As filed with the Securities and Exchange Commission on November 8, 2018

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

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

For the quarterly period ended September 30, 2018

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)

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 and post such files).

Yes ☒ No ☐

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 7(a)(2)(B) of the Securities Act. ☐

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

Yes ☐ No ☒

As of November 1, 2018, the registrant had outstanding 1,030,780 shares of Class A voting common stock, 500,301 shares of Class B voting common stock, and 9,137,550 shares of Class C non-voting common stock.

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PART I

Item 1. **Financial Statements**

FEDERAL AGRICULTURAL MORTGAGE CORPORATION AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(unaudited)

	As of	
	September 30, 2018	December 31, 2017
	(in thousands)	
Assets:		
Cash and cash equivalents	$ 436,152	$ 302,022
Investment securities:		
Available-for-sale, at fair value	2,224,002	2,215,405
Held-to-maturity, at amortized cost	45,032	45,032
Total Investment Securities	2,269,034	2,260,437
Farmer Mac Guaranteed Securities:		
Available-for-sale, at fair value	5,957,304	5,471,914
Held-to-maturity, at amortized cost	2,067,307	2,126,274
Total Farmer Mac Guaranteed Securities	8,024,611	7,598,188
USDA Securities:		
Trading, at fair value	10,237	13,515
Held-to-maturity, at amortized cost	2,143,874	2,117,850
Total USDA Securities	2,154,111	2,131,365
Loans:		
Loans held for investment, at amortized cost	3,884,636	3,873,755
Loans held for investment in consolidated trusts, at amortized cost	1,483,135	1,399,827
Allowance for loan losses	(6,871)	(6,796)
Total loans, net of allowance	5,360,900	5,266,786
Real estate owned, at lower of cost or fair value	128	139
Financial derivatives, at fair value	8,007	7,093
Interest receivable (includes $12,446 and $17,373, respectively, related to consolidated trusts)	135,677	155,278
Guarantee and commitment fees receivable	40,178	39,895
Deferred tax asset, net	—	2,048
Prepaid expenses and other assets	45,236	29,023
Total Assets	$ 18,474,034	$ 17,792,274
Liabilities and Equity:		
Liabilities:		
Notes payable:		
Due within one year	$ 7,378,927	$ 8,089,826
Due after one year	8,419,424	7,432,790
Total notes payable	15,798,351	15,522,616
Debt securities of consolidated trusts held by third parties	1,486,733	1,404,945
Financial derivatives, at fair value	17,841	26,599
Accrued interest payable (includes $10,507 and $14,631, respectively, related to consolidated trusts)	87,435	75,402
Guarantee and commitment obligation	38,597	38,400
Accounts payable and accrued expenses	260,753	14,096
Deferred tax liability, net	4,586	—
Reserve for losses	2,147	2,070
Total Liabilities	17,696,443	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, 9,137,500 shares and 9,087,670 shares outstanding, respectively	9,138	9,088
Additional paid-in capital	118,183	118,979
Accumulated other comprehensive income, net of tax	64,001	51,085
Retained earnings	379,979	322,704
Total Equity	777,591	708,146
Total Liabilities and Equity	$ 18,474,034	$ 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
(unaudited)

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
	(in thousands, except per share amounts)			
Interest income:				
Investments and cash equivalents	$ 15,123	$ 9,223	$ 38,681	$ 24,834
Farmer Mac Guaranteed Securities and USDA Securities	76,870	54,350	213,479	146,978
Loans	50,622	40,924	145,671	117,349
Total interest income	142,615	104,497	397,831	289,161
Total interest expense	97,557	64,935	265,611	172,797
Net interest income	45,058	39,562	132,220	116,364
Provision for loan losses	(99)	(270)	(92)	(1,234)
Net interest income after provision for loan losses	44,959	39,292	132,128	115,130
Non-interest income:				
Guarantee and commitment fees	3,490	3,314	10,470	10,630
Gains/(losses) on financial derivatives and hedging activities	628	661	(688)	2,530
(Losses)/gains on trading securities	(3)	—	24	(84)
Gains on sale of available-for-sale investment securities	—	89	—	89
(Losses)/gains on sale of real estate owned	(41)	32	(7)	784
Other income	365	203	1,259	890
Non-interest income	4,439	4,299	11,058	14,839
Non-interest expense:				
Compensation and employee benefits	6,777	5,987	20,367	18,986
General and administrative	4,350	3,890	13,878	11,611
Regulatory fees	625	625	1,875	1,875
Real estate owned operating costs, net	—	—	16	23
(Release of)/provision for reserve for losses	(102)	114	77	60
Non-interest expense	11,650	10,616	36,213	32,555
Income before income taxes	37,748	32,975	106,973	97,414
Income tax expense	7,979	11,193	21,749	33,103
Net income	29,769	21,782	85,224	64,311
Less: Net loss attributable to non-controlling interest	—	—	—	165
Net income attributable to Farmer Mac	29,769	21,782	85,224	64,476
Preferred stock dividends	(3,295)	(3,295)	(9,886)	(9,886)
Net income attributable to common stockholders	$ 26,474	$ 18,487	$ 75,338	$ 54,590
Earnings per common share and dividends:				
Basic earnings per common share	$ 2.48	$ 1.74	$ 7.07	$ 5.16
Diluted earnings per common share	$ 2.46	$ 1.71	$ 7.01	$ 5.06
Common stock dividends per common share	$ 0.58	$ 0.36	$ 1.74	$ 1.08

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

FEDERAL AGRICULTURAL MORTGAGE CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(unaudited)

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
	(in thousands)			
Net income	$ 29,769	$ 21,782	$ 85,224	$ 64,311
Other comprehensive income before taxes:				
Net unrealized (losses)/gains on available-for-sale securities	(13,546)	(886)	8,678	19,283
Net changes in held-to-maturity securities	(1,544)	(1,879)	(4,400)	(7,491)
Net unrealized gains/(losses) on cash flow hedges	3,181	253	12,038	(966)
Other comprehensive (loss)/income before tax	(11,909)	(2,512)	16,316	10,826
Income tax expense related to other comprehensive (loss)/income	2,500	879	(3,427)	(3,789)
Other comprehensive (loss)/income net of tax	(9,409)	(1,633)	12,889	7,037
Comprehensive income	20,360	20,149	98,113	71,348
Less: comprehensive loss attributable to non-controlling interest	—	—	—	165
Comprehensive income attributable to Farmer Mac	$ 20,360	$ 20,149	$ 98,113	$ 71,513

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

FEDERAL AGRICULTURAL MORTGAGE CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF EQUITY
(unaudited)

	Preferred Stock		Common Stock		Additional Paid-In	Accumulated Other Comprehensive	Retained	Non-controlling	Total
	Shares	Amount	Shares	Amount	Capital	Income/(Loss)	Earnings	Interest	Equity
					(in thousands)				
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	—	—	—	—	—	—	64,476	—	64,476
Attributable to non-controlling interest	—	—	—	—	—	—	—	(165)	(165)
Other comprehensive income, net of tax	—	—	—	—	—	7,037	—	—	7,037
Cash dividends:									
Preferred stock	—	—	—	—	—	—	(9,886)	—	(9,886)
Common stock	—	—	—	—	—	—	(11,435)	—	(11,435)
Issuance of Class C Common Stock	—	—	74	74	228	—	—	—	302
Stock-based compensation cost	—	—	—	—	2,597	—	—	—	2,597
Other stock-based award activity	—	—	—	—	(2,350)	—	—	—	(2,350)
Redemption of interest in subsidiary	—	—	—	—	—	—	—	(57)	(57)
Balance as of September 30, 2017	8,400	$204,759	10,613	$ 10,613	$ 119,130	$ 40,795	$ 318,869	$ —	$ 694,166
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	—	—	—	—	—	—	85,224	—	85,224
Other comprehensive income, net of tax	—	—	—	—	—	12,889	—	—	12,889
Cash dividends:									
Preferred stock	—	—	—	—	—	—	(9,886)	—	(9,886)
Common stock	—	—	—	—	—	—	(18,534)	—	(18,534)
Issuance of Class C Common Stock	—	—	50	50	7	—	—	—	57
Stock-based compensation cost	—	—	—	—	1,882	—	—	—	1,882
Other stock-based award activity	—	—	—	—	(2,685)	—	—	—	(2,685)
Balance as of September 30, 2018	8,400	$204,759	10,669	$ 10,669	$ 118,183	$ 64,001	$ 379,979	$ —	$ 777,591

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

FEDERAL AGRICULTURAL MORTGAGE CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(unaudited)

	For the Nine Months Ended	
	September 30, 2018	September 30, 2017
	(in thousands)	
Cash flows from operating activities:		
Net income	$ 85,224	$ 64,311
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	713	1,701
Amortization of debt premiums, discounts and issuance costs	21,744	17,078
Net change in fair value of trading securities, hedged assets, and financial derivatives	42,054	(12,232)
Losses/(gains) on sale of real estate owned	7	(784)
Total provision for losses	169	1,294
Excess tax benefits related to stock-based awards	1,105	1,170
Deferred income taxes	1,750	1,910
Other	—	11
Stock-based compensation expense	1,882	2,597
Proceeds from repayment of loans purchased as held for sale	76,259	54,919
Net change in:		
Interest receivable	18,537	12,678
Guarantee and commitment fees receivable	(86)	226
Other assets	(7,268)	(109)
Accrued interest payable	12,033	12,104
Other liabilities	(1,898)	435
Net cash provided by operating activities	252,225	157,309
Cash flows from investing activities:		
Purchases of available-for-sale investment securities	(833,650)	(614,423)
Purchases of Farmer Mac Guaranteed Securities and USDA Securities	(2,544,812)	(2,580,229)
Purchases of loans held for investment	(684,486)	(1,047,001)
Purchases of defaulted loans	(7,756)	(3,458)
Proceeds from repayment of available-for-sale investment securities	814,712	895,497
Proceeds from repayment of Farmer Mac Guaranteed Securities and USDA Securities	2,201,723	787,743
Proceeds from repayment of loans purchased as held for investment	508,969	368,826
Proceeds from sale of available-for-sale investment securities	—	5,089
Proceeds from sale of Farmer Mac Guaranteed Securities	305,391	404,246
Proceeds from sale of real estate owned	116	6,464
Net cash used by investing activities	(239,793)	(1,777,246)
Cash flows from financing activities:		
Proceeds from issuance of discount notes	30,946,426	40,262,122
Proceeds from issuance of medium-term notes	6,109,613	7,160,298
Payments to redeem discount notes	(31,530,896)	(42,174,697)
Payments to redeem medium-term notes	(5,254,430)	(3,416,300)
Payments to third parties on debt securities of consolidated trusts	(117,966)	(86,582)
Proceeds from common stock issuance	7	235
Tax payments related to share-based awards	(2,635)	(2,283)
Dividends paid on common and preferred stock	(28,421)	(21,321)
Net cash provided by financing activities	121,698	1,721,472
Net increase in cash and cash equivalents	134,130	101,535
Cash and cash equivalents at beginning of period	302,022	265,229
Cash and cash equivalents at end of period	$ 436,152	$ 366,764

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

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The interim unaudited consolidated financial statements of the Federal Agricultural Mortgage Corporation ("Farmer Mac") and subsidiaries have been prepared pursuant to the rules and regulations of the U.S. Securities and Exchange Commission ("SEC"). These interim unaudited consolidated financial statements reflect all normal and recurring adjustments that are, in the opinion of management, necessary to present a fair statement of the financial position and the results of operations and cash flows of Farmer Mac and subsidiaries for the interim periods presented. Certain information and footnote disclosures normally included in the annual consolidated financial statements have been omitted as permitted by SEC rules and regulations. The December 31, 2017 consolidated balance sheet presented in this report has been derived from Farmer Mac's audited 2017 consolidated financial statements. Management believes that the disclosures are adequate to present fairly the consolidated financial statements as of the dates and for the periods presented. These interim unaudited consolidated financial statements should be read in conjunction with the 2017 consolidated financial statements of Farmer Mac and subsidiaries included in Farmer Mac's Annual Report on Form 10-K for the year ended December 31, 2017 filed with the SEC on March 8, 2018. Results for interim periods are not necessarily indicative of those that may be expected for the fiscal year. Presented below are Farmer Mac's significant accounting policies that contain updated information for the three months ended September 30, 2018.

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.

The following tables present, by line of business, details about the consolidation of VIEs:

Table 1.1

	Consolidation of Variable Interest Entities					
	As of September 30, 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	$ 1,483,135	$ —	$ —	$ —	$ —	$ 1,483,135
Debt securities of consolidated trusts held by third parties (1)	1,486,733	—	—	—	—	1,486,733
Unconsolidated VIEs:						
Farmer Mac Guaranteed Securities:						
Carrying value (2)	—	28,117	—	—	—	28,117
Maximum exposure to loss (3)	—	27,861	—	—	—	27,861
Investment securities:						
Carrying value (4)	—	—	—	—	924,099	924,099
Maximum exposure to loss (3) (4)	—	—	—	—	924,494	924,494
Off-Balance Sheet:						
Unconsolidated VIEs:						
Farmer Mac Guaranteed Securities:						
Maximum exposure to loss (3) (5)	287,594	346,689	—	—	—	634,283

(1) Includes borrower remittances of $3.6 million. The borrower remittances had not been passed through to third party investors as of September 30, 2018.
(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 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	Total
	(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.

(a) Statements of Cash Flows

The following table sets forth information regarding certain cash and non-cash transactions for the nine months ended September 30, 2018 and 2017:

Table 1.2

	For the Nine Months Ended	
	September 30, 2018	September 30, 2017
	(in thousands)	
Non-cash activity:		
Real estate owned acquired through loan liquidation	128	5,261
Loans acquired and securitized as Farmer Mac Guaranteed Securities	305,391	404,246
Consolidation of Farm & Ranch 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	199,764	277,307
Purchases of securities - traded not yet settled	248,600	9,987

(b) 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 non-vested restricted stock awards. The following schedule reconciles basic and diluted EPS for the three and nine months ended September 30, 2018 and 2017:

Table 1.3

	For the Three Months Ended					
	September 30, 2018			September 30, 2017		
	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	$ 26,474	10,668	$ 2.48	$ 18,487	10,605	$ 1.74
Effect of dilutive securities[1]						
Stock options, SARs and restricted stock	—	76	(0.02)	—	210	(0.03)
Diluted EPS	$ 26,474	10,744	$ 2.46	$ 18,487	10,815	$ 1.71

[1] For the three months ended September 30, 2018, 10,122 SARs were outstanding but not included in the computation of diluted earnings per share of common stock because they were anti-dilutive, compared to 24,657 stock options and SARs for the three months ended September 30, 2017. For the three months ended September 30, 2018 and 2017, contingent shares of non-vested restricted stock of 13,138 and 32,892, 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.

	For the Nine Months Ended					
	September 30, 2018			September 30, 2017		
	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	$ 75,338	10,650	$ 7.07	$ 54,590	10,586	$ 5.16
Effect of dilutive securities[1]						
Stock options, SARs and restricted stock	—	93	(0.06)	—	208	(0.10)
Diluted EPS	$ 75,338	10,743	$ 7.01	$ 54,590	10,794	$ 5.06

[1] For the nine months ended September 30, 2018, 15,437 SARs were outstanding but not included in the computation of diluted earnings per share of common stock because they were anti-dilutive, compared to 33,440 stock options and SARs for the nine months ended September 30, 2017. For the nine months ended September 30, 2018 and 2017, contingent shares of non-vested restricted stock of 13,138 and 32,892, 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.

(c) 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 three and nine months ended September 30, 2018 and 2017:

Table 1.4

	As of September 30, 2018				As of September 30, 2017			
	Available-for-Sale Securities	Held-to-Maturity Securities	Cash Flow Hedges	Total	Available-for-Sale Securities	Held-to-Maturity Securities	Cash Flow Hedges	Total
				(in thousands)				
For the Three Months Ended:								
Beginning Balance	$ 15,882	$ 45,979	$ 11,549	$ 73,410	$ (1,276)	$ 42,104	$ 1,600	$ 42,428
Other comprehensive (loss)/income before reclassifications	(9,947)	—	2,662	(7,285)	2,298	—	(97)	2,201
Amounts reclassified from AOCI	(755)	(1,220)	(149)	(2,124)	(2,875)	(1,221)	262	(3,834)
Net comprehensive (loss)/income	(10,702)	(1,220)	2,513	(9,409)	(577)	(1,221)	165	(1,633)
Ending Balance	$ 5,180	$ 44,759	$ 14,062	$ 64,001	$ (1,853)	$ 40,883	$ 1,765	$ 40,795
For the Nine Months Ended:								
Beginning Balance	$ (1,676)	$ 48,236	$ 4,525	$ 51,085	$ (14,387)	$ 45,752	$ 2,393	$ 33,758
Cumulative effect from change in hedge accounting	—	—	27	27	—	—	—	—
Adjusted Beginning Balance	(1,676)	48,236	4,552	51,112	(14,387)	45,752	2,393	33,758
Other comprehensive income/(loss) before reclassifications	10,450	—	9,493	19,943	20,711	—	(1,522)	19,189
Amounts reclassified from AOCI	(3,594)	(3,477)	17	(7,054)	(8,177)	(4,869)	894	(12,152)
Net comprehensive income/(loss)	6,856	(3,477)	9,510	12,889	12,534	(4,869)	(628)	7,037
Ending Balance	$ 5,180	$ 44,759	$ 14,062	$ 64,001	$ (1,853)	$ 40,883	$ 1,765	$ 40,795

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 three and nine months ended September 30, 2018 and 2017:

Table 1.5

	For the Three Months Ended					
	September 30, 2018			September 30, 2017		
	Before Tax	Provision (Benefit)	After Tax	Before Tax	Provision (Benefit)	After Tax
	(in thousands)					
Other comprehensive income:						
Available-for-sale-securities:						
Unrealized holding (losses)/gains on available-for-sale-securities	$ (12,590)	$ (2,643)	$ (9,947)	$ 3,536	$ 1,238	$ 2,298
Less reclassification adjustments included in:						
Net Interest Income[1]	(946)	(199)	(747)	—	—	—
Gains/(losses) on financial derivatives and hedging activities[1]	—	—	—	(4,326)	(1,514)	(2,812)
Gains on sale of available-for-sale investment securities[2]	—	—	—	(89)	(31)	(58)
Other income[2]	(10)	(2)	(8)	(7)	(2)	(5)
Total	$ (13,546)	$ (2,844)	$ (10,702)	$ (886)	$ (309)	$ (577)
Held-to-maturity securities:						
Less reclassification adjustments included in:						
Net interest income[3]	(1,544)	(324)	(1,220)	(1,879)	(658)	(1,221)
Total	$ (1,544)	$ (324)	$ (1,220)	$ (1,879)	$ (658)	$ (1,221)
Cash flow hedges						
Unrealized gains/(losses) on cash flow hedges	$ 3,370	$ 708	$ 2,662	$ (150)	$ (53)	$ (97)
Less reclassification adjustments included in:						
Net interest income[4]	(189)	(40)	(149)	403	141	262
Total	$ 3,181	$ 668	$ 2,513	$ 253	$ 88	$ 165
Other comprehensive (loss)/income	$ (11,909)	$ (2,500)	$ (9,409)	$ (2,512)	$ (879)	$ (1,633)

(1) Relates to the amortization of unrealized gains on hedged items prior to the application of fair value hedge accounting.

(2) Represents amortization of deferred gains related to certain available-for-sale USDA Securities and Farmer Mac Guaranteed USDA Securities.

(3) 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.

(4) Relates to the recognition of unrealized gains and losses on cash flow hedges recorded in AOCI.

