769	29,636	25,819
Preferred stock dividends	(3,296)	(3,295)	(3,296)	(3,295)
Net income attributable to common stockholders	\$19,560	\$26,474	\$26,340	\$22,524
Earnings per common share:				
Basic earnings per common share	\$1.84	\$2.48	\$2.47	\$2.12
Diluted earnings per common share	\$1.82	\$2.46	\$2.45	\$2.10

	2017 Quarter Ended			
	Dec. 31	Sept. 30	June 30	Mar. 31
	(in thousands, except per share amounts)			
Interest income:				
Interest income	\$111,371	\$104,497	\$98,047	\$86,617
Interest expense	70,088	64,935	58,316	49,546
Net interest income	41,283	39,562	39,731	37,071
Provision for loan losses	(474)	(270)	(327)	(637)
Net interest income after provision for loan losses	40,809	39,292	39,404	36,434
Non-interest income/(loss):				
Guarantee and commitment fees	3,484	3,314	3,472	3,844
(Losses)/gains on financial derivatives	(1,777)	661	(617)	2,486
Gains/(losses) on trading assets	60	—	(2)	(82)
Gains on sale of available-for-sale investment securities	—	89	—	—
Gains/(losses) on sale of real estate owned	964	32	757	(5)
Other (loss)/income	(58)	203	134	553
Non-interest income	2,673	4,299	3,744	6,796
Non-interest expense	10,210	10,616	11,390	10,549
Income before income taxes	33,272	32,975	31,758	32,681
Income tax expense	13,266	11,193	11,124	10,786
Net income	20,006	21,782	20,634	21,895
Less: Net loss attributable to non-controlling interest	—	—	150	15
Net income attributable to Farmer Mac	20,006	21,782	20,784	21,910
Preferred stock dividends	(3,296)	(3,295)	(3,296)	(3,295)
Net income attributable to common stockholders	\$16,710	\$18,487	\$17,488	\$18,615
Earnings per common share:				
Basic earnings per common share	\$1.57	\$1.74	\$1.65	\$1.76
Diluted earnings per common share	\$1.55	\$1.71	\$1.62	\$1.73

16. SUBSEQUENT EVENT

On February 19, 2019, we purchased a \$546 million portfolio of participations in seasoned Rural Utilities loans from CoBank under a master loan participation agreement entered into on February 13, 2019. CoBank is a related party to Farmer Mac because of its stock ownership in Farmer Mac. For more information, see the Current Report on Form 8-K that we filed with the SEC on February 20, 2019. As discussed in Note 3, Farmer Mac has a related party relationship with CoBank because CoBank is a major holder (32.6%) of Farmer Mac Class B voting common stock and because a member of Farmer Mac's board of directors has an affiliation with that entity.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Management's Evaluation of Disclosure Controls and Procedures. Farmer Mac maintains disclosure controls and procedures designed to ensure that information required to be disclosed in its periodic filings under the Securities Exchange Act of 1934 (the "Exchange Act"), including this Annual Report on Form 10-K, is recorded, processed, summarized, and reported on a timely basis. These disclosure controls and procedures include controls and procedures designed to ensure that information required to be disclosed under the Exchange Act is accumulated and communicated to Farmer Mac's management on a timely basis to allow decisions about required disclosure. Management, including Farmer Mac's Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of the design and operation of Farmer Mac's disclosure controls and procedures (as defined under Rules 13a-15(e) and 15d-15(e) of the Exchange Act) as of December 31, 2018.

Farmer Mac carried out the evaluation of the effectiveness of its disclosure controls and procedures, required by paragraph (b) of Exchange Act Rules 13a-15 and 15d-15, under the supervision and with the participation of management, including the Chief Executive Officer and Chief Financial Officer. Based upon this evaluation, the Chief Executive Officer and Chief Financial Officer concluded that Farmer Mac's disclosure controls and procedures were effective as of December 31, 2018.

Management's Report on Internal Control Over Financial Reporting. See "Financial Statements—Management's Report on Internal Control Over Financial Reporting" in Item 8 of this Annual Report on Form 10-K.

Attestation Report of Independent Registered Public Accounting Firm. See "Financial Statements—Report of Independent Registered Public Accounting Firm" in Item 8 of this Annual Report on Form 10-K.

