

Section 1: 10-Q (10-Q)

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

FORM 10-Q

(Mark One)

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

For the quarterly period ended March 31, 2019

OR

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

For the transition period from _____ to _____

Commission File No. 0-19341

BOK FINANCIAL CORPORATION
(Exact name of registrant as specified in its charter)

Oklahoma
(State or other jurisdiction
of Incorporation or Organization)

73-1373454
(IRS Employer
Identification No.)

Bank of Oklahoma Tower
Boston Avenue at Second Street
Tulsa, Oklahoma
(Address of Principal Executive Offices)

74192
(Zip Code)

(918) 588-6000
(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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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, or a non-accelerated filer. See definition of "accelerated filer and large accelerated filer" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer Accelerated filer
Non-accelerated filer (Do not check if a smaller reporting company) Smaller reporting company
Emerging growth company

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes No

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date: 71,449,982 shares of common stock (\$.00006 par value) as of March 31, 2019.

BOK Financial Corporation
Form 10-Q
Quarter Ended March 31, 2019

Index

Part I. Financial Information

Management's Discussion and Analysis (Item 2)	<u>1</u>
Market Risk (Item 3)	<u>37</u>
Controls and Procedures (Item 4)	<u>40</u>
Consolidated Financial Statements – Unaudited (Item 1)	<u>41</u>
Quarterly Financial Summary – Unaudited (Item 2)	<u>93</u>
Quarterly Earnings Trend – Unaudited	<u>97</u>

Part II. Other Information

Item 1. Legal Proceedings	<u>97</u>
Item 2. Unregistered Sales of Equity Securities and Use of Proceeds	<u>97</u>
Item 6. Exhibits	<u>97</u>
Signatures	<u>98</u>

Management's Discussion and Analysis of Financial Condition and Results of Operations

Performance Summary

BOK Financial Corporation ("the Company") reported net income of \$110.6 million or \$1.54 per diluted share for the first quarter of 2019. Net income was \$105.6 million or \$1.61 per diluted share for the first quarter of 2018 and \$108.5 million or \$1.50 per diluted share for the fourth quarter of 2018.

On October 1, 2018, the Company acquired CoBiz Financial, Inc. ("CoBiz"). We incurred \$12.7 million of integration costs in the first quarter of 2019 and \$14.5 million in the fourth quarter of 2018, resulting in a per share reduction of 13 cents and 15 cents, respectively. The fluctuation discussion in the highlights below excludes the impact of these items.

Highlights of the first quarter of 2019 included:

- Net interest revenue totaled \$278.1 million, up \$58.4 million over the first quarter of 2018. CoBiz added \$42.8 million to net interest revenue. The remaining increase in net interest revenue over the prior year was driven by both growth in average earning assets and improving yields. Net interest margin was 3.30 percent for the first quarter of 2019 compared to 2.99 percent for the first quarter of 2018. Average earning assets were \$34.4 billion for the first quarter of 2019 compared to \$29.9 billion for the first quarter of 2018. Net interest revenue decreased \$7.6 million compared to the fourth quarter of 2018. Net interest margin decreased by 10 basis points. A decrease in average non-interest bearing demand deposits and an increase in average trading securities and related receivables combined to decrease net interest revenue and to compress the net interest margin.
- Fees and commissions revenue totaled \$160.6 million, an increase of \$938 thousand compared to the first quarter of 2018. Increases in brokerage and trading, fiduciary and asset management and deposit service charges were partially offset by decreased mortgage banking revenue. Fees and commissions revenue were consistent with the fourth quarter of 2018. Increases in brokerage and trading and mortgage banking revenue were offset by a decrease in other revenue.
- Other operating expense totaled \$274.4 million, a \$30.0 million increase over the first quarter of 2018. Expenses related to CoBiz operations added \$26.6 million in the first quarter of 2019. Excluding CoBiz operations, personnel expense increased \$9.6 million, primarily due to an increase in regular and share-based compensation. Non-personnel expense decreased \$6.4 million, largely due to a decrease in net losses and expenses related to repossessed assets. Operating expense increased \$4.3 million over the fourth quarter of 2018. Personnel expense increased \$10.9 million, primarily due to an increase in share-based compensation expense due to changes in vesting assumptions. Non-personnel expense decreased \$6.6 million.
- The Company recorded a provision for credit losses of \$8.0 million in the first quarter of 2019 and \$9.0 million in the fourth quarter of 2018. A negative provision of \$5.0 million was recorded in the first quarter of 2018. Nonperforming assets not guaranteed by U.S. government agencies decreased \$10.8 million compared to December 31, 2018. Potential problem loans decreased \$46 million while other loans especially mentioned increased \$14 million. Net charge-offs were \$10.1 million or 0.19 percent of average loans for the first quarter of 2019, compared to net charge-offs of \$12.3 million or 0.23% of average loans for the fourth quarter of 2018. The combined allowance for credit losses totaled \$207 million or 0.95 percent of outstanding loans at March 31, 2019 compared to \$209 million or 0.97 percent of outstanding loans at December 31, 2018.
- Period-end outstanding loan balances totaled \$21.8 billion at March 31, 2019, an increase of \$102 million over December 31, 2018.
- Period-end deposits were \$25.3 billion at March 31, 2019, a \$68 million increase compared to December 31, 2018. Interest-bearing transaction deposits increased \$270 million while demand deposit balances decreased \$318 million. Savings and time deposits balances increased \$116 million.
- The common equity Tier 1 capital ratio at March 31, 2019 was 10.71 percent. Other regulatory capital ratios were Tier 1 capital ratio, 10.71 percent, total capital ratio, 12.24 percent, and leverage ratio, 8.76 percent. At December 31, 2018, the common equity Tier 1 capital ratio was 10.92 percent, the Tier 1 capital ratio was 10.92 percent, total capital ratio was 12.50 percent, and leverage ratio was 8.96 percent.