	For the Nine Months Ended					
	September 30, 2018			September 30, 2017		
	Before Tax	Provision (Benefit)	After Tax	Before Tax	Provision (Benefit)	After Tax
	(in thousands)					
Other comprehensive income:						
Available-for-sale-securities:						
Unrealized holding gains on available-for-sale-securities	$ 13,227	$ 2,777	$ 10,450	$ 31,863	$ 11,152	$ 20,711
Less reclassification adjustments included in:						
Net Interest Income[(1)]	(4,523)	(949)	(3,574)	—	—	—
Gains/(losses) on financial derivatives and hedging activities[(1)]	—	—	—	(12,470)	(4,365)	(8,105)
Gains on sale of available-for-sale investment securities[(2)]	—	—	—	(89)	(31)	(58)
Other income[(2)]	(26)	(6)	(20)	(21)	(7)	(14)
Total	$ 8,678	$ 1,822	$ 6,856	$ 19,283	$ 6,749	$ 12,534
Held-to-maturity securities:						
Less reclassification adjustments included in:						
Net interest income[(3)]	(4,400)	(923)	(3,477)	(7,491)	(2,622)	(4,869)
Total	$ (4,400)	$ (923)	$ (3,477)	$ (7,491)	$ (2,622)	$ (4,869)
Cash flow hedges						
Unrealized gains/(losses) on cash flow hedges	$ 12,017	$ 2,524	$ 9,493	$ (2,342)	$ (820)	$ (1,522)
Less reclassification adjustments included in:						
Net interest income[(4)]	21	4	17	1,376	482	894
Total	$ 12,038	$ 2,528	$ 9,510	$ (966)	$ (338)	$ (628)
Other comprehensive income	$ 16,316	$ 3,427	$ 12,889	$ 10,826	$ 3,789	$ 7,037

(1) Relates to the amortization of unrealized gains on hedged items prior to the application of fair value hedge accounting.
(2) Represents amortization of deferred gains related to certain available-for-sale USDA Securities and Farmer Mac Guaranteed USDA Securities.
(3) 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.
(4) Relates to the recognition of unrealized gains and losses on cash flow hedges recorded in AOCI.

(d) 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. 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 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 impact will primarily be 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. 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. Additionally, the new guidance 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. 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.

(e) Reclassifications

Certain reclassifications of prior period information were made to conform to the current period presentation.

2. INVESTMENT SECURITIES

The following tables set forth information about Farmer Mac's investment securities as of September 30, 2018 and December 31, 2017:

Table 2.1

	As of September 30, 2018					
	Amount Outstanding	Unamortized Premium/ (Discount)	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
	(in thousands)					
Available-for-sale:						
Floating rate auction-rate certificates backed by Government guaranteed student loans	$ 19,700	$ —	$ 19,700	$ —	$ (739)	$ 18,961
Floating rate asset-backed securities	30,266	(143)	30,123	18	(85)	30,056
Floating rate Government/GSE guaranteed mortgage-backed securities	1,336,138	1,616	1,337,754	1,196	(2,476)	1,336,474
Fixed rate GSE guaranteed mortgage-backed securities(1)	400	—	400	22	—	422
Fixed rate U.S. Treasuries	843,362	(4,031)	839,331	—	(1,242)	838,089
Total available-for-sale	2,229,866	(2,558)	2,227,308	1,236	(4,542)	2,224,002
Held-to-maturity:						
Fixed rate Government/GSE guaranteed mortgage-backed securities	45,032	—	45,032	843	—	45,875
Total investment securities	$ 2,274,898	$ (2,558)	$ 2,272,340	$ 2,079	$ (4,542)	$ 2,269,877

(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					
	Amount Outstanding	Unamortized Premium/ (Discount)	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
	(in thousands)					
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:						
Fixed rate Government/GSE guaranteed mortgage-backed securities	45,032	—	45,032	532	—	45,564
Total investment securities	$ 2,259,620	$ 2,365	$ 2,261,985	$ 4,999	$ (6,015)	$ 2,260,969

(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 three and nine months ended September 30, 2018. During the three and nine months ended September 30, 2017, Farmer Mac received proceeds of $5.1 million from the sale of securities from its available-for-sale portfolio, resulting in gross realized gains of $0.1 million.

As of September 30, 2018 and December 31, 2017, unrealized losses on available-for-sale investment securities were as follows:

Table 2.2

	As of September 30, 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
	(in thousands)			
Floating rate auction-rate certificates backed by Government guaranteed student loans	$ —	$ —	$ 18,961	$ (739)
Floating rate asset-backed securities	—	—	20,080	(85)
Floating rate Government/GSE guaranteed mortgage-backed securities	508,554	(1,285)	179,870	(1,191)
Fixed rate U.S. Treasuries	703,306	(1,164)	134,782	(78)
Total	$ 1,211,860	$ (2,449)	$ 353,693	$ (2,093)

	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)

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 September 30, 2018 and December 31, 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 September 30, 2018 and December 31, 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+." The unrealized losses were on 107 and 91 individual investment securities as of September 30, 2018 and December 31, 2017, respectively.

As of September 30, 2018, 45 of the securities in loss positions had been in loss positions for more than 12 months and had a total unrealized loss of $2.1 million. As of December 31, 2017, 51 of the securities in loss positions had been in loss positions for more than 12 months and had a total unrealized loss of $2.1 million. Securities in unrealized loss positions for 12 months or longer have a fair value as of September 30, 2018 that is, on average, approximately 99.4 percent 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 September 30, 2018 and December 31, 2017.

As of September 30, 2018, Farmer Mac owned $45.0 million of held-to-maturity investment securities at amortized cost with a fair value of $45.9 million and a weighted average yield of 3.3 percent. 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 percent. Farmer Mac did not own any trading investment securities as of September 30, 2018 and December 31, 2017.

The amortized cost, fair value, and weighted-average yield of available-for-sale investment securities by remaining contractual maturity as of September 30, 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 2.3

	As of September 30, 2018		
	Available-for-Sale Securities		
	Amortized Cost	Fair Value	Weighted-Average Yield
		(dollars in thousands)	
Due within one year	$ 807,395	$ 806,214	1.24%
Due after one year through five years	277,030	277,382	2.52%
Due after five years through ten years	508,970	508,629	2.46%
Due after ten years	633,913	631,777	2.65%
Total	$ 2,227,308	$ 2,224,002	2.08%

3. 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 September 30, 2018 and December 31, 2017:

Table 3.1

	As of September 30, 2018					
	Unpaid Principal Balance	Unamortized Premium/ (Discount)	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
			(in thousands)			
Held-to-maturity:						
AgVantage	$ 2,039,471	$ (282)	$ 2,039,189	$ 441	$ (22,500)	$ 2,017,130
Farmer Mac Guaranteed USDA Securities	27,862	256	28,118	134	—	28,252
Total Farmer Mac Guaranteed Securities	2,067,333	(26)	2,067,307	575	(22,500)	2,045,382
USDA Securities	2,086,842	57,032	2,143,874	1	(86,529)	2,057,346
Total held-to-maturity	$ 4,154,175	$ 57,006	$ 4,211,181	$ 576	$ (109,029)	$ 4,102,728
Available-for-sale:						
AgVantage	$ 6,014,252	$ (195)	$ 6,014,057	$ 12,112	$ (68,865)	$ 5,957,304
Trading:						
USDA Securities	$ 9,857	$ 728	$ 10,585	$ 19	$ (367)	$ 10,237

	As of December 31, 2017					
	Unpaid Principal Balance	Unamortized Premium/ (Discount)	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
			(in thousands)			
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 September 30, 2018 and December 31, 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 3.2

	As of September 30, 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
	(in thousands)			
Held-to-maturity:				
AgVantage	$ 1,064,053	$ (11,558)	$ 814,058	$ (10,942)
USDA Securities	38,879	(415)	2,018,466	(86,114)
Total held-to-maturity	$ 1,102,932	$ (11,973)	$ 2,832,524	$ (97,056)
Available-for-sale:				
AgVantage	$ 2,367,859	$ (31,550)	$ 1,559,584	$ (37,315)

	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 September 30, 2018 and December 31, 2017, as applicable. In addition, the unrealized losses on the held-to-maturity USDA Securities as of both September 30, 2018 and December 31, 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 54 available-for-sale securities as of September 30, 2018. There were 52 held-to-maturity AgVantage securities with an unrealized loss as of September 30, 2018. The unrealized losses from AgVantage securities were on 36 available-for-sale securities as of December 31, 2017. There were unrealized losses from 23 held-to-maturity securities as of December 31, 2017. As of September 30, 2018, 17 available-for-sale AgVantage securities had been in a loss position for more than 12 months with a total unrealized loss of $37.3 million. As of December 31, 2017, 16 available-for-sale AgVantage securities had been in a loss position for more than 12 months with a total unrealized loss of $37.5 million. 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 September 30, 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 three and nine months ended September 30, 2018 and 2017, 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 September 30, 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 3.3

	As of September 30, 2018		
	Available-for-Sale Securities		
	Amortized Cost	Fair Value	Weighted-Average Yield
		(dollars in thousands)	
Due within one year	$ 1,019,282	$ 1,018,343	2.58%
Due after one year through five years	2,664,743	2,652,381	2.95%
Due after five years through ten years	777,186	751,727	3.14%
Due after ten years	1,552,846	1,534,853	2.64%
Total	$ 6,014,057	$ 5,957,304	2.84%

	As of September 30, 2018		
	Held-to-Maturity Securities		
	Amortized Cost	Fair Value	Weighted-Average Yield
		(dollars in thousands)	
Due within one year	$ 750,013	$ 745,474	2.10%
Due after one year through five years	1,359,953	1,340,138	2.99%
Due after five years through ten years	218,630	209,806	3.36%
Due after ten years	1,882,585	1,807,310	3.54%
Total	$ 4,211,181	$ 4,102,728	3.09%

As of September 30, 2018, Farmer Mac owned trading USDA Securities with an amortized cost of $10.6 million, a fair value of $10.2 million, and a weighted-average yield of 5.23 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.

4. 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 subsequent to 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 September 30, 2018 and December 31, 2017:

Table 4.1

	As of September 30, 2018						
		Fair Value					
	Notional Amount	Asset	(Liability)	Weighted-Average Pay Rate	Weighted-Average Receive Rate	Weighted-Average Forward Price	Weighted-Average Remaining Term (in years)
			(dollars in thousands)				
Fair value hedges:							
Interest rate swaps:							
Pay fixed non-callable	$ 2,801,164	$ 860	$ (4,493)	2.04%	2.13%		10.39
Receive fixed non-callable	2,131,200	682	(4,796)	2.20%	1.78%		1.74
Cash flow hedges:							
Interest rate swaps:							
Pay fixed non-callable	389,500	4,429	(276)	2.36%	2.57%		6.10
No hedge designation:							
Interest rate swaps:							
Pay fixed non-callable	317,586	1,966	(8,065)	3.69%	2.33%		6.48
Receive fixed non-callable	2,521,965	—	—	2.16%	1.99%		0.84
Basis swaps	1,529,000	233	(206)	2.01%	2.07%		1.41
Treasury futures	12,700	—	(11)			118.70	
Credit valuation adjustment		(163)	6				
Total financial derivatives	$ 9,703,115	$ 8,007	$ (17,841)				
Collateral pledged		—	46,841				
Net amount		$ 8,007	$ 29,000				

	As of December 31, 2017						
		Fair Value					
	Notional Amount	Asset	(Liability)	Weighted-Average Pay Rate	Weighted-Average Receive Rate	Weighted-Average Forward Price	Weighted-Average Remaining Term (in years)
	(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)				

Changes in the fair values of financial derivatives not designated as cash flow or fair value hedges are reported in "Gains/(losses) on financial derivatives and hedging activities" in the consolidated statements of operations. For financial derivatives designated in fair value hedge relationships, changes in the fair values of the hedged items, which are 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 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. As of September 30, 2018, Farmer Mac expects to reclassify $1.9 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 subsequent to September 30, 2018. During the three and nine months ended September 30, 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 three and nine months ended September 30, 2018 and 2017:

Table 4.2

	For the Three Months Ended September 30, 2018				
	Net Income/(Expense) Recognized in Consolidated Statement of Operations on Derivatives				
	Net Interest Income			Non-Interest Income	
	Interest Income Farmer Mac Guaranteed Securities and USDA Securities	Interest Income Loans	Total Interest Expense	Gains/(losses) on financial derivatives and hedging activities	Total
			(in thousands)		
Total amounts presented in the consolidated statement of operations:	$ 76,870	$ 50,622	$ (97,557)	$ 628	$ 30,563
Income/(expense) related to interest settlements on fair value hedging relationships:					
Recognized on derivatives	1,272	(98)	(2,702)	—	(1,528)
Recognized on hedged items	16,769	1,660	(9,821)	—	8,608
Discount amortization recognized on hedged items	—	—	(177)	—	(177)
Income/(expense) related to interest settlements on fair value hedging relationships	$ 18,041	$ 1,562	$ (12,700)	$ —	$ 6,903
(Losses)/gains on fair value hedging relationships:					
Recognized on derivatives	13,420	3,909	(1,188)	—	16,141
Recognized on hedged items	(13,432)	(4,062)	2,404	—	(15,090)
(Losses)/gains on fair value hedging relationships	$ (12)	$ (153)	$ 1,216	$ —	$ 1,051
Expense related to interest settlements on cash flow hedging relationships:					
Interest settlements reclassified from AOCI into net income on derivatives	—	—	189	—	189
Recognized on hedged items	—	—	(2,501)	—	(2,501)
Discount amortization recognized on hedged items	—	—	(2)	—	(2)
Expense recognized on cash flow hedges	$ —	$ —	$ (2,314)	$ —	$ (2,314)
Gains on financial derivatives not designated in hedge relationships:					
Gains on interest rate swaps	—	—	—	3,267	3,267
Interest expense on interest rate swaps	—	—	—	(3,048)	(3,048)
Treasury futures	—	—	—	409	409
Gains on financial derivatives not designated in hedge relationships	$ —	$ —	$ —	$ 628	$ 628

	For the Three Months Ended September 30, 2017				
	Net Income/(Expense) Recognized in Consolidated Statement of Operations on Derivatives				
	Net Interest Income			Non-Interest Income	
	Interest Income Farmer Mac Guaranteed Securities and USDA Securities	Interest Income Loans	Total Interest Expense	Gains/(losses) on financial derivatives and hedging activities	Total
			(in thousands)		
Total amounts presented in the consolidated statement of operations	$ 54,350	$ 40,924	$ (64,935)	$ 661	$ 31,000
Income/(expense) related to interest settlements on fair value hedging relationships:					
Recognized on derivatives	(2,267)	(342)	717	—	(1,892)
Recognized on hedged items	11,986	947	(5,069)	—	7,864
Discount amortization recognized on hedged items	—	—	(121)	—	(121)
Income/(expense) related to interest settlements on fair value hedging relationships	$ 9,719	$ 605	$ (4,473)	$ —	$ 5,851
Gains on fair value hedging relationships:					
Recognized on derivatives[(1)]	—	—	—	1,576	1,576
Recognized on hedged items	—	—	—	166	166
Gains on fair value hedging relationships	$ —	$ —	$ —	$ 1,742	$ 1,742
Expense related to interest settlements on cash flow hedging relationships:					
Interest settlements reclassified from AOCI into net income on derivatives	$ —	$ —	$ (454)	$ —	$ (454)
Recognized on hedged items	—	—	(1,169)	—	(1,169)
Discount amortization recognized on hedged items	—	—	(1)	—	(1)
Losses recognized in income for hedge ineffectiveness	—	—	—	(191)	(191)
Expense recognized on cash flow hedges	$ —	$ —	$ (1,624)	$ (191)	$ (1,815)
Losses on financial derivatives not designated in hedging relationships:					
Gains on interest rate swaps	$ —	$ —	$ —	$ 1,645	$ 1,645
Interest expense on interest rate swaps	—	—	—	(2,676)	(2,676)
Agency forwards	—	—	—	—	—
Treasury futures	—	—	—	141	141
Losses on financial derivatives not designated in hedge relationships	$ —	$ —	$ —	$ (890)	$ (890)

(1) Included in the assessment of hedge effectiveness as of September 30, 2017, but excluded from the amounts in the table, were losses of $1.6 million for the three months ended September 30, 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 three months ended September 30, 2017 were gains of $0.1 million.

	For the Nine Months Ended September 30, 2018				
	Net Income/(Expense) Recognized in Consolidated Statement of Operations on Derivatives				
	Net Interest Income			Non-Interest Income	
	Interest Income Farmer Mac Guaranteed Securities and USDA Securities	Interest Income Loans	Total Interest Expense	Gains/(losses) on financial derivatives and hedging activities	Total
			(in thousands)		
Total amounts presented in the consolidated statement of operations:	$ 213,479	$ 145,671	$ (265,611)	$ (688)	$ 92,851
Income/(expense) related to interest settlements on fair value hedging relationships:					
Recognized on derivatives	465	(560)	(5,315)	—	(5,410)
Recognized on hedged items	46,289	4,619	(28,633)	—	22,275
Discount amortization recognized on hedged items	—	—	(534)	—	(534)
Income/(expense) related to interest settlements on fair value hedging relationships	$ 46,754	$ 4,059	$ (34,482)	$ —	$ 16,331
Gains/(losses) on fair value hedging relationships:					
Recognized on derivatives	46,354	12,564	(13,565)	—	45,353
Recognized on hedged items	(43,229)	(13,106)	16,733	—	(39,602)
Gains/(losses) on fair value hedging relationships	$ 3,125	$ (542)	$ 3,168	$ —	$ 5,751
Expense related to interest settlements on cash flow hedging relationships:					
Interest settlements reclassified from AOCI into net income on derivatives	—	—	(21)	—	(21)
Recognized on hedged items	—	—	(6,611)	—	(6,611)
Discount amortization recognized on hedged items	—	—	(5)	—	(5)
Expense recognized on cash flow hedges	$ —	$ —	$ (6,637)	$ —	$ (6,637)
Losses on financial derivatives not designated in hedge relationships:					
Gains on interest rate swaps	—	—	—	7,443	7,443
Interest expense on interest rate swaps	—	—	—	(8,903)	(8,903)
Treasury futures	—	—	—	772	772
Losses on financial derivatives not designated in hedge relationships	$ —	$ —	$ —	$ (688)	$ (688)

	For the Nine Months Ended September 30, 2017				
	Net Income/(Expense) Recognized in Consolidated Statement of Operations on Derivatives				
	Net Interest Income			Non-Interest Income	
	Interest Income Farmer Mac Guaranteed Securities and USDA Securities	Interest Income Loans	Total Interest Expense	Gains/(losses) on financial derivatives and hedging activities	Total
			(in thousands)		
Total amounts presented in the consolidated statement of operations	$ 146,978	$ 117,349	$ (172,797)	$ 2,530	$ 94,060
Income/(expense) related to interest settlements on fair value hedging relationships:					
Recognized on derivatives	(8,251)	(767)	2,157	—	(6,861)
Recognized on hedged items	34,212	2,045	(12,832)	—	23,425
Discount amortization recognized on hedged items	—	—	(311)	—	(311)
Income/(expense) related to interest settlements on fair value hedging relationships	$ 25,961	$ 1,278	$ (10,986)	$ —	$ 16,253
Losses on fair value hedging relationships:					
Recognized on derivatives[1]	—	—	—	(5,466)	(5,466)
Recognized on hedged items	—	—	—	4,750	4,750
Losses on fair value hedging relationships	$ —	$ —	$ —	$ (716)	$ (716)
Expense related to interest settlements on cash flow hedging relationships:					
Interest settlements reclassified from AOCI into net income on derivatives	$ —	$ —	$ (1,494)	$ —	$ (1,494)
Recognized on hedged items	—	—	(2,665)	—	(2,665)
Discount amortization recognized on hedged items	—	—	(3)	—	(3)
Losses recognized in income for hedge ineffectiveness	—	—	—	(365)	(365)
Expense recognized on cash flow hedges	$ —	$ —	$ (4,162)	$ (365)	$ (4,527)
Gains on financial derivatives not designated in hedging relationships:					
Gains on interest rate swaps	$ —	$ —	$ —	$ 12,324	$ 12,324
Interest expense on interest rate swaps	—	—	—	(8,318)	(8,318)
Agency forwards	—	—	—	(588)	(588)
Treasury futures	—	—	—	193	193
Gains on financial derivatives not designated in hedge relationships	$ —	$ —	$ —	$ 3,611	$ 3,611

(1) Included in the assessment of hedge effectiveness as of September 30, 2017, but excluded from the amounts in the table, were gains of $0.7 million for the nine months ended September 30, 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 nine months ended September 30, 2017 were zero.