Changes in Internal Control Over Financial Reporting. There were no changes in Farmer Mac's internal control over financial reporting during the three months ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, Farmer Mac's internal control over financial reporting.

Item 9B. Other Information

(a) None.

(b) None.

PART III

Item 10. Directors, Executive Officers, and Corporate Governance

The information required by this Item is incorporated by reference to Farmer Mac's definitive proxy statement to be filed on or about April 1, 2019.

Item 11. Executive Compensation

The information required by this Item is incorporated by reference to Farmer Mac's definitive proxy statement to be filed on or about April 1, 2019.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this Item is incorporated by reference to Farmer Mac's definitive proxy statement to be filed on or about April 1, 2019.

Item 13. Certain Relationships and Related Transactions and Director Independence

The information required by this Item is incorporated by reference to Farmer Mac's definitive proxy statement to be filed on or about April 1, 2019.

Item 14. Principal Accountant Fees and Services

The information required by this Item is incorporated by reference to Farmer Mac's definitive proxy statement to be filed on or about April 1, 2019.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a)(1) Financial Statements.

Refer to Item 8 above.

(2) Financial Statement Schedules.

There are no schedules because they are not applicable, not required, or the information required to be set forth therein is included in the consolidated financial statements or in notes thereto.

(b) Exhibits

- ** 3.1 Title VIII of the Farm Credit Act of 1971, as most recently amended by the Agricultural Improvement Act of 2018.
 - * 3.2 Amended and Restated By-Laws of the Registrant (Previously filed as Exhibit 3.1 to Form 8-K filed August 2, 2018).
 - * 4.1 Specimen Certificate for Farmer Mac Class A Voting Common Stock (Previously filed as Exhibit 4.1 to Form 10-Q filed May 15, 2003).
 - * 4.2 Specimen Certificate for Farmer Mac Class B Voting Common Stock (Previously filed as Exhibit 4.2 to Form 10-Q filed May 15, 2003).
 - * 4.3 Specimen Certificate for Farmer Mac Class C Non-Voting Common Stock (Previously filed as Exhibit 4.3 to Form 10-Q filed May 15, 2003).
 - * 4.4 Specimen Certificate for 5.875% Non-Cumulative Preferred Stock, Series A (Previously filed as Exhibit 4.4.1 to Form 10-Q filed May 9, 2013).
 - * 4.4.1 Certificate of Designation of Terms and Conditions of 5.875% Non-Cumulative Preferred Stock, Series A (Previously filed as Exhibit 4.1 to Form 8-A filed January 17, 2013).
 - * 4.5 Specimen Certificate for 6.875% Non-Cumulative Preferred Stock, Series B (Previously filed as Exhibit 4.5 to Form 10-Q filed May 12, 2014).