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 September 30, 2018 and December 31, 2017:

Table 4.3

	Hedged Items in Fair Value Relationship			
	Carrying Amount of Hedged Assets/ (Liabilities)		Cumulative Amount of Fair Value Hedging Adjustments included in the Carrying Amount of the Hedged Assets/(Liabilities)	
	September 30, 2018	December 31, 2017	September 30, 2018	December 31, 2017
	(in thousands)			
Farmer Mac Guaranteed Securities, Available-for-Sale, at fair value	$ 2,514,978	$ 1,928,220	$ (65,596)	$ (22,853)
Loans held for investment, at amortized cost	166,754	149,304	(13,150)	(189)
Notes Payable, due after one year[1][2]	(2,057,594)	(1,552,935)	22,428	5,836

(1) Carrying amount represents amortized cost.
(2) Includes $0.4 million of hedging adjustments on a discontinued hedging relationship.

As of September 30, 2018 and December 31, 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 $94.6 million and $28.5 million, respectively; however, including netting arrangements and accrued interest, Farmer Mac's credit exposure was $4.4 million and $0.5 million as of September 30, 2018 and December 31, 2017, respectively. As of September 30, 2018, Farmer Mac held no cash as collateral for its derivatives in net asset positions resulting in uncollateralized net asset positions of $4.4 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 September 30, 2018 and December 31, 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 $50.1 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 $6.4 million and $28.0 million as of September 30, 2018 and December 31, 2017, respectively. Farmer Mac posted cash of $0 and $46.8 million of investment securities as of September 30, 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 September 30, 2018 and December 31, 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 September 30, 2018 and December 31, 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 $9.7 billion notional amount of interest rate swaps outstanding as of September 30, 2018, $8.3 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.

5. 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 September 30, 2018 and December 31, 2017, Farmer Mac had no loans held for sale. The following table displays the composition of the loan balances as of September 30, 2018 and December 31, 2017:

Table 5.1

	As of September 30, 2018			As of December 31, 2017		
	Unsecuritized	In Consolidated Trusts	Total	Unsecuritized	In Consolidated Trusts	Total
	(in thousands)					
Farm & Ranch	$ 2,937,484	$ 1,483,135	$ 4,420,619	$ 2,798,906	$ 1,399,827	$ 4,198,733
Rural Utilities	962,702	—	962,702	1,076,291	—	1,076,291
Total unpaid principal balance[1]	3,900,186	1,483,135	5,383,321	3,875,197	1,399,827	5,275,024
Unamortized premiums, discounts, and other cost basis adjustments	(15,550)	—	(15,550)	(1,442)	—	(1,442)
Total loans	3,884,636	1,483,135	5,367,771	3,873,755	1,399,827	5,273,582
Allowance for loan losses	(5,378)	(1,493)	(6,871)	(5,493)	(1,303)	(6,796)
Total loans, net of allowance	$ 3,879,258	$ 1,481,642	$ 5,360,900	$ 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 $9.0 million as of September 30, 2018 and $8.9 million as of December 31, 2017. See Note 6 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 the three and nine months ended September 30, 2018 and 2017:

Table 5.2

	As of September 30, 2018			As of September 30, 2017		
	Allowance for Loan Losses	Reserve for Losses	Total Allowance for Losses	Allowance for Loan Losses	Reserve for Losses	Total Allowance for Losses
	(in thousands)					
For the Three Months Ended:						
Beginning Balance	$ 6,789	$ 2,249	$ 9,038	$ 6,138	$ 1,966	$ 8,104
Provision for/(release of) losses	99	(102)	(3)	270	114	384
Charge-offs	(17)	—	(17)	—	—	—
Ending Balance	$ 6,871	$ 2,147	$ 9,018	$ 6,408	$ 2,080	$ 8,488
For the Nine Months Ended:						
Beginning Balance	6,796	2,070	8,866	5,415	2,020	7,435
Provision for losses	92	77	169	1,234	60	1,294
Charge-offs	$ (17)	$ —	$ (17)	$ (241)	$ —	$ (241)
Ending Balance	$ 6,871	$ 2,147	$ 9,018	$ 6,408	$ 2,080	$ 8,488

During the three and nine months ended September 30, 2018, Farmer Mac recorded a provision to its allowance for loan losses of $0.1 million and $0.1 million respectively. During those same periods, Farmer Mac also recorded a release of reserve for losses of $0.1 million and a provision to the reserve for losses of $0.1 million, respectively. The provisions for the allowance for loan losses recorded during the three and nine months ended September 30, 2018 were attributable to an increase in the balance of on-balance sheet Farm & Ranch loans, which was partially offset by a slight improvement in overall portfolio credit quality. The release of the reserve for losses recorded during third quarter 2018 was attributable to a decrease in the balance of loans underlying LTSPCs since second quarter 2018. The provision for the reserve for losses recorded during the nine months ended September 30, 2018 was attributable to an increase in the balance of loans underlying LTSPCs since December 31, 2017. The charge-off that Farmer Mac recorded during the three and nine months ended September 30, 2018 related to one loan that was foreclosed and transitioned to REO during third quarter 2018.

During third quarter 2017, Farmer Mac recorded net provisions to its allowance for loan losses and reserve for losses of $0.3 million and $0.1 million, respectively. The net provisions to the allowance for loan losses recorded during third quarter 2017 were primarily attributable to (1) 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 certain of those loans, and (2) an increase in the general allowance due to overall net volume growth in on-balance sheet Farm & Ranch loans. The net provision to the reserve for losses recorded during third quarter 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. Farmer Mac recorded no charge-offs to its allowance for loan losses during third quarter 2017.

The following tables present the changes in the total allowance for losses for the three and nine months ended September 30, 2018 and 2017 by commodity type:

Table 5.3

	September 30, 2018						
	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	Total
	(in thousands)						
For the Three Months Ended:							
Beginning Balance	$ 4,125	$ 2,368	$ 1,322	$ 448	$ 720	$ 55	$ 9,038
Provision for/(release of) losses	(99)	40	148	50	(97)	(45)	(3)
Charge-offs	—	—	—	(17)	—	—	(17)
Ending Balance	$ 4,026	$ 2,408	$ 1,470	$ 481	$ 623	$ 10	$ 9,018
For the Nine Months Ended:							
Beginning Balance	$ 4,081	$ 2,469	$ 1,211	$ 481	$ 606	$ 18	$ 8,866
Provision for/(release of) losses	(55)	(61)	259	17	17	(8)	169
Charge-offs	—	—	—	(17)	—	—	(17)
Ending Balance	$ 4,026	$ 2,408	$ 1,470	$ 481	$ 623	$ 10	$ 9,018

	September 30, 2017						
	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	Total
	(in thousands)						
For the Three Months Ended:							
Beginning Balance	$ 3,735	$ 2,164	$ 1,234	$ 397	$ 558	$ 16	$ 8,104
Provision for/(release of) losses	115	162	35	4	72	(4)	384
Ending Balance	$ 3,850	$ 2,326	$ 1,269	$ 401	$ 630	$ 12	$ 8,488
For the Nine Months Ended:							
Beginning Balance	$ 3,365	$ 1,723	$ 1,375	$ 405	$ 533	$ 34	$ 7,435
Provision for/(release of) losses	713	603	(93)	(4)	97	(22)	1,294
Charge-offs	(228)	—	(13)	—	—	—	(241)
Ending Balance	$ 3,850	$ 2,326	$ 1,269	$ 401	$ 630	$ 12	$ 8,488

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 September 30, 2018 and December 31, 2017:

Table 5.4

	As of September 30, 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	$ 2,428,763	$ 860,870	$ 678,456	$ 309,235	$ 10,824	$ 4,542	$ 4,292,690
Off-balance sheet	1,242,091	503,784	648,648	166,570	68,651	3,509	2,633,253
Total	$ 3,670,854	$ 1,364,654	$ 1,327,104	$ 475,805	$ 79,475	$ 8,051	$ 6,925,943
Individually evaluated for impairment:							
On-balance sheet	$ 63,726	$ 33,948	$ 22,729	$ 7,526	$ —	$ —	$ 127,929
Off-balance sheet	11,497	2,374	3,308	896	—	71	18,146
Total	$ 75,223	$ 36,322	$ 26,037	$ 8,422	$ —	$ 71	$ 146,075
Total Farm & Ranch loans:							
On-balance sheet	$ 2,492,489	$ 894,818	$ 701,185	$ 316,761	$ 10,824	$ 4,542	$ 4,420,619
Off-balance sheet	1,253,588	506,158	651,956	167,466	68,651	3,580	2,651,399
Total	$ 3,746,077	$ 1,400,976	$ 1,353,141	$ 484,227	$ 79,475	$ 8,122	$ 7,072,018
Allowance for Losses:							
Collectively evaluated for impairment:							
On-balance sheet	$ 2,047	$ 955	$ 765	$ 300	$ 9	$ 4	$ 4,080
Off-balance sheet	612	191	211	49	614	5	1,682
Total	$ 2,659	$ 1,146	$ 976	$ 349	$ 623	$ 9	$ 5,762
Individually evaluated for impairment:							
On-balance sheet	$ 1,112	$ 1,207	$ 361	$ 111	$ —	$ —	$ 2,791
Off-balance sheet	255	55	133	21	—	1	465
Total	$ 1,367	$ 1,262	$ 494	$ 132	$ —	$ 1	$ 3,256
Total Farm & Ranch loans:							
On-balance sheet	$ 3,159	$ 2,162	$ 1,126	$ 411	$ 9	$ 4	$ 6,871
Off-balance sheet	867	246	344	70	614	6	2,147
Total	$ 4,026	$ 2,408	$ 1,470	$ 481	$ 623	$ 10	$ 9,018

	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 September 30, 2018 and December 31, 2017:

Table 5.5

	As of September 30, 2018						
	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	Total
				(in thousands)			
Impaired Loans:							
With no specific allowance:							
Recorded investment	$ 14,815	$ 848	$ 10,431	$ 2,036	$ —	$ —	$ 28,130
Unpaid principal balance	14,851	851	10,456	2,041	—	—	28,199
With a specific allowance:							
Recorded investment(1)	60,250	35,389	15,550	6,368	—	71	117,628
Unpaid principal balance	60,372	35,471	15,581	6,381	—	71	117,876
Associated allowance	1,367	1,262	494	132	—	1	3,256
Total:							
Recorded investment	75,065	36,237	25,981	8,404	—	71	145,758
Unpaid principal balance	75,223	36,322	26,037	8,422	—	71	146,075
Associated allowance	1,367	1,262	494	132	—	1	3,256
Recorded investment of loans on nonaccrual status(2)	$ 28,098	$ 23,090	$ 7,859	$ 4,291	$ —	$ —	$ 63,338

(1) Impairment analysis was performed in the aggregate in consideration of similar risk characteristics of the assets and historical statistics on $115.2 million (79 percent) of impaired loans as of September 30, 2018, which resulted in a specific allowance of $2.7 million.

(2) Includes $30.6 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
Recorded investment of loans on nonaccrual status(2)	$ 27,630	$ 25,701	$ 5,333	$ 4,929	$ —	$ —	$ 63,593

(1) Impairment analysis was performed in the aggregate in consideration of similar risk characteristics of the assets and historical statistics on $113.2 million (77 percent) 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 three and nine months ended September 30, 2018 and 2017:

Table 5.6

	September 30, 2018						
	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	Total
				(in thousands)			
For the Three Months Ended:							
Average recorded investment in impaired loans	$ 75,920	$ 44,818	$ 24,443	$ 8,898	$ —	$ 72	$ 154,151
Income recognized on impaired loans	223	933	122	56	—	—	1,334
For the Nine Months Ended:							
Average recorded investment in impaired loans	$ 73,968	$ 44,122	$ 23,358	$ 8,874	$ —	$ 394	$ 150,716
Income recognized on impaired loans	942	1,597	261	173	—	—	2,973

	September 30, 2017						
	Crops	Permanent Plantings	Livestock	Part-time Farm	Ag. Storage and Processing	Other	Total
				(in thousands)			
For the Three Months Ended:							
Average recorded investment in impaired loans	$ 72,180	$ 38,396	$ 15,582	$ 7,944	$ —	$ 401	$ 134,503
Income recognized on impaired loans	101	244	13	61	—	—	419
For the Nine Months Ended:							
Average recorded investment in impaired loans	$ 65,244	$ 35,101	$ 14,620	$ 8,096	$ —	$ 201	$ 123,262
Income recognized on impaired loans	563	464	212	235	—	—	1,474

For the three and nine months ended September 30, 2018, there were two Farm & Ranch loans to the same borrower that were restructured in a troubled debt restructuring ("TDR"). The recorded investment of these TDR loans was $10.9 million before and after the restructuring. As a result of the restructuring, $0.8 million of unpaid interest, late fees and other fees were capitalized. For the three months ended September 30, 2017, there were no TDRs. For the nine months ended September 30, 2017, the recorded investment of loans determined to be TDRs was $0.2 million both before and after restructuring. As of September 30, 2018 and 2017, there were no TDRs identified during the previous 12 months that were in default under the modified terms. The impact of TDRs on Farmer Mac's allowance for loan losses was immaterial for the three and nine months ended September 30, 2018 and 2017.

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. Subsequent to the 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 three and nine months ended September 30, 2018 and 2017 and the outstanding balances and carrying amounts of all such loans as of September 30, 2018 and December 31, 2017:

Table 5.7

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
	($ in thousands)			
Unpaid principal balance at acquisition date:				
Loans underlying LTSPCs	$ 1,483	$ —	$ 1,483	$ 311
Loans underlying off-balance sheet Farmer Mac Guaranteed Securities (excluding AgVantage securities)	5,552	3,043	6,273	3,147
Total unpaid principal balance at acquisition date	7,035	3,043	7,756	3,458
Contractually required payments receivable	7,115	3,073	7,845	3,490
Impairment recognized subsequent to acquisition	26	—	26	—
Release of allowance for all outstanding acquired defaulted loans	—	29	—	171
Number of defaulted loans purchased	7	6	11	10

	As of	
	September 30, 2018	December 31, 2017
	(in thousands)	
Outstanding balance	$ 22,242	$ 18,866
Carrying amount	21,481	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 September 30, 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 5.8

	90-Day Delinquencies[1]		Net Credit (Recoveries)/Losses	
	As of		For the Nine Months Ended	
	September 30, 2018	December 31, 2017	September 30, 2018	September 30, 2017
	(in thousands)			
On-balance sheet assets:				
Farm & Ranch:				
Loans	$ 32,756	$ 47,881	$ 40	$ (520)
Total on-balance sheet	$ 32,756	$ 47,881	$ 40	$ (520)
Off-balance sheet assets:				
Farm & Ranch:				
LTSPCs	$ 4,789	$ 563	$ —	$ —
Total off-balance sheet	$ 4,789	$ 563	$ —	$ —
Total	$ 37,545	$ 48,444	$ 40	$ (520)

(1) Includes loans and loans underlying off-balance sheet Farm & Ranch Guaranteed Securities and LTSPCs that 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.

Of the $32.8 million of on-balance sheet loans reported as 90-day delinquencies as of September 30, 2018, $0.2 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.

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 September 30, 2018 and December 31, 2017:

Table 5.9

	As of September 30, 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	$ 2,355,938	$ 847,666	$ 652,715	$ 302,243	$ 10,824	$ 4,542	$ 4,173,928
Special mention[2]	72,974	13,204	25,729	6,992	—	—	118,899
Substandard[3]	63,577	33,948	22,741	7,526	—	—	127,792
Total on-balance sheet	$ 2,492,489	$ 894,818	$ 701,185	$ 316,761	$ 10,824	$ 4,542	$ 4,420,619
Off-Balance Sheet:							
Acceptable	$ 1,131,413	$ 455,135	$ 600,128	$ 161,671	$ 67,287	$ 2,870	$ 2,418,504
Special mention[2]	70,511	36,062	37,305	786	—	—	144,664
Substandard[3]	51,664	14,961	14,523	5,009	1,364	710	88,231
Total off-balance sheet	$ 1,253,588	$ 506,158	$ 651,956	$ 167,466	$ 68,651	$ 3,580	$ 2,651,399
Total Ending Balance:							
Acceptable	$ 3,487,351	$ 1,302,801	$1,252,843	$ 463,914	$ 78,111	$ 7,412	$ 6,592,432
Special mention[2]	143,485	49,266	63,034	7,778	—	—	263,563
Substandard[3]	115,241	48,909	37,264	12,535	1,364	710	216,023
Total	$ 3,746,077	$ 1,400,976	$1,353,141	$ 484,227	$ 79,475	$ 8,122	$ 7,072,018
Commodity analysis of past due loans[1]							
On-balance sheet	$ 15,843	$ 7,822	$ 5,274	$ 3,817	$ —	$ —	$ 32,756
Off-balance sheet	1,146	1,518	1,489	636	—	—	4,789
90 days or more past due	$ 16,989	$ 9,340	$ 6,763	$ 4,453	$ —	$ —	$ 37,545

(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 September 30, 2018 and December 31, 2017:

Table 5.10

	As of	
	September 30, 2018	December 31, 2017
	(in thousands)	
By commodity/collateral type:		
Crops	$ 3,746,077	$ 3,657,945
Permanent plantings	1,400,976	1,367,563
Livestock	1,353,141	1,334,958
Part-time farm	484,227	433,628
Ag. Storage and Processing	79,475	58,761
Other	8,122	14,731
Total	$ 7,072,018	$ 6,867,586
By geographic region(1):		
Northwest	$ 815,346	$ 740,991
Southwest	2,198,744	2,093,213
Mid-North	2,276,100	2,244,094
Mid-South	876,960	908,603
Northeast	315,685	296,264
Southeast	589,183	584,421
Total	$ 7,072,018	$ 6,867,586
By original loan-to-value ratio(2):		
0.00% to 40.00%	$ 1,317,118	$ 1,322,422
40.01% to 50.00%	1,769,124	1,733,671
50.01% to 60.00%	2,456,766	2,385,605
60.01% to 70.00%	1,227,092	1,150,914
70.01% to 80.00%(3)	277,204	248,799
80.01% to 90.00%(3)	24,714	26,175
Total	$ 7,072,018	$ 6,867,586
By size of borrower exposure(4):		
Less than $1,000,000	$ 2,423,394	$ 2,379,596
$1,000,000 to $4,999,999	2,696,431	2,627,617
$5,000,000 to $9,999,999	917,198	867,574
$10,000,000 to $24,999,999	587,618	584,896
$25,000,000 to $50,000,000	447,377	407,903
Total	$ 7,072,018	$ 6,867,586

(1) Geographic regions: Northwest (AK, ID, MT, OR, WA, WY); Southwest (AZ, CA, CO, HI, NM, NV, UT); 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) As of second quarter 2017, Farmer Mac revised its calculation of the original loan-to-value ratio of a loan to combine for any cross-collateralized loans: (i) the original loan principal balance amounts in the numerator and (ii) the original appraised property values in the denominator. In previous periods, the ratio was calculated on a loan-by-loan basis without considering the effects of any cross-collateralization. Prior period information has been reclassified to conform to the current period calculation and presentation.

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

(4) 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.

6. 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.

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 September 30, 2018 and December 31, 2017, not including offsets provided by any recourse provisions, recoveries from third parties, or collateral for the underlying loans:

Table 6.1

Outstanding Balance of Off-Balance Sheet Farmer Mac Guaranteed Securities

	As of September 30, 2018	As of December 31, 2017
	(in thousands)	
Farm & Ranch:		
Guaranteed Securities	$ 287,594	$ 333,511
USDA Guarantees:		
Farmer Mac Guaranteed USDA Securities	346,690	254,217
Institutional Credit:		
AgVantage Securities	11,556	11,556
Revolving floating rate AgVantage facility[1]	300,000	300,000
Total off-balance sheet Farmer Mac Guaranteed Securities	$ 945,840	$ 899,284

[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.