 - * 4.5.1 Certificate of Designation of Terms and Conditions of 6.875% Non-Cumulative Preferred Stock, Series B (Previously filed as Exhibit 4.1 to Form 8-A filed March 25, 2014).
 - * 4.6 Specimen Certificate for 6.000% Fixed-to-Floating Rate Non-Cumulative Preferred Stock, Series C (Previously filed as Exhibit 4.6 to Form 10-Q filed August 11, 2014).
 - * 4.6.1 Certificate of Designation of Terms and Conditions of 6.000% Fixed-to-Floating Rate Non-Cumulative Preferred Stock, Series C (Previously filed as Exhibit 4.1 to Form 8-A filed June 20, 2014).
 - †* 10.1 Employment Agreement dated as of October 15, 2018 between Bradford T. Nordholm and the Registrant (Previously filed as Exhibit 10.1 to Form 8-K filed October 1, 2018).
 - †* 10.2 Letter Agreement on compensation terms for Registrant's Acting President and Chief Executive Officer between Registrant and Lowell L. Junkins, dated May 18, 2018 (effective May 1, 2018) (Previously filed as Exhibit 10.1 to Form 10-Q filed August 9, 2018).
 - †* 10.3 Amended and Restated 2008 Omnibus Incentive Plan (Previously filed as Exhibit 10.2 to Form 10-Q filed August 9, 2018).
 - †* 10.3.1 Form of SARs Award Agreement under the 2008 Omnibus Incentive Plan for grants made prior to April 1, 2012 (Previously filed as Exhibit 10 to Form 8-K filed June 11, 2008).
 - †* 10.3.2 Form of SARs Award Agreement under the 2008 Omnibus Incentive Plan for grants made from April 1, 2012 to March 31, 2013 (Previously filed as Exhibit 10.1 to Form 8-K filed April 6, 2012).
 - †* 10.3.3 Form of SARs Award Agreement under the 2008 Omnibus Incentive Plan for grants made from April 1, 2013 to March 31, 2015 (Previously filed as Exhibit 10.1 to Form 8-K filed April 5, 2013).
 - †* 10.3.4 Form of SARs Award Agreement under the 2008 Omnibus Incentive Plan for grants made on or after April 1, 2015 (Previously filed as Exhibit 10.1 to Form 8-K filed on April 3, 2015).
 - †* 10.3.5 Form of Restricted Stock Agreement (Officers) under the 2008 Omnibus Incentive Plan for grants made prior to April 1, 2012 (Previously filed as Exhibit 10.1 to Form 8-K filed June 10, 2009).
 - †* 10.3.6 Form of Restricted Stock Agreement (Officers) under the 2008 Omnibus Incentive Plan for grants made from April 1, 2012 to March 31, 2013 (Previously filed as Exhibit 10.2 to Form 8-K filed April 6, 2012).
 - †* 10.3.7 Form of Restricted Stock Agreement (Directors) under the 2008 Omnibus Incentive Plan (Previously filed as Exhibit 10.3 to Form 8-K filed April 6, 2012).
 - †* 10.3.8 Form of Time-Based Restricted Stock Award Agreement for grants made to non-directors from April 1, 2013 to March 31, 2015 (Previously filed as Exhibit 10.2 to Form 8-K filed April 5, 2013).
 - †* 10.3.9 Form of Time-Based Restricted Stock Award Agreement for grants made to non-directors on or after April 1, 2015 (Previously filed as Exhibit 10.3 to Form 8-K filed on April 3, 2015).
- * Incorporated by reference to the indicated prior filing.

** Filed with this report.

Portions of this exhibit have been omitted pursuant to a request for confidential treatment.

† Management contract or compensatory plan.

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- †* 10.3.10 Form of Performance-Based Restricted Stock Award Agreement for grants made to non-directors from April 1, 2013 to March 31, 2015 (Previously filed as Exhibit 10.2 to Form 8-K filed April 5, 2013).
- †* 10.3.11 Form of Performance-Based Restricted Stock Award Agreement for grants made to non-directors on or after April 1, 2015 (Previously filed as Exhibit 10.2 to Form 8-K filed on April 3, 2015).
- †* 10.4 Federal Agricultural Mortgage Corporation Amended and Restated Executive Officer Severance Plan (Previously filed as Exhibit 10.1 to Form 8-K filed November 3, 2016).
- †* 10.5 Form of Participation Agreement to the Federal Agricultural Mortgage Corporation Amended and Restated Executive Officer Severance Plan (Previously filed as Exhibit 10.2 to Form 8-K filed November 3, 2016).
- †* 10.6 Nonqualified Deferred Compensation Plan (effective May 1, 2017) (Previously filed as Exhibit 10.2 to Form 10-Q filed May 10, 2017)
- †* 10.7 Adoption Agreement of the Nonqualified Deferred Compensation Plan (effective May 1, 2017) (Previously filed as Exhibit 10.3 to Form 10-Q filed May 10, 2017)
- †* 10.8 Form of Indemnification Agreement for Directors (Previously filed as Exhibit 10.1 to Form 8-K filed April 9, 2008).
- †* 10.9 Description of compensation agreement between the Registrant and its directors, effective January 1, 2018 (Previously filed as Exhibit 10.7 to Form 10-K filed March 8, 2018).
- *# 10.10 Amended and Restated Master Central Servicing Agreement between Zions First National Bank and the Registrant, dated as of May 1, 2004 (Previously filed as Exhibit 10.11.2 to Form 10-Q filed August 9, 2004).
- *# 10.10.1 Amendment No. 1 to Amended and Restated Master Central Servicing Agreement between Zions First National Bank and the Registrant, dated as of June 1, 2009 (Previously filed as Exhibit 10.11.1 to Form 10-Q filed August 10, 2009).
- *# 10.10.2 Amendment No. 2 to Amended and Restated Master Central Servicing Agreement between Zions First National Bank and the Registrant, dated as of August 25, 2010 (Previously filed as Exhibit 10.11.2 to Form 10-Q filed November 9, 2010).
- *# 10.11 Loan Closing File Review Agreement between Zions First National Bank and the Registrant, dated as of May 1, 2004 (Previously filed as Exhibit 10.12 to Form 10-Q filed November 9, 2005).
- * 10.12 Sublease Agreement between Mayer Brown LLP and the Registrant, dated as of December 6, 2010 (Previously filed as Exhibit 10.43 to Form 10-K/A filed June 1, 2011).
- * 10.13 Master Trust, Sale and Servicing Agreement between CFC Advantage, LLC, National Rural Utilities Cooperative Finance Corporation, U.S. Bank National Association, and the Registrant, dated as of October 20, 2006 (Previously filed as Exhibit 10.22 to Form 10-Q filed August 9, 2010).
- * 10.14 Registration Rights Agreement Series 2007-1 between CFC Advantage, LLC, National Rural Utilities Cooperative Finance Corporation, and the Registrant, dated as of February 15, 2007 (Previously filed as Exhibit 10.23 to Form 10-Q filed August 9, 2010).
- * 10.15 Registration Rights Agreement Series 2007-2 between CFC Advantage, LLC, National Rural Utilities Cooperative Finance Corporation, and the Registrant, dated as of August 10, 2007 (Previously filed as Exhibit 10.24 to Form 10-Q filed August 9, 2010).
- * 10.16 Amended and Restated Note Purchase Agreement between Farmer Mac Mortgage Securities Corporation, National Rural Utilities Cooperative Finance Corporation, and the Registrant, dated as of March 24, 2011 (Previously filed as Exhibit 10.22 to Form 10-Q filed May 10, 2011).
- * 10.16.1 Amended and Restated First Supplemental Note Purchase Agreement between Farmer Mac Mortgage Securities Corporation, National Rural Utilities Cooperative Finance Corporation, and the Registrant, dated as of January 8, 2015 (Previously filed as Exhibit 10.1 to Form 8-K filed January 13, 2015).
- * 10.16.2 Second Amended and Restated First Supplemental Note Purchase Agreement between Farmer Mac Mortgage Securities Corporation, National Rural Utilities Cooperative Finance Corporation, and the Registrant, dated as of February 26, 2018 (Previously filed as Exhibit 10.1 to Form 10-Q filed May 10,

2018).

* Incorporated by reference to the indicated prior filing.

** Filed with this report.

Portions of this exhibit have been omitted pursuant to a request for confidential treatment.

† Management contract or compensatory plan.