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 6.2

	For the Nine Months Ended	
	September 30, 2018	September 30, 2017
	(in thousands)	
Proceeds from new securitizations	$ 305,391	$ 404,246
Guarantee fees received	1,481	2,141
Purchases of assets from the trusts	(6,273)	(3,147)

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 $3.1 million as of September 30, 2018 and $3.6 million as of December 31, 2017. As of September 30, 2018 and December 31, 2017, the weighted-average remaining maturity of all loans underlying off-balance sheet Farmer Mac Guaranteed Securities, excluding AgVantage securities, was 9.5 years and 10.0 years, respectively. As of September 30, 2018 and December 31, 2017, the weighted-average remaining maturity of the off-balance sheet AgVantage securities was 5.3 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.

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 $3.0 billion and $3.1 billion as of September 30, 2018 and December 31, 2017, respectively.

As of September 30, 2018 and December 31, 2017, the weighted-average remaining maturity of all loans underlying LTSPCs was 15.5 years and 15.3 years, respectively. 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 $35.5 million as of September 30, 2018 and $34.8 million as of December 31, 2017.

7. EQUITY

Common Stock

For each of the first, second, and third quarters in 2018, Farmer Mac paid a quarterly dividend of $0.58 per share on all classes of its common stock. For each quarter in 2017, Farmer Mac paid a quarterly dividend of $0.36 per share on all classes of its common stock.

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, which is the amount that was remaining under the share repurchase program originally authorized in third quarter 2015.

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 percent of Farmer Mac's aggregate on-balance sheet assets, as calculated for regulatory purposes, plus 0.75 percent 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 percent 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 September 30, 2018 and December 31, 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 September 30, 2018, Farmer Mac's minimum capital requirement was $539.8 million and its core capital level was $713.6 million, which was $173.8 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.

8. FAIR VALUE DISCLOSURES

As of September 30, 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 percent of total assets and 73 percent of financial instruments measured at fair value as of September 30, 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 percent of total assets and 71 percent 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 the first nine months of 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 the first nine months of 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.

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 September 30, 2018 and December 31, 2017, respectively, and indicate the fair value hierarchy of the valuation techniques used by Farmer Mac to determine such fair value:

Table 8.1

Assets and Liabilities Measured at Fair Value as of September 30, 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	$ —	$ —	$ 18,961	$ 18,961
Floating rate asset-backed securities	—	30,056	—	30,056
Floating rate Government/GSE guaranteed mortgage-backed securities	—	1,336,474	—	1,336,474
Fixed rate GSE guaranteed mortgage-backed securities	—	422	—	422
Fixed rate U.S. Treasuries	838,089	—	—	838,089
Total Investment Securities	838,089	1,366,952	18,961	2,224,002
Farmer Mac Guaranteed Securities:				
Available-for-sale:				
AgVantage	—	—	5,957,304	5,957,304
Total Farmer Mac Guaranteed Securities	—	—	5,957,304	5,957,304
USDA Securities:				
Trading	—	—	10,237	10,237
Total USDA Securities	—	—	10,237	10,237
Financial derivatives	—	8,007	—	8,007
Total Assets at fair value	$ 838,089	$ 1,374,959	$ 5,986,502	$ 8,199,550
Liabilities:				
Financial derivatives	$ 10	$ 17,831	$ —	$ 17,841
Total Liabilities at fair value	$ 10	$ 17,831	$ —	$ 17,841
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	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	$ —	$ —	$ 18,814	$ 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 three and nine months ended September 30, 2018 and 2017.

Table 8.2

Level 3 Assets and Liabilities Measured at Fair Value for the Three Months Ended September 30, 2018

	Beginning Balance	Purchases	Sales	Settlements	Realized and Unrealized (Losses) included in Income	Unrealized Gains/ (Losses) included in Other Comprehe-nsive Income	Ending Balance
				(in thousands)			
Recurring:							
Assets:							
Investment Securities:							
Available-for-sale:							
Floating rate auction-rate certificates backed by Government guaranteed student loans	$ 19,010	$ —	$ —	$ —	$ —	$ (49)	$ 18,961
Total available-for-sale	19,010	—	—	—	—	(49)	18,961
Farmer Mac Guaranteed Securities:							
Available-for-sale:							
AgVantage	5,985,806	687,381	—	(689,213)	(13,432)	(13,238)	5,957,304
Total available-for-sale	5,985,806	687,381	—	(689,213)	(13,432)	(13,238)	5,957,304
USDA Securities:							
Available-for-sale	—	26,321	(26,321)	—	—	—	—
Trading[1]	10,748	—	—	(508)	(3)	—	10,237
Total USDA Securities	10,748	26,321	(26,321)	(508)	(3)	—	10,237
Total Assets at fair value	$ 6,015,564	$ 713,702	$ (26,321)	$ (689,721)	$ (13,435)	$ (13,287)	$5,986,502

(1) Includes unrealized losses of $9,000 attributable to assets still held as of September 30, 2018 that are recorded in "(Losses)/gains on trading securities."

Level 3 Assets and Liabilities Measured at Fair Value for the Three Months Ended September 30, 2017

	Beginning Balance	Purchases	Sales	Settlements	Realized and Unrealized Gains/ (losses) included in Income	Unrealized Gains/(losses) included in Other Comprehensive Income	Ending Balance
				(in thousands)			
Recurring:							
Assets:							
Investment Securities:							
Available-for-sale:							
Floating rate auction-rate certificates backed by Government guaranteed student loans	$ 18,518	$ —	$ —	$ —	$ —	$ —	$ 18,518
Fixed rate GSE guaranteed mortgage-backed securities	4,651	—	—	(111)	—	(82)	4,458
Total available-for-sale	23,169	—	—	(111)	—	(82)	22,976
Farmer Mac Guaranteed Securities:							
Available-for-sale:							
AgVantage	5,282,562	193,800	—	(29,851)	(1,171)	(1,594)	5,443,746
Total available-for-sale	5,282,562	193,800	—	(29,851)	(1,171)	(1,594)	5,443,746
USDA Securities:							
Available-for-sale	—	40,844	(40,844)	—	—	—	—
Trading[(1)]	16,294	—	—	(1,430)	—	—	14,864
Total USDA Securities	16,294	40,844	(40,844)	(1,430)	—	—	14,864
Total Assets at fair value	$5,322,025	$ 234,644	$ (40,844)	$ (31,392)	$ (1,171)	$ (1,676)	$5,481,586

(1) Includes unrealized gains of $34,000 attributable to assets still held as of September 30, 2017 that are recorded in "(Losses)/gains on trading securities."

Level 3 Assets and Liabilities Measured at Fair Value for the Nine Months Ended September 30, 2018

	Beginning Balance	Cumulative Effect from Change in Hedge Accounting	Purchases	Sales	Settlements	Realized and Unrealized (Losses) included in Income	Unrealized Gains/ (Losses) included in Other Comprehensive 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	—	$ —	$ —	$ —	$ —	$ 147	$ 18,961
Fixed rate GSE guaranteed mortgage-backed securities	4,333	—	—	—	(2,137)	(2,092)	(104)	—
Total available-for-sale	23,147	—	—	—	(2,137)	(2,092)	43	18,961
Farmer Mac Guaranteed Securities:								
Available-for-sale:								
AgVantage	5,471,914	487	1,646,345	—	(1,128,674)	(43,230)	10,462	5,957,304
Total available-for-sale	5,471,914	487	1,646,345	—	(1,128,674)	(43,230)	10,462	5,957,304
USDA Securities:								
Available-for-sale	—	—	105,628	(105,628)	—	—	—	—
Trading[(1)]	13,515	—	—	—	(3,302)	24	—	10,237
Total USDA Securities	13,515	—	105,628	(105,628)	(3,302)	24	—	10,237
Total Assets at fair value	$5,508,576	$ 487	$1,751,973	$(105,628)	$(1,134,113)	$ (45,298)	$ 10,505	$5,986,502

(1) Includes unrealized gains of $0.1 million attributable to assets still held as of September 30, 2018 that are recorded in "(Losses)/gains on trading securities."

Level 3 Assets and Liabilities Measured at Fair Value for the Nine Months Ended September 30, 2017

	Beginning Balance	Transfers in	Purchases	Sales	Settlements	Realized and Unrealized Gains/ (losses) included in Income	Unrealized Gains/ (losses) included in Other Comprehe- nsive 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	$ —	$ —	$ —	$ —	$ —	$ 788	$ 18,518
Fixed rate GSE guaranteed mortgage-backed securities	$ —	$ 7,041	$ —	$ —	$ (334)	$ —	$ (2,249)	$ 4,458
Total available-for-sale	17,730	7,041	—	—	(334)	—	(1,461)	22,976
Farmer Mac Guaranteed Securities:								
Available-for-sale:								
AgVantage	4,853,685	—	927,615	—	(357,006)	5,166	14,286	5,443,746
Total available-for-sale	4,853,685	—	927,615	—	(357,006)	5,166	14,286	5,443,746
USDA Securities:								
Available-for-sale	—	—	126,939	(126,939)	—	—	—	—
Trading[(1)]	20,388	—	—	—	(5,440)	(84)	—	14,864
Total USDA Securities	20,388	—	126,939	(126,939)	(5,440)	(84)	—	14,864
Total Assets at fair value	$ 4,891,803	$ 7,041	$ 1,054,554	$ (126,939)	$ (362,780)	$ 5,082	$ 12,825	$ 5,481,586

(1) Includes unrealized gains of $42,000 attributable to assets still held as of September 30, 2017 that are recorded in "(Losses)/gains 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 September 30, 2018 and December 31, 2017.

Table 8.3

	As of September 30, 2018			
Financial Instruments	Fair Value	Valuation Technique	Unobservable Input	Range (Weighted-Average)
		(in thousands)		
Assets:				
Investment securities:				
Floating rate auction-rate certificates backed by Government guaranteed student loans	$ 18,961	Indicative bids	Range of broker quotes	96.3% - 96.3% (96.3%)
Farmer Mac Guaranteed Securities:				
AgVantage	$ 5,957,304	Discounted cash flow	Discount rate	2.9% - 4.0% (3.1%)
USDA Securities	$ 10,237	Discounted cash flow	Discount rate	3.3% - 5.2% (4.9%)
			CPR	6% - 16% (15%)

	As of December 31, 2017			
Financial Instruments	Fair Value	Valuation Technique	Unobservable Input	Range (Weighted-Average)
		(in thousands)		
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%
			CPR	0 %
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 September 30, 2018 and December 31, 2017:

Table 8.4

	As of September 30, 2018		As of December 31, 2017	
	Fair Value	Carrying Amount	Fair Value	Carrying Amount
	(in thousands)			
Financial assets:				
Cash and cash equivalents	$ 436,152	$ 436,152	$ 302,022	$ 302,022
Investment securities	2,269,877	2,269,034	2,260,969	2,260,437
Farmer Mac Guaranteed Securities	8,002,686	8,024,611	7,588,806	7,598,188
USDA Securities	2,067,583	2,154,111	2,076,396	2,131,365
Loans	5,331,095	5,360,900	5,279,225	5,266,786
Financial derivatives	8,007	8,007	7,093	7,093
Guarantee and commitment fees receivable:				
LTSPCs	37,764	36,436	33,871	35,718
Farmer Mac Guaranteed Securities	3,710	3,742	4,323	4,177
Financial liabilities:				
Notes payable:				
Due within one year	7,363,251	7,378,927	8,079,309	8,089,826
Due after one year	8,348,709	8,419,424	7,445,545	7,432,790
Debt securities of consolidated trusts held by third parties	1,451,781	1,486,733	1,386,652	1,404,945
Financial derivatives	17,841	17,841	26,599	26,599
Guarantee and commitment obligations:				
LTSPCs	36,796	35,468	32,976	34,824
Farmer Mac Guaranteed Securities	3,098	3,129	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.

9. BUSINESS SEGMENT REPORTING

The following tables present core earnings for Farmer Mac's operating segments and a reconciliation to consolidated net income for the three and nine months ended September 30, 2018 and 2017:

Table 9.1

Core Earnings by Business Segment

For the Three Months Ended September 30, 2018

	Farm & Ranch	USDA Guarantees	Rural Utilities	Institutional Credit	Corporate	Reconciling Adjustments	Consolidated Net Income
				(in thousands)			
Net interest income	$ 16,425	$ 5,304	$ 3,081	$ 17,600	$ 2,648	$ —	$ 45,058
Less: reconciling adjustments[(1)(2)(3)(4)]	(2,538)	(677)	(204)	(1,958)	(604)	5,981	—
Net effective spread	13,887	4,627	2,877	15,642	2,044	5,981	—
Guarantee and commitment fees[(2)]	4,489	214	376	91	—	(1,680)	3,490
Other income/(expense)[(3)]	294	5	15	—	(245)	880	949
Non-interest income/(loss)	4,783	219	391	91	(245)	(800)	4,439
Provision for loan losses	(99)	—	—	—	—	—	(99)
Release of reserve for losses	102	—	—	—	—	—	102
Other non-interest expense	(4,456)	(1,288)	(732)	(1,844)	(3,432)	—	(11,752)
Non-interest expense[(5)]	(4,354)	(1,288)	(732)	(1,844)	(3,432)	—	(11,650)
Core earnings before income taxes	14,217	3,558	2,536	13,889	(1,633)	5,181 [(6)]	37,748
Income tax (expense)/benefit	(2,986)	(747)	(533)	(2,917)	292	(1,088)	(7,979)
Core earnings before preferred stock dividends and attribution of income to non-controlling interest	11,231	2,811	2,003	10,972	(1,341)	4,093 [(6)]	29,769
Preferred stock dividends	—	—	—	—	(3,295)	—	(3,295)
Segment core earnings/(losses)	$ 11,231	$ 2,811	$ 2,003	$ 10,972	$ (4,636)	$ 4,093 [(6)]	$ 26,474
Total assets at carrying value	$ 4,438,128	$ 2,212,515	$ 956,204	$ 8,103,181	$ 2,764,006	$ —	$ 18,474,034
Total on- and off-balance sheet program assets at principal balance	$ 7,072,018	$ 2,471,251	$ 1,632,037	$ 8,365,280	—	—	$ 19,540,586

(1) 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 "Gains/(losses) on financial derivatives and hedging activities" on the consolidated financial statements, to determine the effective funding cost for each operating segment.

(4) 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 on financial derivatives and hedging activities. 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."

(5) Includes directly attributable costs and an allocation of indirectly attributable costs based on employee headcount.

(6) 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.

Core Earnings by Business Segment

For the Three Months Ended September 30, 2017

	Farm & Ranch	USDA Guarantees	Rural Utilities	Institutional Credit	Corporate	Reconciling Adjustments	Consolidated Net Income
				(in thousands)			
Net interest income	$ 13,609	$ 5,288	$ 2,230	$ 15,431	$ 3,004	$ —	$ 39,562
Less: reconciling adjustments(1)(2)(3)(4)	(2,306)	(560)	535	(976)	(279)	3,586	—
Net effective spread	11,303	4,728	2,765	14,455	2,725	3,586	—
Guarantee and commitment fees(2)	4,236	130	476	93	—	(1,621)	3,314
Other income/(expense)(3)(5)	214	9	5	—	78	679	985
Non-interest income/(loss)	4,450	139	481	93	78	(942)	4,299
Provision for loan losses	(270)	—	—	—	—	—	(270)
Provision for reserve for losses	(114)	—	—	—	—	—	(114)
Other non-interest expense	(4,077)	(1,080)	(608)	(1,670)	(3,067)	—	(10,502)
Non-interest expense(6)	(4,191)	(1,080)	(608)	(1,670)	(3,067)	—	(10,616)
Core earnings before income taxes	11,292	3,787	2,638	12,878	(264)	2,644 (7)	32,975
Income tax (expense)/benefit	(3,952)	(1,325)	(923)	(4,507)	439	(925)	(11,193)
Core earnings before preferred stock dividends and attribution of income to non-controlling interest	7,340	2,462	1,715	8,371	175	1,719 (7)	21,782
Preferred stock dividends	—	—	—	—	(3,295)	—	(3,295)
Non-controlling interest	—	—	—	—	—	—	—
Segment core earnings/(losses)	$ 7,340	$ 2,462	$ 1,715	$ 8,371	$ (3,120)	$ 1,719 (7)	$ 18,487
Total assets at carrying value	$ 4,128,778	$ 2,165,749	$1,073,525	$ 7,612,572	$ 2,709,614	$ —	$ 17,690,238
Total on- and off-balance sheet program assets at principal balance	$ 6,557,030	$ 2,298,956	$1,886,445	$ 7,901,842	$ —	$ —	$ 18,644,273

(1) 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 "Gains/(losses) on financial derivatives and hedging activities" on the consolidated financial statements, to determine the effective funding cost for each operating segment.

(4) 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 on financial derivatives and hedging activities. 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."

(5) Includes reconciling adjustments for fair value adjustments on financial derivatives and trading assets. Also 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.

(7) 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.

Core Earnings by Business Segment

For the Nine Months Ended September 30, 2018

	Farm & Ranch	USDA Guarantees	Rural Utilities	Institutional Credit	Corporate	Reconciling Adjustments	Consolidated Net Income
	(in thousands)						
Net interest income	$ 47,255	$ 15,446	$ 8,931	$ 54,237	$ 6,351	$ —	$ 132,220
Less: reconciling adjustments[(1)(2)(3)(4)]	(7,481)	(2,021)	(181)	(8,551)	(1,646)	19,880	—
Net effective spread	39,774	13,425	8,750	45,686	4,705	19,880	—
Guarantee and commitment fees[(2)]	13,356	570	1,227	271	—	(4,954)	10,470
Other income/(expense)[(3)]	1,193	18	25	—	(594)	(54)	588
Non-interest income/(loss)	14,549	588	1,252	271	(594)	(5,008)	11,058
Provision for loan losses	(92)	—	—	—	—	—	(92)
Provision for reserve for losses	(77)	—	—	—	—	—	(77)
Other non-interest expense	(13,930)	(3,793)	(2,144)	(5,720)	(10,549)	—	(36,136)
Non-interest expense[(5)]	(14,007)	(3,793)	(2,144)	(5,720)	(10,549)	—	(36,213)
Core earnings before income taxes	40,224	10,220	7,858	40,237	(6,438)	14,872 [(6)]	106,973
Income tax (expense)/benefit	(8,447)	(2,146)	(1,651)	(8,450)	2,067	(3,122)	(21,749)
Core earnings before preferred stock dividends and attribution of income to non-controlling interest	31,777	8,074	6,207	31,787	(4,371)	11,750 [(6)]	85,224
Preferred stock dividends	—	—	—	—	(9,886)	—	(9,886)
Segment core earnings/(losses)	$ 31,777	$ 8,074	$ 6,207	$ 31,787	$ (14,257)	$ 11,750 [(6)]	$ 75,338
Total assets at carrying value	$ 4,438,128	$ 2,212,515	$ 956,204	$ 8,103,181	$ 2,764,006	$ —	$ 18,474,034
Total on- and off-balance sheet program assets at principal balance	$ 7,072,018	$ 2,471,251	$ 1,632,037	$ 8,365,280	—	—	$ 19,540,586

(1) 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 "Gains/(losses) on financial derivatives and hedging activities" on the consolidated financial statements, to determine the effective funding cost for each operating segment.

(4) 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 on financial derivatives and hedging activities. 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."

(5) Includes directly attributable costs and an allocation of indirectly attributable costs based on employee headcount.

(6) 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.

Core Earnings by Business Segment

For the Nine Months Ended September 30, 2017

	Farm & Ranch	USDA Guarantees	Rural Utilities	Institutional Credit	Corporate	Reconciling Adjustments	Consolidated Net Income
				(in thousands)			
Net interest income	$ 39,701	$ 15,747	$ 8,181	$ 44,364	$ 8,371	$ —	$ 116,364
Less: reconciling adjustments[(1)(2)(3)(4)]	(6,729)	(1,907)	(179)	(2,827)	(886)	12,528	—
Net effective spread	32,972	13,840	8,002	41,537	7,485	12,528	—
Guarantee and commitment fees[(2)]	12,722	303	1,455	713	—	(4,563)	10,630
Other income/(expense)[(3)(5)]	1,402	34	15	—	199	2,559	4,209
Non-interest income/(loss)	14,124	337	1,470	713	199	(2,004)	14,839
Provision for loan losses	(1,234)	—	—	—	—	—	(1,234)
Provision for reserve for losses	(60)	—	—	—	—	—	(60)
Other non-interest expense	(12,588)	(3,333)	(1,838)	(4,813)	(9,923)	—	(32,495)
Non-interest expense[(6)]	(12,648)	(3,333)	(1,838)	(4,813)	(9,923)	—	(32,555)
Core earnings before income taxes	33,214	10,844	7,634	37,437	(2,239)	10,524 [(7)]	97,414
Income tax (expense)/benefit	(11,625)	(3,795)	(2,671)	(13,103)	1,775	(3,684)	(33,103)
Core earnings before preferred stock dividends and attribution of income to non-controlling interest	21,589	7,049	4,963	24,334	(464)	6,840 [(7)]	64,311
Preferred stock dividends	—	—	—	—	(9,886)	—	(9,886)
Non-controlling interest	—	—	—	—	165	—	165
Segment core earnings/(losses)	$ 21,589	$ 7,049	$ 4,963	$ 24,334	$ (10,185)	$ 6,840 [(7)]	$ 54,590
Total assets at carrying value	$ 4,128,778	$ 2,165,749	$ 1,073,525	$ 7,612,572	$ 2,709,614	$ —	$ 17,690,238
Total on- and off-balance sheet program assets at principal balance	$ 6,557,030	$ 2,298,956	$ 1,886,445	$ 7,901,842	—	—	$ 18,644,273

(1) 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 "Gains/(losses) on financial derivatives and hedging activities" on the consolidated financial statements, to determine the effective funding cost for each operating segment.

(4) 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 on financial derivatives and hedging activities. 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."

(5) Includes reconciling adjustments for fair value adjustments on financial derivatives and trading assets. Also 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.

(7) 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.

10. INCOME TAXES

As a result of the changes to the U.S. tax code resulting from legislation enacted in December 2017, Farmer Mac's effective tax rate decreased from 35.5 percent for the year ended December 31, 2017 to 20.1 percent for the first nine months of 2018. The effective tax rate was lower than the statutory corporate tax rate in the first nine months of 2018 due to net tax benefits recognized related to exercises of share-based compensation awards during 2018.

Item 2. 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: (1) the interim unaudited consolidated financial statements and the related notes that appear elsewhere in this report; and (2) Farmer Mac's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on March 8, 2018.

FORWARD-LOOKING STATEMENTS

Some statements made in this report, and in particular in the "Management's Discussion & Analysis of Financial Condition and Results of Operations" section, are "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995 pertaining to management's current expectations as to 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 are accompanied by, and identified with, 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 a number of assumptions and 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 Farmer Mac's Annual Report on Form 10-K for the fiscal period ended December 31, 2017 filed with the SEC on March 8, 2018, and uncertainties regarding:

- 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 such as LIBOR; and
- volatility in commodity prices relative to costs of production, changes in U.S. trade policies, and/or fluctuations in export demand for U.S. agricultural products.

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

Overview

Farmer Mac increased its outstanding business volume by $15.7 million from the end of second quarter 2018 to $19.5 billion as of September 30, 2018. This increase was driven by net growth of $53.1 million in the USDA Guarantees line of business, $47.3 million in net new Institutional Credit business from financial fund counterparties, and net growth of $41.7 million in Farm & Ranch loan purchases. The net growth in these lines of business was partially offset by net declines in other lines of business. Farmer Mac refinanced all of its AgVantage securities maturing during third quarter 2018, which included an early refinance of a $50.0 million AgVantage security that matured in third quarter 2018 but was refinanced during second quarter 2018, which contributed to reducing actual net growth in third quarter 2018. Farmer Mac's overall credit quality improved modestly during third quarter 2018 compared to second quarter 2018. This improvement offset the net growth in the Farm & Ranch portfolio, which resulted in a $3 thousand release from the total allowance for losses since last quarter. Farmer Mac's 90-day delinquencies and substandard assets both decreased slightly both in dollars and as a percentage of the Farm & Ranch portfolio. Farmer Mac's substandard asset rate and 90-day delinquency rate each remained below Farmer Mac's historical averages.

As a result of the changes to the U.S. tax code that became effective on January 1, 2018, Farmer Mac's effective tax rate decreased from 35.5 percent for the year ended December 31, 2017 to 20.1 percent for the nine months ended September 30, 2018. Farmer Mac also increased its quarterly dividend on all three classes of its common stock by 61 percent from $0.36 per share in each quarter of 2017 to $0.58 per share for each of the first, second, and third quarters of 2018.

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.

The discussion below of Farmer Mac's financial information includes certain "non-GAAP measures," which are measures of financial performance that are not presented in accordance with generally accepted accounting principles in the United States ("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

Farmer Mac's net income attributable to common stockholders for third quarter 2018 was $26.5 million, compared to $26.3 million in second quarter 2018 and $18.5 million in third quarter 2017.

The $0.2 million sequential increase in net income attributable to common stockholders was primarily attributable to: (1) a $0.9 million after-tax increase in net interest income, primarily due to the absence of the $1.6 million after-tax premium amortization that occurred in second quarter 2018 resulting from the prepayment of an interest-only security in Farmer Mac's investment portfolio (the "Interest-Only Amortization"); and (2) a $0.8 million after-tax decrease in operating expenses. The decrease in operating expenses was primarily due to a $0.3 million after-tax decrease in hiring expenses (including expenses related to the search for Farmer Mac's President and Chief Executive Officer) and a $0.3 million after-tax decrease in servicing advances. Servicing advances are potentially recoverable expenses paid by Farmer Mac on behalf of borrowers on delinquent loans for items such as legal fees, appraisal fees, insurance, and taxes to protect Farmer Mac's interest in the collateral underlying a mortgage loan. Also contributing to the sequential increase in net income available to common stockholders was a $0.5 million after-tax decrease in the net provision for the total allowance for losses. The sequential increase was offset in part by: (1) a $1.5 million after-tax decrease in gains in fair value of financial derivatives and hedging activities; and (2) a $0.6 million increase in income tax expense.

The $8.0 million year-over-year increase in net income attributable to common stockholders was driven by: (1) an increase of $4.3 million after tax in net interest income; and (2) a $4.6 million decrease in income tax expense as a result of the lower federal corporate income tax rate in 2018 compared to 2017. The year-over-year increase was offset in part by a $1.0 million after-tax increase in operating expenses in third quarter 2018, primarily attributable to higher compensation and employee benefits expenses and higher general and administrative ("G&A") expenses.

Farmer Mac's non-GAAP core earnings for third quarter 2018 were $22.4 million, compared to $19.4 million in second quarter 2018 and $16.8 million in third quarter 2017.

The $3.0 million sequential increase in core earnings was primarily attributable to: (1) a $2.3 million after-tax increase in net effective spread, resulting from the absence in third quarter 2018 of the $1.6 million after-tax impact of the Interest-Only Amortization that occurred in second quarter 2018; (2) a $0.8 million after-tax decrease in operating expenses, primarily attributable to a decrease in G&A expenses, including hiring expenses and servicing advances, and a decrease in compensation and benefits expenses, which are generally higher during second quarter due to payments of employee incentive compensation; and (3) a $0.4 million after-tax decrease in credit-related expenses due to a $2 thousand after-tax release from the total allowance for losses in third quarter 2018 compared to a provision for the total allowance for losses of $0.5 million after-tax in second quarter 2018. The sequential increase in core earnings was partially offset by a $0.5 million decrease in tax benefits primarily related to share-based compensation recognized from exercises of equity-based awards.

The $5.6 million year-over-year increase in core earnings was primarily attributable to: (1) a $2.4 million after-tax increase in net effective spread; and (2) a $4.2 million decrease in income tax expense attributable to the lower federal corporate income tax rate. The year-over-year increase in core earnings was offset in part by the $1.0 million after-tax increase in operating expenses described above. This increase in operating expenses was primarily attributable to: (1) continued technology and business infrastructure investments; (2) an increase in headcount; and (3) new leases for office space entered into during late 2017.

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 $45.1 million for third quarter 2018, compared to $43.9 million for second quarter 2018 and $39.6 million for third quarter 2017. The overall net interest yield was 0.99 percent for third quarter 2018, compared to 0.96 percent for second quarter 2018 and 0.92 percent for third quarter 2017.

The $1.2 million sequential increase in net interest income was primarily attributable to: (1) the absence in third quarter 2018 of the Interest-Only Amortization that occurred in second quarter 2018; and (2) 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 2017 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 relationships. Another factor contributing to the sequential increase in net interest income was an increase in the amount of cash basis interest income recognized on non-accrual Farm & Ranch loans. The increase in net interest income was offset in part by an increase in net yield adjustments related to amortizations of premiums and discounts on assets consolidated at fair value. The 3 basis point sequential increase in net interest yield was primarily attributable to the absence of the Interest-Only Amortization in third quarter 2018, which had a 4 basis point negative impact in second quarter 2018.

The $5.5 million year-over-year increase in net interest income was primarily attributable to net growth in on-balance sheet AgVantage securities, Farm & Ranch loans, 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. As noted above, the effect on net interest income occurred because interest expense does not include the expense on financial derivatives not designated in hedge relationships. Also 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. Prior to 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 and hedging activities" 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. The 7 basis point year-over-year increase in net interest yield was primarily attributable to an increase in the fair value changes on financial derivatives and corresponding financial assets and liabilities in fair value hedge relationships included in net interest income in third quarter 2018 and an increase in the amount of cash basis interest income recognized on nonaccrual Farm & Ranch loans.

Net effective spread, a non-GAAP measure, was $39.1 million for third quarter 2018, compared to $36.2 million in second quarter 2018 and $36.0 million in third quarter 2017. In percentage terms, net effective spread was 0.93 percent for third quarter 2018, compared to 0.86 percent in second quarter 2018 and 0.91 percent in third quarter 2017. 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 $2.9 million and 7 basis point sequential increase in net effective spread in dollars and percentage terms was primarily attributable to: (1) the absence of the Interest-Only Amortization in third quarter 2018 that occurred in second quarter 2018, which reduced net effective spread by $2.0 million and had a 5 basis point negative impact in second quarter; (2) an increase in the amount of cash basis interest income received from non-accrual Farm & Ranch loans, which increased net effective spread by $0.4 million and 1 basis point; and (3) a decrease in net yield adjustments on asset-backed securities in Farmer Mac's investment portfolio resulting from lower prepayments in third quarter 2018, which increased net effective spread by $0.3 million and 1 basis point.

The $3.1 million year-over-year increase in net effective spread in dollars was primarily attributable to: (1) growth in outstanding business volume, which increased net effective spread by approximately $2.3 million; and (2) a $0.8 million increase in the amount of cash basis interest income received from non-accrual Farm & Ranch loans. The 2 basis point year-over-year increase in net effective spread in percentage terms was primarily attributable to the increase in the amount of cash basis interest income received from non-accrual Farm & Ranch loans.

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

Farmer Mac's outstanding business volume was $19.5 billion as of September 30, 2018, an increase of $15.7 million from the end of second quarter 2018 after taking into account all new business, account maturities, and paydowns on existing assets. This increase was driven by net growth of $53.1 million in the USDA Guarantees line of business, $47.3 million in net new Institutional Credit business from financial fund counterparties, and net growth of $41.7 million in Farm & Ranch loan purchases. Farmer Mac refinanced all of its AgVantage securities that matured during third quarter 2018, which included an early refinance of a $50.0 million AgVantage security that matured in third quarter 2018 but was refinanced in second quarter 2018, which contributed to reducing actual net growth in third quarter 2018. Farmer Mac added $1.5 billion of gross new business volume during third quarter 2018. The new business volume included purchases of $786.0 million of AgVantage securities, the renewal of an undrawn $300.0 million revolving floating rate AgVantage facility, purchases of $192.6 million of newly originated Farm & Ranch loans, Farm & Ranch loans added under LTSPCs of $64.1 million, purchases of $90.0 million of USDA Securities, and the issuance of $26.3 million of Farmer Mac Guaranteed USDA Securities. Farmer Mac's outstanding business volume of $19.5 billion as of September 30, 2018 represented an increase of $533.3 million from December 31, 2017.

During third quarter 2018 and throughout this year, Farmer Mac's gross purchases of Farm & Ranch loans and USDA Securities have decreased compared to the prior year, which Farmer Mac believes is due to several factors. In the Farm & Ranch line of business, 2018 has seen far fewer opportunities to purchase large loans that are over $15.0 million compared to 2017. Farmer Mac believes that this could be due to a fewer number of 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. The decrease in purchases 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, Farmer Mac does not believe that this indicates a decrease in borrower demand for USDA agricultural loans. While gross loan purchase volumes are down in both the Farm & Ranch and USDA Guarantees lines of business, year-over-year net outstanding business volume growth has remained in the high single-digit to double-digit range throughout 2018. Contributing to these net growth rates is the significant slowdown during 2018 of prepayments on loans in these lines of business, as a higher interest rate and lower farm income environment appears to have reduced borrowers' incentive to prepay. Farmer Mac's net agricultural mortgage loan growth rate compares favorably to the year-over-year growth rate of the total agricultural mortgage loan market of approximately 5.1 percent through June 2018, based upon a review of bank and Farm Credit System call report data.

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 September 30, 2018, Farmer Mac's core capital level was $713.6 million, which was $173.8 million above the minimum capital level required by Farmer Mac's statutory charter. As of December 31, 2017, Farmer Mac's core capital level was $657.1 million, which was $136.8 million above the minimum capital requirement. The increase in capital in excess of the minimum capital level was due primarily to an increase in retained earnings.

Credit Quality

As of September 30, 2018, Farmer Mac's allowance for losses was $9.0 million (0.13 percent of the Farm & Ranch portfolio), compared to $9.0 million (0.13 percent of the Farm & Ranch portfolio) as of June 30, 2018 and $8.9 million (0.13 percent of the Farm & Ranch portfolio) as of December 31, 2017. The $3 thousand release from the total allowance for losses in third quarter 2018 was primarily attributable to: (1) a modest improvement in overall portfolio credit quality; and (2) a reduced net volume growth rate in Farm & Ranch loans during third quarter 2018.

As of September 30, 2018, Farmer Mac's substandard assets were $216.0 million (3.1 percent of the Farm & Ranch portfolio), compared to $226.5 million (3.2 percent of the Farm & Ranch portfolio) as of June 30, 2018 and $221.3 million (3.2 percent of the Farm & Ranch portfolio) as of December 31, 2017. Farmer Mac's substandard asset volume decreased modestly from last quarter in dollars as more substandard loan volume paid off and fewer assets migrated to the substandard asset category. As of September 30, 2018, the loan volume migrating into the substandard asset category was primarily comprised of oilseeds, feedgrains, and livestock.

As of September 30, 2018, Farmer Mac's 90-day delinquencies were $37.5 million (0.53 percent of the Farm & Ranch portfolio), compared to $43.1 million (0.61 percent of the Farm & Ranch portfolio) as of June 30, 2018 and $48.4 million (0.71 percent of the Farm & Ranch portfolio) as of December 31, 2017. The sequential decrease in 90-day delinquencies is primarily attributable to: (1) lower than expected seasonal delinquencies associated with loans that have annual (January 1st) and semi-annual (January 1st and July 1st) payment terms, which account for most of the loans in the Farm & Ranch portfolio; and (2) $9.8 million in two crop loans to a single borrower that became current during third quarter 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."

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 and hedging activities. Specifically, variation margin is exchanged between Farmer Mac and its counterparties on both its cleared and non-cleared derivatives portfolios. Prior to 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 subsequently 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. Farmer Mac believes 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 and hedging activities as a result of the CME rule change and subsequent 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 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. 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 for purposes of 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*." Prior to 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 "Gains/(losses) on financial derivatives and hedging activities" 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.

Net effective spread also includes the net effects of terminations or net settlements on financial derivatives and hedging activities. 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 relationship. For additional details on the specific components that relate to the net effects of terminations or net settlements on financial derivatives and hedging activities, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations."

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 the three months ended September 30, 2018 was $26.5 million ($2.46 per diluted common share), compared to $18.5 million ($1.71 per diluted common share) for the same period in 2017. For the nine months ended September 30, 2018, Farmer Mac's net income attributable to common stockholders was $75.3 million ($7.01 per diluted common share), compared to $54.6 million ($5.06 per diluted common share) for the same period in 2017. Farmer Mac's non-GAAP core earnings for the three months ended September 30, 2018 were $22.4 million ($2.08 per diluted common share), compared to $16.8 million ($1.55 per diluted common share) for the same period in 2017. Farmer Mac's non-GAAP core earnings for the nine months ended September 30, 2018 were $63.6 million ($5.92 per diluted common share), compared to $47.8 million ($4.42 per diluted common share) for the same period in 2017. 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 Three Months Ended	
	September 30, 2018	September 30, 2017
	(in thousands, except per share amounts)	
Net income attributable to common stockholders	$ 26,474	$ 18,487
Less reconciling items:		
Gains on undesignated financial derivatives due to fair value changes (see Table 8)	3,625	995
Gains on hedging activities due to fair value changes	1,051	1,742
Unrealized losses on trading securities	(3)	—
Amortization of premiums/discounts and deferred gains on assets consolidated at fair value	(38)	(954)
Net effects of terminations or net settlements on financial derivatives and hedging activities[(1)]	546	862
Income tax effect related to reconciling items	(1,088)	(926)
Sub-total	4,093	1,719
Core earnings	$ 22,381	$ 16,768
Composition of Core Earnings:		
Revenues:		
Net effective spread[(2)]	$ 39,077	$ 35,976
Guarantee and commitment fees[(3)]	5,170	4,935
Other[(4)]	110	274
Total revenues	44,357	41,185
Credit related expense/(income)(GAAP):		
(Release of)/provision for losses	(3)	384
Losses/(gains) on sale of REO	41	(32)
Total credit related expenses	38	352
Operating expenses (GAAP):		
Compensation and employee benefits	6,777	5,987
General and administrative	4,350	3,890
Regulatory fees	625	625
Total operating expenses	11,752	10,502
Net earnings	32,567	30,331
Income tax expense[(5)]	6,891	10,268
Preferred stock dividends (GAAP)	3,295	3,295
Core earnings	$ 22,381	$ 16,768
Core earnings per share:		
Basic	$ 2.10	$ 1.58
Diluted	2.08	1.55
Weighted-average shares:		
Basic	10,668	10,605
Diluted	10,744	10,815

(1) 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 and hedging activities. 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.

(2) 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.

(3) 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.

(4) 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 hedging activities, 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.

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

Reconciliation of Net Income Attributable to Common Stockholders to Core Earnings

	For the Nine Months Ended	
	September 30, 2018	September 30, 2017
	(in thousands, except per share amounts)	
Net income attributable to common stockholders	$ 75,338	$ 54,590
Less reconciling items:		
Gains on undesignated financial derivatives due to fair value changes (see Table 8)	8,055	10,479
Gains/(losses) on hedging activities due to fair value changes	5,302	(716)
Unrealized gains/(losses) on trading securities	24	(84)
Amortization of premiums/discounts and deferred gains on assets consolidated at fair value	(528)	(1,198)
Net effects of terminations or net settlements on financial derivatives and hedging activities(1)	2,020	2,042
Income tax effect related to reconciling items	(3,123)	(3,683)
Sub-total	11,750	6,840
Core earnings	$ 63,588	$ 47,750
Composition of Core Earnings:		
Revenues:		
Net effective spread(2)	$ 112,340	$ 103,836
Guarantee and commitment fees(3)	15,424	15,193
Other(4)	649	866
Total revenues	128,413	119,895
Credit related expense (GAAP):		
Provision for losses	169	1,294
REO operating expenses	16	23
Loss/(gain) on sale of REO	7	(784)
Total credit related expense	192	533
Operating expenses (GAAP):		
Compensation and employee benefits	20,367	18,986
General and administrative	13,878	11,611
Regulatory fees	1,875	1,875
Total operating expenses	36,120	32,472
Net earnings	92,101	86,890
Income tax expense(5)	18,627	29,419
Net loss attributable to non-controlling interest (GAAP)	—	(165)
Preferred stock dividends (GAAP)	9,886	9,886
Core earnings	$ 63,588	$ 47,750
Core earnings per share:		
Basic	$ 5.97	$ 4.51
Diluted	5.92	4.42
Weighted-average shares:		
Basic	10,650	10,586
Diluted	10,743	10,794

(1) 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 and hedging activities. 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.