- * 10.17 ~~Setoff Rights Letter Agreement between National Rural Utilities Cooperative Finance Corporation, Farmer Mac Mortgage Securities Corporation, and the Registrant, dated as of March 24, 2011 (Previously filed as Exhibit 10.24 to Form 10-Q filed May 10, 2011).~~
- * 10.18 ~~Amended and Restated Master Sale and Servicing Agreement between National Rural Utilities Cooperative Finance Corporation and the Registrant, dated as of August 12, 2011 (Previously filed as Exhibit 10.26 to Form 10-Q filed November 9, 2011).~~
- * 10.19 ~~Amendment No. 1 to Amended and Restated Master Sale and Servicing Agreement between National Rural Utilities Cooperative Finance Corporation and the Registrant, dated as of November 28, 2016 (Previously filed as Exhibit 10.17 to Form 10-K filed March 9, 2017).~~
- ** 10.20 ~~Credit Support Agreement between National Rural Utilities Cooperative Finance Corporation and the Registrant, dated as of September 1, 2009 (Previously filed as Exhibit 10.38 to Form 10-Q filed August 9, 2010).~~
- * 10.21 ~~Indenture between National Rural Utilities Cooperative Finance Corporation, U.S. Bank National Association, and the Registrant, dated as of September 1, 2009 (Previously filed as Exhibit 10.39 to Form 10-Q filed August 9, 2010).~~
- * 10.22 ~~Master Note Purchase Agreement between Farmer Mac Mortgage Securities Corporation, National Rural Utilities Cooperative Finance Corporation, and the Registrant, dated as of July 31, 2015 (Previously filed as Exhibit 10.1 to Form 10-Q filed November 9, 2015).~~
- ** 10.23 ~~Amended and Restated First Supplemental Note Purchase Agreement between Farmer Mac Mortgage Securities Corporation, National Rural Utilities Cooperative Finance Corporation, and the Registrant, dated as of March 15, 2016 (Previously filed as Exhibit 10.1 to Form 10-Q filed May 10, 2016).~~
- ** 10.24 ~~Second Supplemental Note Purchase Agreement between Farmer Mac Mortgage Securities Corporation, National Rural Utilities Cooperative Finance Corporation, and the Registrant, dated as of July 31, 2018 (Previously filed as Exhibit 10.1 to Form 10-Q filed November 8, 2018).~~
- * 10.25 ~~Second Amended, Restated and Consolidated Pledge Agreement between Farmer Mac Mortgage Securities Corporation, National Rural Utilities Cooperative Finance Corporation, U.S. Bank National Association, and the Registrant, dated as of July 31, 2015 (Previously filed as Exhibit 10.3 to Form 10-Q filed November 9, 2015).~~
- * 10.26 ~~Long Term Standby Commitment to Purchase between National Rural Utilities Cooperative Finance Corporation and the Registrant, dated as of August 31, 2015 (Previously filed as Exhibit 10.4 to Form 10-Q filed November 9, 2015).~~
- * 10.27 ~~Amendment No. 1 to Long Term Standby Commitment to Purchase between National Rural Utilities Cooperative Finance Corporation and the Registrant, dated as of May 31, 2016 (Previously filed as Exhibit 10.1 to Form 10-Q filed August 9, 2016).~~
- * 21 ~~List of the Registrant's subsidiaries (Previously filed as Exhibit 21 to Form 10-K filed March 8, 2018).~~
- ** 31.1 ~~Certification of Registrant's principal executive officer relating to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2018, pursuant to Rule 13a-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.~~
- ** 31.2 ~~Certification of Registrant's principal financial officer relating to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2018, pursuant to Rule 13a-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.~~
- ** 32 ~~Certification of Registrant's principal executive officer and principal financial officer relating to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2018, pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.~~

* Incorporated by reference to the indicated prior filing.

** Filed with this report.

Portions of this exhibit have been omitted pursuant to a request for confidential treatment.

† Management contract or compensatory plan.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

FEDERAL AGRICULTURAL MORTGAGE CORPORATION

/s/ Bradford T. Nordholm February 21, 2019
By: Bradford T. Nordholm Date
 President and Chief Executive Officer
 (Principal Executive Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

Name	Title	Date
/s/ Lowell L. Junkins Lowell L. Junkins	Chairman of the Board and Director	February 21, 2019
/s/ Bradford T. Nordholm Bradford T. Nordholm	President and Chief Executive Officer (Principal Executive Officer)	February 21, 2019
/s/ R. Dale Lynch R. Dale Lynch	Executive Vice President – Chief Financial Officer and Treasurer (Principal Financial Officer)	February 21, 2019
/s/ Gregory N. Ramsey Gregory N. Ramsey	Vice President – Controller (Principal Accounting Officer)	February 21, 2019

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Name	Title	Date
/s/ Dennis L. Brack Dennis L. Brack	Director	February 21, 2019
/s/ Chester J. Culver Chester J. Culver	Director	February 21, 2019
/s/ Richard H. Davidson Richard H. Davidson	Director	February 21, 2019
/s/ James R. Engebretsen James R. Engebretsen	Director	February 21, 2019
/s/ Dennis A. Everson Dennis A. Everson	Director	February 21, 2019
/s/ Sara L. Faivre Sara L. Faivre	Director	February 21, 2019
/s/ Thomas W. Hill Thomas W. Hill	Director	February 21, 2019
/s/ Mitchell A. Johnson Mitchell A. Johnson	Director	February 21, 2019
/s/ Clark B. Maxwell Clark B. Maxwell	Director	February 21, 2019
/s/ Robert G. Sexton Robert G. Sexton	Director	February 21, 2019

/s/ Bruce J. Sherrick Director February 21, 2019

Bruce J. Sherrick

/s/ Keri L. Votruba Director February 21, 2019

Keri L. Votruba

/s/ Myles J. Watts Director February 21, 2019

Myles J. Watts

/s/ Douglas E. Wilhelm Director February 21, 2019

Douglas E. Wilhelm