(2) 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.
(3) 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.
(4) 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 hedging activities, 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.
(5) 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 Three Months Ended		For the Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
	(in thousands, except per share amounts)			
GAAP - Basic EPS	$ 2.48	$ 1.74	$ 7.07	$ 5.16
Less reconciling items:				
Gains on undesignated financial derivatives due to fair value changes (see Table 8)	0.34	0.09	0.76	0.99
Gains/(losses) on hedging activities due to fair value changes	0.10	0.17	0.50	(0.07)
Unrealized gains/(losses) on trading securities	—	—	—	(0.01)
Amortization of premiums/discounts and deferred gains on assets consolidated at fair value	—	(0.09)	(0.05)	(0.11)
Net effects of terminations or net settlements on financial derivatives and hedging activities	0.05	0.08	0.19	0.20
Income tax effect related to reconciling items	(0.11)	(0.09)	(0.30)	(0.35)
Sub-total	0.38	0.16	1.10	0.65
Core Earnings - Basic EPS	$ 2.10	$ 1.58	$ 5.97	$ 4.51
Shares used in per share calculation (GAAP and Core Earnings)	10,668	10,605	10,650	10,586

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

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
	(in thousands, except per share amounts)			
GAAP - Diluted EPS	$ 2.46	$ 1.71	$ 7.01	$ 5.06
Less reconciling items:				
Gains on undesignated financial derivatives due to fair value changes (see Table 8)	0.33	0.09	0.75	0.97
Gains/(losses) on hedging activities due to fair value changes	0.10	0.17	0.49	(0.06)
Unrealized gains/(losses) on trading securities	—	—	—	(0.01)
Amortization of premiums/discounts and deferred gains on assets consolidated at fair value	—	(0.09)	(0.05)	(0.11)
Net effects of terminations or net settlements on financial derivatives and hedging activities	0.05	0.08	0.19	0.19
Income tax effect related to reconciling items	(0.10)	(0.09)	(0.29)	(0.34)
Sub-total	0.38	0.16	1.09	0.64
Core Earnings - Diluted EPS	$ 2.08	$ 1.55	$ 5.92	$ 4.42
Shares used in per share calculation (GAAP and Core Earnings)	10,744	10,815	10,743	10,794

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

1. Gains/(losses) on financial derivatives and hedging activities 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 Three Months Ended		For the Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
	(in thousands)			
Gains/(losses) due to fair value changes (see Table 4.2)	1,051	1,742	5,751	(716)
Initial cash payment received at inception of swap[(1)]	—	—	(449)	—
Gains/(losses) on hedging activities due to fair value changes	$ 1,051	$ 1,742	$ 5,302	$ (716)

(1) 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 "Gains/(losses) on financial derivatives and hedging activities" in the statement of operations. Upon adoption of ASU 2017-12, "*Derivatives and Hedging (Topic 815): Targeted Improvements to 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 and hedging activities. 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 and hedging activities," whereas 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.

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

Net Interest Income. The following table provides information regarding interest-earning assets and funding for the nine months ended September 30, 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 Nine Months Ended					
	September 30, 2018			September 30, 2017		
	Average Balance	Income/ Expense	Average Rate	Average Balance	Income/ Expense	Average Rate
	(dollars in thousands)					
Interest-earning assets:						
Cash and investments	$ 2,750,402	$ 38,681	1.88%	$ 2,746,902	$ 24,834	1.21%
Loans, Farmer Mac Guaranteed Securities and USDA Securities(1)	13,889,468	319,040	3.06%	12,496,888	231,852	2.47%
Total interest-earning assets	16,639,870	357,721	2.87%	15,243,790	256,686	2.25%
Funding:						
Notes payable due within one year	3,521,125	44,990	1.70%	5,409,742	36,526	0.90%
Notes payable due after one year(2)	12,399,858	185,464	1.99%	9,205,917	108,359	1.57%
Total interest-bearing liabilities(3)	15,920,983	230,454	1.93%	14,615,659	144,885	1.32%
Net non-interest-bearing funding	718,887	—		628,131	—	
Total funding	16,639,870	230,454	1.85%	15,243,790	144,885	1.27%
Net interest income/yield prior to consolidation of certain trusts	16,639,870	127,267	1.02%	15,243,790	111,801	0.98%
Net effect of consolidated trusts(4)	1,427,560	4,953	0.46%	1,211,419	4,563	0.50%
Net interest income/yield	$ 18,067,430	$ 132,220	0.98%	$ 16,455,209	$116,364	0.94%

(1) Excludes interest income of $40.1 million and $32.5 million in the first nine months of 2018 and 2017, 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 $35.2 million and $27.9 million in the first nine months of 2018 and 2017, 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.

Net interest income was $132.2 million for the nine months ended September 30, 2018, compared to $116.4 million for the same period in 2017. The overall net interest yield was 0.98 percent for the nine months ended September 30, 2018, compared to 0.94 percent for the same period in 2017.

The $15.8 million increase in net interest income for the nine months ended September 30, 2018 compared to the same period in 2017 was driven by net growth in on-balance sheet AgVantage securities, Farm & Ranch loans, 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. The effect on net interest income occurred because interest expense does not include the expense on financial derivatives not designated in hedge relationships. Also contributing to the increase were the fair value changes on financial derivatives and corresponding financial assets and liabilities in fair value hedge relationships. The increase was offset in part by the $2.0 million negative impact of the Interest-Only Amortization during second quarter 2018.

The 4 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 following table sets forth information regarding 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

	For the Nine Months Ended September 30, 2018 Compared to Same Period in 2017		
	Increase/(Decrease) Due to		
	Rate	Volume	Total
		(in thousands)	
Income from interest-earning assets:			
Cash and investments	$ 13,815	$ 32	$ 13,847
Loans, Farmer Mac Guaranteed Securities and USDA Securities	59,391	27,797	87,188
Total	73,206	27,829	101,035
Expense from other interest-bearing liabilities	71,662	13,907	85,569
Change in net interest income prior to consolidation of certain trusts[1]	$ 1,544	$ 13,922	$ 15,466

(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 and hedging activities, 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 hedging activities; 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 regarding the explanation of net effective spread.

Table 6

	For the Three Months Ended				For the Nine Months Ended			
	September 30, 2018		September 30, 2017		September 30, 2018		September 30, 2017	
	Dollars	Yield	Dollars	Yield	Dollars	Yield	Dollars	Yield
	(dollars in thousands)							
Net interest income/yield	$ 45,058	0.99 %	$ 39,562	0.92 %	$ 132,220	0.98 %	$ 116,364	0.94 %
Net effects of consolidated trusts	(1,681)	0.05 %	(1,621)	0.04 %	(4,953)	0.04 %	(4,563)	0.04 %
Expense related to undesignated financial derivatives	(3,223)	(0.08)%	(2,675)	(0.07)%	(9,523)	(0.08)%	(8,317)	(0.07)%
Amortization of premiums/discounts on assets consolidated at fair value	49	— %	961	0.03 %	555	0.01 %	1,219	0.01 %
Amortization of losses due to terminations or net settlements on financial derivatives and hedging activities	(75)	— %	(251)	(0.01)%	(207)	— %	(867)	(0.01)%
Fair value changes on fair value hedge relationships	(1,051)	(0.03)%	—	— %	$ (5,752)	(0.05)%	$ —	— %
Net effective spread	$ 39,077	0.93 %	$ 35,976	0.91 %	$ 112,340	0.90 %	$ 103,836	0.91 %

Net effective spread was $39.1 million and $112.3 million for the three and nine months ended September 30, 2018, compared to $36.0 million and $103.8 million for the same periods in 2017, respectively. In percentage terms, net effective spread for the three and nine months ended September 30, 2018 was 0.93 percent and 0.90 percent, respectively, compared to 0.91 percent for both comparable periods in 2017.

For the first nine months of 2018 compared to the same period in 2017, the $8.5 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 $8.6 million; and (2) a $1.4 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. The 1 basis point year-over-year decrease in net effective spread in percentage terms was primarily attributable to: (1) the dilutive effect of the refinancing in second quarter 2017 of a $1.0 billion AgVantage security, $970.0 million of which was previously held by third-party investors and reported as off-balance sheet business volume in the Institutional Credit line of business; and (2) the Interest-Only Amortization. The decrease was offset by the increase in amount of cash basis interest income recognized on nonaccrual Farm & Ranch loans.

See Note 9 to the consolidated financial statements for more information regarding 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 the three and nine months ended September 30, 2018 and 2017:

Table 7

	As of September 30, 2018			As of September 30, 2017		
	Allowance for Loan Losses	Reserve for Losses	Total Allowance for Losses	Allowance for Loan Losses	Reserve for Losses	Total Allowance for Losses
			(in thousands)			
For the Three Months Ended:						
Beginning Balance	$ 6,789	$ 2,249	$ 9,038	$ 6,138	$ 1,966	$ 8,104
Provision for/(release of) losses	99	(102)	(3)	270	114	384
Charge-offs	(17)	—	(17)	—	—	—
Ending Balance	$ 6,871	$ 2,147	$ 9,018	$ 6,408	$ 2,080	$ 8,488
For the Nine Months Ended:						
Beginning Balance	$ 6,796	$ 2,070	$ 8,866	$ 5,415	$ 2,020	$ 7,435
Provision for losses	92	$ 77	$ 169	1,234	60	1,294
Charge-offs	(17)	$ —	$ (17)	(241)	—	(241)
Ending Balance	$ 6,871	$ 2,147	$ 9,018	$ 6,408	$ 2,080	$ 8,488

The provision for the allowance for loan losses recorded during the three and nine months ended September 30, 2018 was attributable to an increase in the balance of on-balance sheet Farm & Ranch loans, which was partially offset by a modest improvement in overall portfolio credit quality. The release of the reserve for losses recorded during the three months ended September 30, 2018 was attributable to a decrease in the balance of loans underlying LTSPCs. The provision for the reserve for losses recorded during the nine months ended September 30, 2018 was primarily attributable to an increase in the balance of loans underlying LTSPCs. The charge-off that Farmer Mac recorded during the three and nine months ended September 30, 2018 related to one loan that was foreclosed and transitioned to REO during third quarter 2018.

The provision for the allowance for loan losses recorded during the three and nine months ended September 30, 2017 was attributable to: (1) 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 certain of those loans; and (2) an increase in the general allowance due to overall net volume growth in on-balance sheet Farm & Ranch loans. The increases to the allowance were offset in part by a modest decline in loss rates used to estimate probable losses. The provision for the reserve for losses recorded during the three and nine months ended September 30, 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. 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 the first nine months of 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.

See Note 5 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 $3.5 million and $10.5 million for the three and nine months ended September 30, 2018, compared to $3.3 million and $10.6 million for the same periods in 2017, 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 the three and nine months ended September 30, 2018, guarantee and commitment Fees, for the purpose of core earnings, were $5.2 million and $15.4 million, compared to $4.9 million and $15.2 million for the same periods in 2017.

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."

(Losses)/Gains on Financial Derivatives and Hedging Activities. The effect of unrealized and realized gains on Farmer Mac's financial derivatives and hedging activities were net gains of $0.6 million and net losses of $0.7 million for the three and nine months ended September 30, 2018, respectively, compared to net gains of $0.7 million and $2.5 million for the comparable periods in 2017, respectively.

The components of gains and losses on financial derivatives and hedging activities for the three and nine months ended September 30, 2018 and 2017 are summarized in the following table:

Table 8

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
	(in thousands)			
Fair value hedges:				
(Losses)/gains due to fair value changes:				
Financial derivatives[2]	$ —	$ 1,576		$ (5,466)
Hedged items	—	166		4,750
(Losses)/gains on fair value hedging activities	—	1,742	—	(716)
Cash flow hedges:				
Loss recognized (ineffective portion)	—	(191)		(365)
Losses on cash flow hedges	—	(191)		(365)
No hedge designation:				
(Losses)/Gains due to fair value changes	3,624	995	8,055	10,479
Accrual of contractual payments	(3,224)	(2,484)	(9,524)	(7,952)
Gains/(losses) due to terminations or net settlements	228	599	781	1,084
(Losses)/gains on financial derivatives not designated in hedging relationships	628	(890)	(688)	3,611
(Losses)/gains on financial derivatives and hedging activities	$ 628	$ 661	$ (688)	$ 2,530

(1) 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 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.

(2) Included in the assessment of hedge effectiveness as of September 30, 2017, but excluded from the amounts in the table, were losses of $1.6 million and gains of $0.7 million for the three and nine months ended September 30, 2017, respectively, attributable to the fair value of the swaps at the inception of the hedging relationship. Accordingly, the amounts recognized as hedge ineffectiveness for the three and nine months ended September 30, 2017 were gains of $0.1 million and losses of zero, respectively.

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 the first nine months of 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. Prior to 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 accounting relationships. Thus, for the first nine months of 2017, 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 and hedging activities," whereas 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 upon the number of the aforementioned type of swaps it executes during a quarter.

(Losses)/Gains on Sale of Real Estate Owned (REO). During the three and nine months ended September 30, 2018, Farmer Mac realized net losses of $41,000 and $7,000 on the sales of REO properties, respectively, compared to net gains of $32,000 and $0.8 million for the three and nine months ended September 30, 2017, respectively.

Other Income. Other income totaled $0.4 million and $1.3 million for the three and nine months ended September 30, 2018, respectively, compared to $0.2 million and $0.9 million for the same periods in 2017, respectively. The increase in other income for the three and nine months ended September 30, 2018 was primarily attributable to the collection of $0.3 million and $1.1 million, respectively, in late fees received on Farm & Ranch loans, compared to $0.1 million and $0.4 million for the same periods in 2017. The increase was offset in part by the recognition of zero and $0.4 million during the three and nine months ended September 30, 2017, respectively, of appraisal fees received by Farmer Mac's former consolidated appraisal company subsidiary, AgVisory, compared to none for the same periods in 2018. 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 $6.8 million and $20.4 million for the three and nine months ended September 30, 2018, respectively, compared to $6.0 million and $19.0 million for the same periods in 2017, respectively. The increase in compensation and employee benefits for both the three and nine months ended September 30, 2018 compared to the same periods in 2017 was primarily attributable 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.

General and Administrative Expenses. G&A expenses were $4.4 million and $13.9 million for the three and nine months ended September 30, 2018, respectively, compared to $3.9 million and $11.6 million for the same periods in 2017, respectively. The increase in G&A expenses for the three months ended September 30, 2018 compared to the same period in 2017 was primarily attributable 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 President and Chief Executive Officer; and (3) new leases for office space entered into during 2017. The increase for the nine months ended September 30, 2018 compared to the same period in 2017 was caused by all of the same reasons described above and an increase in legal fees related to general corporate matters, including fees related to the development of new products, a higher number of AgVantage transactions, and the termination of employment of Farmer Mac's former President and Chief Executive Officer.

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 $0.6 million and $1.9 million for the three and nine months ended September 30, 2018, respectively, compared to $0.6 million and $1.9 million for the same periods in 2017, respectively. FCA has advised Farmer Mac that its estimated fees for the federal fiscal year ending September 30, 2019 would increase to $2.75 million ($0.688 million per federal 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 $8.0 million and $21.7 million for the three and nine months ended September 30, 2018, respectively, compared to $11.2 million and $33.1 million for same periods in 2017, respectively. The decrease in income tax expense in the three and nine months ended September 30, 2018 compared to the same periods in 2017 was primarily due to a lower effective federal tax rate under the new tax legislation enacted in December 2017. The effective federal tax rate for the three and nine months ended September 30, 2018 was lower than the statutory corporate tax rate due to the effect of exercises of share-based compensation awards during the first nine months of 2018.

Business Volume. During third quarter 2018, Farmer Mac added $1.5 billion of gross new business volume, compared to $0.9 billion in third quarter 2017. Specifically, Farmer Mac:

- purchased $786.0 million of AgVantage securities;
- renewed a $300.0 million revolving floating rate AgVantage facility;
- purchased $192.6 million of newly originated Farm & Ranch loans;
- purchased $90.0 million of USDA Securities;
- added $64.1 million of Farm & Ranch loans under LTSPCs; and
- issued $26.3 million of Farmer Mac Guaranteed USDA Securities.

Farmer Mac's outstanding business volume was $19.5 billion as of September 30, 2018, which represented a net increase of $15.7 million from June 30, 2018. This increase was driven by net growth of $53.1 million in the USDA Guarantees line of business, $47.3 million in net new Institutional Credit business from financial fund counterparties, and net growth of $41.7 million in Farm & Ranch loan purchases. Farmer Mac refinanced all of its AgVantage securities maturing during third quarter 2018, which included an early refinance of a $50.0 million AgVantage security that matured in third quarter 2018 but which was refinanced in second quarter 2018.

Although Farmer Mac experienced net growth in some of its lines of business during third quarter 2018, several factors combined to reduce overall net growth. Specifically, within the Institutional Credit line of business, three factors contributed to reducing overall net growth: (1) an early refinance of a $50.0 million AgVantage security in second quarter 2018 that matured in third quarter 2018; (2) the quarterly amortization of $14.0 million on another AgVantage security; and (3) a $9.8 million prepayment on a Farm Equity AgVantage security. The Farm Equity AgVantage security prepaid upon the sale of the underlying asset, as the counterparty's limited life fund that held the asset is nearing its maturity date and selling assets to return capital to its investors. Another factor reducing overall net growth this quarter was a $37.4 million net decrease in Farmer Mac's Rural Utilities line of business due to loan repayments. The last factor that contributed to reducing overall net growth was a $15.0 million net decrease in Farm & Ranch LTSPCs, as repayments exceeded new business volume.

Within the Institutional Credit line of business, while outstanding business volume experienced a net decrease of $26.6 million in third quarter 2018 compared to second quarter 2018 primarily due to the aforementioned early refinance of the $50.0 million AgVantage security, Farmer Mac was able to successfully refinance all of its third quarter 2018 scheduled maturities. Specifically, Farmer Mac refinanced $650.0 million of maturing on-balance sheet AgVantage securities and a $300.0 million off-balance sheet AgVantage facility. The purchases in Farmer Mac's Institutional Credit line of business during third quarter 2018 included refinancing purchases of AgVantage securities in the amounts of $275.0 million from MetLife, $250.0 million from National Rural Utilities Cooperative Finance Corporation ("CFC"), and $125.0 million from Rabo Agrifinance, Inc. ("Rabo"). The counterparties in these transactions used the funds to repay AgVantage securities that matured in third quarter 2018. Farmer Mac also purchased a new AgVantage security in the amount of $25.0 million from Rabo. Farmer Mac committed to the new $300.0 million revolving floating rate AgVantage facility with CFC to replace a similar facility that expired during third quarter 2018. Farmer Mac receives 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 Farmer Mac will earn interest income on those securities.

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 purchases 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:

Table 9

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

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
	(in thousands)			
Farm & Ranch:				
Loans	$ 192,628	$ 298,274	$ 675,840	$ 924,628
LTSPCs	64,100	102,774	349,231	271,934
USDA Guarantees:				
USDA Securities	90,018	90,229	264,196	298,539
Farmer Mac Guaranteed USDA Securities	26,321	41,069	105,628	133,121
Rural Utilities:				
Loans	—	70,000	8,645	122,341
Institutional Credit:				
AgVantage securities	785,953	290,995	2,424,493	2,149,159
AgVantage revolving line of credit facility	300,000	—	300,000	—
Total purchases, guarantees, LTSPCs, and AgVantage securities	$ 1,459,020	$ 893,341	$ 4,128,033	$ 3,899,722

The decrease in gross new business volume of loans purchased within the Farm & Ranch line of business for the first nine months of 2018 compared to the same period of 2017 was primarily due to there being far fewer opportunities to purchase large loans over $15.0 million. Farmer Mac believes this could be due to a fewer number of eligible borrowers that are able to secure financing of that size, as well as potentially increased pricing competition for the highest rated borrowers of these larger loans. During the first nine months of 2017, Farmer Mac purchased eight large loans totaling $210.0 million, compared to the purchase of only two large loans totaling $35.5 million during the first nine months of 2018. While gross Farm & Ranch loan purchases were down during the first nine months of 2018, net outstanding Farm & Ranch loan volume grew 8.6 percent year-over-year, which compares to year-over-year total agricultural mortgage market growth of 5.1 percent through the first six months of 2018, based on a review of bank and Farm Credit System call report data. During the first nine months of 2018, Farmer Mac purchased 1,606 Farm & Ranch loans with an average unpaid principal balance of $431,000, compared to 1,621 Farm & Ranch loans purchased with an average unpaid principal balance of $572,000 during the same period in 2017.

The increase in new business volume for loans added under LTSPCs within the Farm & Ranch line of business in the first nine months of 2018 compared to the first nine months of 2017 reflected an increase in demand among Farm Credit System institutions for the LTSPC product.

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

Loan purchase volume in the Rural Utilities line of business decreased in the first nine months of 2018 compared to the first nine months of 2017 primarily as a result of a leveling off of loan demand within the rural utilities industry as demand for capital remains flat.

Changes in AgVantage securities volume are primarily driven by the generally larger transaction sizes for that product and the fluctuating wholesale funding and liquidity needs of Farmer Mac's customer network and scheduled maturity amounts. The volume of new AgVantage securities was higher in the first nine months of 2018 compared to the first nine months of 2017 primarily due to net new business with CFC, Rabo, and several financial fund counterparties.

Based on market conditions, 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 the third quarter of 2018 and 2017 was less than one year. Of those loans, 63 percent and 73 percent had principal amortization periods longer than the maturity date, resulting in balloon payments at maturity, with a weighted-average remaining term to maturity of 22.4 years and 19.1 years, respectively.

During third quarter 2018 and 2017, Farmer Mac securitized some of the Farm & Ranch loans it had purchased and sold the resulting Farmer Mac Guaranteed Securities in the amounts of $82.8 million and $115.4 million, respectively. Farmer Mac consolidates these loans and presents them as "Loans held for investment in consolidated trusts, at amortized cost" on the consolidated balance sheets. For the three and nine months ended September 30, 2018 $38.9 million and $68.7 million, respectively, of Farmer Mac Guaranteed Securities were sold to Zions First National Bank, which is a related party to Farmer Mac, compared to $46.0 million and $102.5 million for the same periods in 2017, respectively.

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

Table 10

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
	(in thousands)			
Loans securitized and sold as Farm & Ranch Guaranteed Securities	$ 82,781	$ 115,427	$ 199,764	$ 277,307
Farmer Mac Guaranteed USDA Securities	26,321	41,069	105,628	127,164
AgVantage securities	785,953	290,995	2,424,493	2,149,159
Total Farmer Mac Guaranteed Securities issuances	$ 895,055	$ 447,491	$ 2,729,885	$ 2,553,630

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 September 30, 2018	As of December 31, 2017
	(in thousands)	
On-balance sheet:		
Farm & Ranch:		
Loans	$ 2,937,484	$ 2,798,906
Loans held in trusts:		
Beneficial interests owned by third party investors	1,483,135	1,399,827
USDA Guarantees:		
USDA Securities	2,096,700	2,068,017
Farmer Mac Guaranteed USDA Securities	27,861	29,980
Rural Utilities:		
Loans	962,702	1,076,291
Institutional Credit:		
AgVantage securities	8,053,724	7,593,322
Total on-balance sheet	$ 15,561,606	$ 14,966,343
Off-balance sheet:		
Farm & Ranch:		
LTSPCs	$ 2,363,805	$ 2,335,342
Guaranteed Securities	287,594	333,511
USDA Guarantees:		
Farmer Mac Guaranteed USDA Securities	346,690	254,217
Rural Utilities:		
LTSPCs(1)	669,335	806,342
Institutional Credit:		
AgVantage securities	11,556	11,556
Revolving floating rate AgVantage facility(2)	300,000	300,000
Total off-balance sheet	$ 3,978,980	$ 4,040,968
Total	$ 19,540,586	$ 19,007,311

(1) Includes $20.0 million related to one-year loan purchase commitments on which Farmer Mac receives a nominal unused commitment fee as of both September 30, 2018 and December 31, 2017.

(2) During the first nine months of 2018, $100.0 million of this facility was drawn and subsequently repaid. During 2017, $100.0 million of this facility was drawn and subsequently 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.

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 September 30, 2018:

Table 12

Schedule of Principal Amortization as of September 30, 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)		
2018	51,715	57,751	25,722	135,188
2019	219,777	267,446	109,758	596,981
2020	240,173	238,144	107,449	585,766
2021	249,110	270,939	111,138	631,187
2022	216,044	208,781	114,561	539,386
Thereafter	4,406,501	2,277,675	2,002,622	8,686,798
Total	$ 5,383,320	$ 3,320,736	$ 2,471,250	$ 11,175,306

Of the $19.5 billion outstanding principal balance of volume included in Farmer Mac's four lines of business as of September 30, 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 September 30, 2018:

Table 13

AgVantage Balances by Year of Maturity

	As of September 30, 2018
	(in thousands)
2018	520,919
2019	1,437,279
2020	1,320,758
2021	1,414,262
2022	909,278
Thereafter(1)(2)	2,762,784
Total	$ 8,365,280

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

(2) Includes various maturities ranging from 2023 to 2044.

The weighted-average remaining maturity of the outstanding AgVantage securities shown in the table above was 4.8 years as of September 30, 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 third quarter 2018 had a weighted average age of 3 years. During third quarter 2017, the delinquent loans purchased out of securitized pools had a weighted-average age of 5 years. 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 Three Months Ended		For the Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
	(in thousands)			
Defaulted loans purchased underlying Farm & Ranch Guaranteed Securities owned by third party investors	$ 5,552	$ 3,043	$ 6,273	$ 3,147
Defaulted loans purchased underlying LTSPCs	1,483	—	1,483	311
Total loan purchases	$ 7,035	$ 3,043	$ 7,756	$ 3,458

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 most of its lines of business, driven by several key factors:

- As agricultural and rural utilities lenders seek to manage equity capital requirements under regulatory frameworks or seek to reduce exposure due to lending limits or concentration limits, Farmer Mac can provide relief for those institutions through loan purchases, guarantees, LTSPCs, or wholesale funding.
- Prospects for loan growth within the rural utilities industry appear 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 be impacted by sector growth, credit quality, and the competitiveness of Farmer Mac's AgVantage product.

- As a result of 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 continues to expand, which may generate additional 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.

Farmer Mac believes that these growth opportunities will be important in replacing income earned on its 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 compensation and employee benefits and general and administrative expenses will increase approximately 15 percent in 2018 relative to 2017, with percent increases moderating in 2019.

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 estimates that aggregate net cash income levels increased year-over-year in 2017 due to higher commodity quantities sold and stabilizing commodity prices. In August 2018, the USDA forecasted a 12 percent decline in net cash income in 2018, largely as a result of lower expected commodity prices throughout the year. Farmland values appear to be holding largely 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 percent in 2018 in Corn Belt states (Illinois, Indiana, Iowa, Missouri, and Ohio), but a decline of 1.4 percent 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 that were placed on various agricultural products by China and the U.S. during 2018 has materially affected the market prices for these products, including 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 market frictions resulting from recent trade disruptions. The USDA anticipates 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 or early 2019 through the USDA's Market Facilitation Program. If fully realized, these initial aid payments would constitute approximately 6 percent of net cash income, which equates to approximately half of the expected decline in net cash income forecasted for 2018. At the same time, the U.S. dollar strengthened by approximately 3 percent during the first three quarters of 2018, as measured by the U.S. Dollar Index, which has decreased the competitiveness of U.S. agricultural exports and thereby has diminished their global demand and driven down producer profits. Farmer Mac believes that its portfolio is sufficiently diverse by product and production region to be able to withstand any short-term market volatility that may arise as a result 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 their historical averages. However, some indications of stress have emerged, as the volume of Farmer Mac's substandard assets has generally increased since 2015 and 90-day delinquencies have generally increased compared to the historically favorable levels observed in recent years. To date, the increases in these two measures 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. Accordingly, Farmer Mac 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 September 30, 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 Tax Cuts and Jobs Act, signed into law in December 2017, may result in lower overall effective tax rates for U.S. farmers and ranchers, thereby improving after-tax returns for farming operations. The Agricultural Act of 2014, also referred to as the U.S. Farm Bill, expired on September 30, 2018. Legislators may sign a new Farm Bill or extend the current Farm Bill before the end of the 2018 calendar year. Various federal agricultural policies, including those affecting crop subsidies, crop insurance, commodity support programs, Farm Services Agency (FSA) guaranteed loan limits, and other aspects of agricultural production, in effect under the previous U.S. Farm Bill may be altered with the enactment of new legislation. 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 Farm Credit System. 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. In the Farm & Ranch line of business, Farmer Mac is experiencing continued demand for its loan products. 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. Future opportunities within the rural utilities industry may be impacted by sector growth, credit quality, and competitive dynamics within the rural utilities cooperative finance industry.

Balance Sheet Review

Assets. Farmer Mac's total assets as of September 30, 2018 were $18.5 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 cash and cash equivalents.

As of September 30, 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 September 30, 2018, Farmer Mac had $8.0 billion of Farmer Mac Guaranteed Securities, $5.4 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 $17.7 billion as of September 30, 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 and accounts payable and accrued expenses. The increase in accounts payable and accrued expenses was attributable to the purchase of a $250 million AgVantage security issued by CFC, the proceeds of which will be used to refinance an AgVantage security of the same amount, which does not settle until fourth quarter 2018.

Equity. As of September 30, 2018, Farmer Mac had total equity of $777.6 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 and accumulated other comprehensive income. The increase in accumulated other comprehensive income was due to increases in fair value on certain floating-rate AgVantage securities.

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 result in the creation of off-balance sheet obligations for Farmer Mac. See Note 6 to the consolidated financial statements for more information about consolidation and Farmer Mac's off-balance sheet business activities.

Risk Management

Credit Risk – Loans and Guarantees. Farmer Mac is exposed to credit risk resulting from the inability of borrowers to repay their loans in conjunction 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 percent 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 September 30, 2018 was $7.1 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" in Farmer Mac's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on March 8, 2018.

Farmer Mac's direct credit exposure to Rural Utilities loans held and loans underlying LTSPCs as of September 30, 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 generation and transmission ("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" in Farmer Mac's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on March 8, 2018. As of September 30, 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. Accordingly, 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 September 30, 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 September 30, 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 upon farm operator efficiency and leverage, which can vary widely within a geographic region or commodity type or based upon 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 appraised value 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 upon the market value of a property, as determined in accordance with Farmer Mac's collateral valuation standards. As of September 30, 2018 and December 31, 2017, the average unpaid loan balances for loans outstanding in the Farm & Ranch line of business was $634,000 and $642,000, respectively. The original loan-to-value ratio is based on the original appraised value that has not been indexed to provide a current market value or reflect amortization of loans. As of second quarter 2017, Farmer Mac revised its calculation of the original loan-to-value ratio of a loan to combine for any cross-collateralized loans: (1) the original loan principal balance amounts in the numerator; and (2) the original appraised property values in the denominator. In previous periods, the ratio was calculated on a loan-by-loan basis without considering the effects of any cross-collateralization. Prior period ratios of original loan-to-value have been recalculated to conform to this revised calculation. The weighted-average original loan-to-value ratio for Farm & Ranch loans purchased during third quarter 2018 was 42 percent, compared to 52 percent for loans purchased during third quarter 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 percent as of both September 30, 2018 and December 31, 2017. The weighted-average original loan-to-value ratio for all 90-day delinquencies was 51 percent and 52 percent, respectively, as of September 30, 2018 and December 31, 2017.

The weighted-average current loan-to-value ratio, which is the loan-to-value ratio based on original appraised value but which reflects loan amortization since purchase, for Farm & Ranch loans held and loans underlying off-balance sheet Farm & Ranch Guaranteed Securities and LTSPCs was approximately 44 percent as of September 30, 2018 and 45 percent as of December 31, 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(j) to the consolidated financial statements included in

Farmer Mac's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on March 8, 2018. 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 changes in the components of Farmer Mac's total allowance for losses for the three and nine months ended September 30, 2018 and 2017:

Table 15

	As of September 30, 2018			As of September 30, 2017		
	Allowance for Loan Losses	Reserve for Losses	Total Allowance for Losses	Allowance for Loan Losses	Reserve for Losses	Total Allowance for Losses
			(in thousands)			
For the Three Months Ended:						
Beginning Balance	$ 6,789	$ 2,249	$ 9,038	$ 6,138	$ 1,966	$ 8,104
Provision for losses	99	(102)	(3)	270	114	384
Charge-offs	(17)	—	(17)	—	—	—
Ending Balance	$ 6,871	$ 2,147	$ 9,018	$ 6,408	$ 2,080	$ 8,488
For the Nine Months Ended:						
Beginning Balance	$ 6,796	$ 2,070	$ 8,866	$ 5,415	$ 2,020	$ 7,435
Provision for losses	92	77	169	1,234	60	1,294
Charge-offs	(17)	—	(17)	(241)	—	(241)
Ending Balance	$ 6,871	$ 2,147	$ 9,018	$ 6,408	$ 2,080	$ 8,488

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 September 30, 2018, Farmer Mac's total allowance for losses totaled $9.0 million, or 0.13 percent 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 percent, as of December 31, 2017.

As of September 30, 2018, Farmer Mac individually evaluated $30.6 million of the $145.8 million of recorded investment in impaired assets for collateral shortfalls against updated appraised values, other updated collateral valuations, or discounted values. For the remaining $115.2 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 $3.3 million for undercollateralized assets as of September 30, 2018. Farmer Mac's general allowances were $5.7 million as of September 30, 2018.

The charge-off recorded during the first nine months of 2018 related to one loan that was foreclosed and transitioned to REO during third quarter 2018. The charge-offs recorded during first nine months of 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. In second quarter 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 September 30, 2018, Farmer Mac's 90-day delinquencies were $37.5 million (0.53 percent of the Farm & Ranch portfolio), compared to $48.4 million (0.71 percent of the Farm & Ranch portfolio) as of December 31, 2017 and $66.4 million (1.01% of the Farm & Ranch portfolio) as of September 30, 2017. Those 90-day delinquencies were comprised of 64 delinquent loans as of September 30, 2018, compared with 51 delinquent loans as of December 31, 2017 and 68 delinquent loans as of September 30, 2017. The decrease in 90-day delinquencies compared to December 31, 2017 is primarily attributable to: (1) lower than expected seasonal delinquencies associated with loans that have annual (January 1st) and semi-annual (January 1st and July 1st) payment terms, which account for most of the loans in the Farm & Ranch portfolio; (2) the paydown on two large permanent planting loans to a single borrower that resulted in the loans becoming current; and (3) $9.8 million in two crop loans to a single borrower that became current during third quarter 2018. 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 percent. The highest 90-day delinquency rate observed during that period occurred in 2009 at approximately 2 percent, 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 regarding 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 16

	Farm & Ranch Line of Business	90-Day Delinquencies	Percentage
	(dollars in thousands)		
As of:			
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%
September 30, 2016	6,004,728	18,377	0.31%

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 0.19 percent of total outstanding business volume as of September 30, 2018, compared to 0.25 percent as of December 31, 2017 and 0.36 percent as of September 30, 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 September 30, 2018 by year of origination, geographic region, commodity/collateral type, original loan-to-value ratio, and range in the size of borrower exposure:

Table 17

Farm & Ranch 90-Day Delinquencies as of September 30, 2018

	Distribution of Farm & Ranch Line of Business	Farm & Ranch Line of Business	90-Day Delinquencies[1]	Percentage
		(dollars in thousands)		
By year of origination:				
2008 and prior	11%	790,898	8,548	1.08%
2009	1%	95,465	477	0.50%
2010	2%	152,089	—	—%
2011	3%	225,295	914	0.41%
2012	8%	532,747	1,955	0.37%
2013	11%	759,516	4,018	0.53%
2014	8%	597,238	3,075	0.51%
2015	11%	768,477	391	0.05%
2016	16%	1,123,758	8,663	0.77%
2017	19%	1,306,981	9,504	0.73%
2018	10%	719,554	—	—%
Total	100%	$ 7,072,018	$ 37,545	0.53%
By geographic region[2]:				
Northwest	12%	$ 815,346	$ 12,659	1.55%
Southwest	31%	2,198,744	12,065	0.55%
Mid-North	32%	2,276,100	7,373	0.32%
Mid-South	12%	876,960	3,274	0.37%
Northeast	5%	315,685	1,487	0.47%
Southeast	8%	589,183	687	0.12%
Total	100%	$ 7,072,018	$ 37,545	0.53%
By commodity/collateral type:				
Crops	53%	$ 3,746,077	$ 16,989	0.45%
Permanent plantings	20%	1,400,976	9,340	0.67%
Livestock	19%	1,353,141	6,763	0.50%
Part-time farm	7%	484,227	4,453	0.92%
Ag. Storage and Processing	1%	79,475	—	—%
Other	—	8,122	—	—%
Total	100%	$ 7,072,018	$ 37,545	0.53%
By original loan-to-value ratio[3]:				
0.00% to 40.00%	19%	$ 1,317,118	$ 4,607	0.35%
40.01% to 50.00%	25%	1,769,124	11,794	0.67%
50.01% to 60.00%	35%	2,456,766	16,074	0.65%
60.01% to 70.00%	17%	1,227,092	3,809	0.31%
70.01% to 80.00%[4]	4%	277,204	960	0.35%
80.01% to 90.00%[4]	—%	24,714	301	1.22%
Total	100%	$ 7,072,018	$ 37,545	0.53%
By size of borrower exposure[5]:				
Less than $1,000,000	34%	$ 2,423,394	$ 13,862	0.57%
$1,000,000 to $4,999,999	38%	2,696,431	23,683	0.88%
$5,000,000 to $9,999,999	13%	917,198	—	—%
$10,000,000 to $24,999,999	8%	587,618	—	—%
$25,000,000 to $50,000,000	7%	447,377	—	—%
Total	100%	$ 7,072,018	$ 37,545	0.53%

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

(2) Geographic regions: Northwest (AK, ID, MT, OR, WA, WY); Southwest (AZ, CA, CO, HI, NM, NV, UT); 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) As of second quarter 2017, Farmer Mac revised its calculation of the original loan-to-value ratio of a loan to combine for any cross-collateralized loans, set forth as follows: (i) the original loan principal balance amounts in the numerator; and (ii) the original appraised property values in the denominator. In previous periods, the ratio was calculated on a loan-by-loan basis without considering the effects of any cross-collateralization. Prior period information has been reclassified to conform to the current period calculation and presentation.

(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 September 30, 2018, Farmer Mac's substandard assets were $216.0 million (3.1 percent of the Farm & Ranch portfolio), compared to $221.3 million (3.2 percent of the Farm & Ranch portfolio) as of December 31, 2017. Those substandard assets were comprised of 336 loans as of September 30, 2018 and 307 loans as of December 31, 2017. As of September 30, 2018, substandard asset volume included several large exposures and represents a relatively diverse set of commodities. Farmer Mac's substandard asset volume decreased modestly from year-end 2017 in dollars as assets newly classified as substandard were slightly less than assets that were paid off, paid down, or upgraded in risk rating. As of September 30, 2018, the commodity composition of substandard assets was similar to past quarters. The improvement in substandard assets as compared to December 31, 2017 was primarily due to paydowns of loans and fewer loans migrating into the substandard asset category. Farmer Mac expects that over time its substandard asset rate will eventually revert closer to, and possibly exceed, Farmer Mac's historical average due to macroeconomic factors and the cyclical nature of the agricultural economy. Farmer Mac's average substandard assets as a percentage of its Farm & Ranch portfolio over the last 15 years is approximately 4 percent. The highest substandard asset rate observed during that period occurred in 2010 at approximately 8 percent, 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 5 to the consolidated financial statements for more information regarding 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 September 30, 2018 by year of origination, geographic region, and commodity/collateral type. The purpose of this information is to present information regarding losses relative to original Farm & Ranch purchases, guarantees, and commitments.

Table 18

Farm & Ranch Credit Losses Relative to Cumulative
Original Loans, Guarantees, and LTSPCs as of September 30, 2018

	Cumulative Original Loans, Guarantees and LTSPCs	Cumulative Net Credit Losses/ (Recoveries)	Cumulative Loss Rate
	(dollars in thousands)		
By year of origination:			
2008 and prior	14,974,346	28,538	0.19 %
2009	579,665	1,544	0.27 %
2010	663,870	5	— %
2011	785,554	3,661	0.47 %
2012	1,158,941	—	— %
2013	1,423,735	—	— %
2014	980,965	—	— %
2015	1,104,579	(540)	(0.05)%
2016	1,404,299	—	— %
2017	1,482,209	—	— %
2018	776,090	—	— %
Total	$ 25,334,253	$ 33,208	0.13 %
By geographic region[1]:			
Northwest	$ 3,245,378	$ 11,191	0.34 %
Southwest	8,840,676	8,167	0.09 %
Mid-North	6,239,007	12,830	0.21 %
Mid-South	2,930,849	(211)	(0.01)%
Northeast	1,780,211	259	0.01 %
Southeast	2,298,132	972	0.04 %
Total	$ 25,334,253	$ 33,208	0.13 %
By commodity/collateral type:			
Crops	$ 11,416,270	$ 2,887	0.03 %
Permanent plantings	5,369,875	9,368	0.17 %
Livestock	6,055,966	3,877	0.06 %
Part-time farm	1,550,443	1,403	0.09 %
Ag. Storage and Processing	783,908	15,673	2.00 %
Other	157,791	—	— %
Total	$ 25,334,253	$ 33,208	0.13 %

(1) Geographic regions: Northwest (AK, ID, MT, OR, WA, WY); Southwest (AZ, CA, CO, HI, NM, NV, UT); 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, consequently, may result in more successful operations within the commodity group. Certain geographic areas also offer better growing conditions and market access than others and, consequently, may result in more versatile and more successful operators within a given commodity group. Farmer Mac's board of directors has established policies regarding geographic and commodity concentration to maintain adequate diversification and measure concentration risk.

In Farmer Mac's historical 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, consequently, 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 19

	As of September 30, 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	$ 401,675	$ 102,187	$ 240,728	$ 70,353	$ —	$ 403	$ 815,346
	5.7%	1.4%	3.4%	1.0%	—%	—%	11.5%
Southwest	534,570	1,089,010	439,515	81,284	50,292	4,073	2,198,744
	7.6%	15.4%	6.2%	1.1%	0.7%	0.1%	31.1%
Mid-North	1,932,370	16,948	188,220	126,823	8,943	2,796	2,276,100
	27.3%	0.3%	2.7%	1.8%	0.1%	—%	32.2%
Mid-South	533,204	8,094	264,086	62,458	8,661	457	876,960
	7.5%	0.1%	3.7%	0.9%	0.1%	—%	12.3%
Northeast	153,233	22,450	60,545	74,879	4,578	—	315,685
	2.2%	0.3%	0.9%	1.1%	0.1%	—%	4.6%
Southeast	191,025	162,287	160,047	68,430	7,001	393	589,183
	2.7%	2.3%	2.3%	0.9%	0.1%	—%	8.3%
Total	$ 3,746,077	$ 1,400,976	$1,353,141	$ 484,227	$ 79,475	$ 8,122	$7,072,018
	53.0%	19.8%	19.2%	6.8%	1.1%	0.1%	100.0%

(1) Geographic regions: Northwest (AK, ID, MT, OR, WA, WY); Southwest (AZ, CA, CO, HI, NM, NV, UT); 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 20

	As of September 30, 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 regarding 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 September 30, 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" in Farmer Mac's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on March 8, 2018.

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 has the right to terminate the servicing relationship for a particular loan or the entire portfolio serviced by the central servicer. In addition, Farmer Mac can proceed against the central servicer in arbitration or exercise any remedies available to it under law. During the previous three years ended September 30, 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" in Farmer Mac's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on March 8, 2018.

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 at the time 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" in Farmer Mac's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on March 8, 2018.

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 September 30, 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 September 30, 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 September 30, 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 September 30, 2018 and December 31, 2017:

Table 21

	As of September 30, 2018			As of December 31, 2017		
Counterparty	Balance	Credit Rating	Required Collateralization	Balance	Credit Rating	Required Collateralization
			(dollars in thousands)			
AgVantage:						
MetLife	$ 2,550,000	AA-	103%	$ 2,550,000	AA-	103%
CFC(1)	3,086,187	A	100%	2,800,188	A	100%
Rabo AgriFinance	2,075,000	None	110%	2,075,000	None	106%
Other(2)	374,303	(3)	106% to 125%	199,959	(3)	106% to 125%
Farm Equity AgVantage(4)	279,790	None	110%	279,731	None	110%
Total outstanding	$ 8,365,280			$ 7,904,878		

(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 September 30, 2018 and December 31, 2017.
(3) Consists of AgVantage securities from 6 different issuers without a credit rating as of both September 30, 2018 and December 31, 2017.
(4) Consists of AgVantage securities from 5 different issuers as of both September 30, 2018 and December 31, 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" in Farmer Mac's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on March 8, 2018.

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 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). Farmer Mac transacts interest rate swaps with multiple counterparties to reduce any counterparty credit exposure concentration. As a result of mandatory clearing rules for certain interest rate derivative transactions enacted under the Dodd-Frank Wall Street Reform and Consumer Protection Act (the "Dodd-Frank Act"), Farmer Mac 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 4 to the consolidated financial statements.

Credit Risk – Other Investments. As of September 30, 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 FCA 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. Those regulations can be found at 12 C.F.R. §§ 652.1-652.45 (the "Liquidity and Investment Regulations"). 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) in the event that 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 issuer, issuer, or obligor of securities from 25 percent to 10 percent of Farmer Mac's regulatory capital ($72.3 million as of September 30, 2018). However, Farmer Mac's current policy limits this total credit exposure to 5 percent of its regulatory capital ($36.1 million as of September 30, 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 percent of regulatory capital in the senior non-convertible debt securities of any one GSE.

Prior to 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 on a regular basis 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 subsequent 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 September 30, 2018, approximately 2 percent 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 4 percent of all loans with fixed interest rates). Of the Farm & Ranch loans purchased in third quarter 2018, none had yield maintenance or another form of prepayment protection. As of September 30, 2018, none of Farmer Mac's USDA Securities had yield maintenance provisions; however, 4 percent contained other prepayment penalties. Of the USDA Securities purchased in third quarter 2018, 7 percent contained various forms of prepayment penalties. As of September 30, 2018, 67 percent of the Rural Utilities loans owned by Farmer Mac had yield maintenance provisions. Farmer Mac did not purchase any Rural Utilities loans in third quarter 2018.

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 September 30, 2018, $2.19 billion of the $2.27 billion of investment securities (96 percent) 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 September 30, 2018 and December 31, 2017 to an immediate and instantaneous uniform or "parallel" shift in the yield curve:

Table 22

	Percentage Change in MVE from Base Case	
Interest Rate Scenario	As of September 30, 2018	As of December 31, 2017
+100 basis points	(1.6)%	(1.1)%
-100 basis points	(2.7)%	(5.4)%

	Percentage Change in NES from Base Case	
Interest Rate Scenario	As of September 30, 2018	As of December 31, 2017
+100 basis points	5.2 %	4.4 %
-100 basis points	(5.8)%	(3.7)%

As of September 30, 2018, Farmer Mac's effective duration gap was 0.0 months, compared to negative 0.9 months as of December 31, 2017. During the first nine months of 2018, interest rates increased significantly. This rate movement increased the duration of Farmer Mac’s assets relative to its liabilities, thereby reducing Farmer Mac’s duration gap. Despite this rate movement, Farmer Mac’s overall interest rate sensitivity remained stable and at relatively low levels during the first nine months of 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 September 30, 2018, Farmer Mac had $9.7 billion combined notional amount of interest rate swaps, with terms ranging from less than one year to twenty-five years, of which $3.5 billion were pay-fixed interest rate swaps, $4.7 billion were receive-fixed interest rate swaps, and $1.5 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.

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 September 30, 2018, Farmer Mac had $4.4 million of uncollateralized net exposures to four 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, whereas 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, 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, 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 September 30, 2018, Farmer Mac held $6.4 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 $3.5 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 during the first nine months of 2018. For most of this period, funding costs relative to LIBOR have been at levels generally more favorable than Farmer Mac’s historical experience. As of September 30, 2018 these levels have 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. Farmer Mac believes that material improvements in its short-term funding costs relative to LIBOR in the near-term are unlikely.

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 the first nine months of 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 is required to maintain a minimum of 90 days of liquidity under the Liquidity and Investment Regulations. In accordance with the methodology for calculating available days of liquidity prescribed by those regulations, Farmer Mac maintained an average of 215 days of liquidity during third quarter 2018 and had 212 days of liquidity as of September 30, 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 September 30, 2018, Farmer Mac had outstanding discount notes of $1.2 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 $15.8 billion was outstanding as of September 30, 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 September 30, 2018 and December 31, 2017:

Table 23

	As of September 30, 2018	As of December 31, 2017
	(in thousands)	
Cash and cash equivalents	$ 436,152	$ 302,022
Investment securities:		
Guaranteed by U.S. Government and its agencies	1,299,903	1,331,490
Guaranteed by GSEs	935,633	893,843
Asset-backed securities	33,498	35,104
Total	$ 2,705,186	$ 2,562,459

Capital Requirements. Farmer Mac is subject to the following capital requirements – minimum, critical, and risk-based. Farmer Mac is required to 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 September 30, 2018, Farmer Mac was in compliance with its statutory capital requirements and was classified as within "level I" (the highest compliance level). 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—Capital Standards" in Farmer Mac's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on March 8, 2018 for more information on the capital requirements applicable to Farmer Mac.

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 imposes restrictions on Tier 1-eligible dividends and any discretionary bonus payments if Tier 1 capital falls below specified thresholds. As of September 30, 2018 and December 31, 2017, Farmer Mac's Tier 1 capital ratio was 13.3% and 12.6%, respectively, as capital growth outpaced the growth in risk-weighted assets during the first nine months of 2018. For more information about Farmer Mac's capital adequacy policy and FCA's rule on capital planning, see "Business—Government Regulation of Farmer Mac—Capital Standards" in Farmer Mac's

Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on March 8, 2018. As of September 30, 2018, Farmer Mac was in compliance with its capital adequacy policy.

Regulatory Matters

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, as well as to revise the eligibility criteria and exposure limits for certain types of investments. Farmer Mac expects that it will be able to successfully adapt to FCA's amendments of the Liquidity and Investment Regulations, which will become effective on the later of 30 days after their publication in the Federal Register or January 1, 2019. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Risk Management—Credit Risk – Other Investments" for more information about these amendments.

Other Matters

Common Stock Dividends. For each of the first, second, and third quarters in 2018, Farmer Mac paid a quarterly dividend of $0.58 per share on all classes of its common stock. For each quarter in 2017, Farmer Mac paid a quarterly dividend of $0.36 per share on all classes of its common stock. Farmer Mac's ability to declare and pay dividends on common stock could be restricted if it fails to comply with applicable capital requirements. See "Business—Government Regulation of Farmer Mac—Capital Standards—Enforcement Levels" in Farmer Mac's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on March 8, 2018.

Preferred Stock Dividends. For each of the first, second, and third quarters in 2018 and for each quarter of 2017, 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.

Supplemental Information

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

Table 24

New Business Volume

	Farm & Ranch		USDA Guarantees	Rural Utilities		Institutional Credit	
	Loans	LTSPCs	USDA Securities	Loans	LTSPCs	AgVantage	Total
				(in thousands)			
For the quarter ended:							
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
September 30, 2016	282,690	155,657	119,201	20,000	—	528,234	1,105,782
For the year ended:							
December 31, 2017	1,129,545	554,743	531,684	137,341	—	2,383,912	4,737,225
December 31, 2016	966,023	399,095	481,257	50,491	441,404	2,098,852	4,437,122

Table 25

Repayments of Assets by Line of Business

	Farm & Ranch			USDA Guarantees	Rural Utilities		Institutional Credit	
	Loans	Guaranteed Securities	LTSPCs	USDA Securities	Loans	LTSPCs	AgVantage	Total
				(in thousands)				
For the quarter ended:								
Scheduled	$ 73,476	$ 3,556	$ 21,742	$ 28,135	$ 25,640	$ 8,286	$ 1,112,558	$ 1,273,393
Unscheduled	77,492	6,683	47,159	35,068	3,476	—	—	169,878
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
Scheduled	$ 47,221	$ 7,954	$ 39,192	$ 22,626	$ 26,522	$ 58,177	$ 559,895	$ 761,587
Unscheduled	85,583	17,108	67,094	36,099	2,108	—	5,000	212,992
September 30, 2016	$ 132,804	$ 25,062	$106,286	$ 58,725	$ 28,630	$ 58,177	$ 564,895	$ 974,579
For the year ended:								
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
Scheduled	$ 121,111	$ 50,905	$137,967	$ 121,354	$ 52,570	$ 85,670	$ 1,528,180	$ 2,097,757
Unscheduled	288,433	47,705	304,992	183,805	6,535	—	7,240	838,710
December 31, 2016	$ 409,544	$ 98,610	$442,959	$ 305,159	$ 59,105	$ 85,670	$ 1,535,420	$ 2,936,467

Table 26

Lines of Business - Outstanding Business Volume

	Farm & Ranch			USDA Guarantees	Rural Utilities		Institutional Credit	
	Loans	Guaranteed Securities	LTSPCs	USDA Securities	Loans	LTSPCs	AgVantage	Total
				(in thousands)				
As of:								
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
September 30, 2016	3,338,484	441,417	2,224,827	2,020,834	993,139	874,527	7,354,511	17,247,739

Table 27

On-Balance Sheet Outstanding Business Volume

	Fixed Rate	5- to 10-Year ARMs & Resets	1-Month to 3-Year ARMs	Total Held in Portfolio
		(in thousands)		
As of:				
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
September 30, 2016	5,278,332	2,212,946	4,869,765	12,361,043

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

Table 28

	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:												
September 30, 2018[2]	$ 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	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[2]	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%
September 30, 2016	10,476	1.86%	4,994	1.03%	2,541	1.01%	11,431	0.75%	2,239	0.24%	31,681	0.85%

(1) 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 and hedging activities. 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 9 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 three months ended September 30, 2018 and 2017.

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

Table 29

Core Earnings by Quarter End

	September 2018	June 2018	March 2018	December 2017	September 2017	June 2017	March 2017	December 2016	September 2016
Revenues:									
Net effective spread	$ 39,077	$ 36,162	$ 37,101	$ 37,467	$ 35,976	$ 35,334	$ 32,526	$ 31,448	$ 31,681
Guarantee and commitment fees	5,170	5,171	5,083	5,157	4,935	4,942	5,316	5,158	4,533
Other	110	111	428	69	274	107	485	545	713
Total revenues	44,357	41,444	42,612	42,693	41,185	40,383	38,327	37,151	36,927
Credit related expense/(income):									
(Release of)/provision for losses	(3)	582	(410)	464	384	466	444	512	(31)
REO operating expenses	—	—	16	—	—	23	—	—	—
Losses/(gains) on sale of REO	41	(34)	—	(964)	(32)	(757)	5	—	(15)
Total credit related expense/(income)	38	548	(394)	(500)	352	(268)	449	512	(46)
Operating expenses:									
Compensation and employee benefits	6,777	6,936	6,654	5,247	5,987	6,682	6,317	5,949	5,438
General and administrative	4,350	5,202	4,326	4,348	3,890	3,921	3,800	4,352	3,474
Regulatory fees	625	625	625	625	625	625	625	625	613
Total operating expenses	11,752	12,763	11,605	10,220	10,502	11,228	10,742	10,926	9,525
Net earnings	32,567	28,133	31,401	32,973	30,331	29,423	27,136	25,713	27,448
Income tax expense	6,891	5,477	6,259	11,796	10,268	10,307	8,844	9,189	9,577
Net (loss)/income attributable to non-controlling interest[(1)]	—	—	—	—	—	(150)	(15)	28	(18)
Preferred stock dividends	3,295	3,296	3,295	3,296	3,295	3,296	3,295	3,296	3,295
Core earnings	$ 22,381	$ 19,360	$ 21,847	$ 17,881	$ 16,768	$ 15,970	$ 15,012	$ 13,200	$ 14,594
Reconciling items:									
Gains/(losses) on undesignated financial derivatives due to fair value changes	3,625	6,709	(2,279)	(261)	995	801	8,683	17,906	734
Gains/(losses) on hedging activities due to fair value changes	1,051	1,687	2,564	(3)	1,742	1,420	(3,878)	(673)	726
Unrealized (losses)/gains on trading assets	(3)	11	16	60	—	(2)	(82)	(474)	1,182
Amortization of premiums/discounts and deferred gains on assets consolidated at fair value	(38)	196	(686)	(129)	(954)	(117)	(127)	(40)	(157)
Net effects of terminations or net settlements on financial derivatives and hedging activities	546	232	1,242	632	862	232	948	2,150	238
Re-measurement of net deferred tax asset due to enactment of new tax legislation	—	—	—	(1,365)	—	—	—	—	—
Income tax effect related to reconciling items	(1,088)	(1,855)	(180)	(105)	(926)	(816)	(1,941)	(6,604)	(953)
Net income attributable to common stockholders	$ 26,474	$ 26,340	$ 22,524	$ 16,710	$ 18,487	$ 17,488	$ 18,615	$ 25,465	$ 16,364

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

Item 3. 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 regarding Farmer Mac's use of financial derivatives and related accounting policies, see Note 4 to the consolidated financial statements.

Item 4. 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 Quarterly Report on Form 10-Q, 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 regarding 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 September 30, 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 September 30, 2018.

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 September 30, 2018 that have materially affected, or are reasonably likely to materially affect, Farmer Mac's internal control over financial reporting.

PART II

Item 1. Legal Proceedings

None.

Item 1A. Risk Factors

There were no material changes from the risk factors previously disclosed in Farmer Mac's Annual Report on Form 10-K for the year ended December 31, 2017 filed with the SEC on March 8, 2018.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

(a) Farmer Mac is a federally chartered instrumentality of the United States whose debt and equity securities are exempt from registration under Section 3(a)(2) of the Securities Act of 1933. During third quarter 2018, the following transactions occurred related to Farmer Mac's equity securities that were not registered under the Securities Act of 1933 and were not otherwise reported on a Current Report on Form 8-K:

Class C Non-Voting Common Stock. Under 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 41 shares of its Class C Non-Voting Common Stock on July 2, 2018 to the three directors who elected to receive stock in lieu of their cash retainers. Farmer Mac calculated the number of shares issued to the directors based on a price of $89.48 per share, which was the closing price of the Class C Non-Voting Common Stock on June 29, 2018 (the last trading day of the second quarter) as reported by the New York Stock Exchange.

(b) Not applicable.

(c) None.

Item 3. Defaults Upon Senior Securities

(a) None.

(b) None.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

(a) None.

(b) None.

Item 6. Exhibits

*	3.1	—	Title VIII of the Farm Credit Act of 1971, as most recently amended by the Food, Conservation and Energy Act of 2008 (Previously filed as Exhibit to Form 10-Q filed August 12, 2008).
*	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	—	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.
*†	10.2		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).
**	31.1	—	Certification of Registrant's principal executive officer relating to the Registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 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 Quarterly Report on Form 10-Q for the quarter ended September 30, 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 Quarterly Report on Form 10-Q for the quarter ended September 30, 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.

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	November 8, 2018
By:	Bradford T. Nordholm President and Chief Executive Officer (Principal Executive Officer)	Date
	/s/ R. Dale Lynch	November 8, 2018
By:	R. Dale Lynch Executive Vice President – Chief Financial Officer (Principal Financial Officer)	Date