- The Company repurchased 705,609 shares at an average price of \$85.85 per share during the first quarter of 2019 and 525,000 thousand shares at an average price of \$85.82 in the fourth quarter of 2018.
- The company paid a regular cash dividend of \$35.9 million or \$0.50 per common share during the first quarter of 2019. On April 30, 2019, the board of directors approved a quarterly cash dividend of \$0.50 per common share payable on or about May 28, 2019 to shareholders of record as of May 13, 2019.

Results of Operations

Net Interest Revenue and Net Interest Margin

Net interest revenue is the interest earned on debt securities, loans and other interest-earning assets less interest paid for interest-bearing deposits and other borrowings. The net interest margin is calculated by dividing tax-equivalent net interest revenue by average interest-earning assets. Net interest spread is the difference between the average rate earned on interest-earning assets and the average rate paid on interest-bearing liabilities. Net interest margin is typically greater than net interest spread due to interest income earned on assets funded by non-interest bearing liabilities such as demand deposits and equity.

Tax-equivalent net interest revenue totaled \$281.3 million for the first quarter of 2019, up from \$221.7 million in the first quarter of 2018. CoBiz added \$42.8 million to net interest revenue, including \$7.8 million of net purchase accounting discount accretion in the first quarter of 2019. Net interest revenue increased \$15.6 million primarily due to three 25 basis point increases in the federal funds rate by the Federal Reserve since the end of the first quarter of 2018 and \$43.9 million primarily due to growth in average loan balances, including acquired loans. Table 1 shows the effect on net interest revenue from changes in average balances and interest rates for various types of earning assets and interest-bearing liabilities.

Net interest margin was 3.30 percent for the first quarter of 2019, compared to 2.99 percent for the first quarter of 2018. The tax-equivalent yield on earning assets was 4.46 percent, up 85 basis points over the first quarter of 2018. Loan yields increased 81 basis points to 5.26 percent primarily due to an increase in short-term interest rates. The yield on interest-bearing cash and cash equivalents increased 99 basis points to 2.56 percent. Yield on trading securities increased 48 basis points. The available for sale securities portfolio yield increased 34 basis points to 2.57 percent and the yield on fair value option securities was up 67 basis points. Funding costs were up 73 basis points over the first quarter of 2018. The cost of interest-bearing deposits increased 47 basis points and the cost of other borrowed funds increased 104 basis points. The benefit to net interest margin from earning assets funded by non-interest bearing liabilities was 50 basis points for the first quarter of 2019, up 19 basis points over the first quarter of 2018.

Average earning assets for the first quarter of 2019 increased \$4.5 billion or 15 percent over the first quarter of 2018. Average loans, net of allowance for loan losses, increased \$4.5 billion, including acquired loans. The legacy BOKF portfolio grew \$1.6 billion mainly due to growth in commercial and commercial real estate loans. Available for sale securities increased \$646 million. The average balance of trading securities grew by \$1.0 billion, primarily due to expansion of U.S. agency residential mortgage-backed securities trading activities. Interest-bearing cash and cash equivalent balances decreased \$1.5 billion. The Company reduced excess cash balances held at the Federal Reserve, including cash used in our purchase of CoBiz.

Average deposits increased \$2.5 billion compared to the first quarter of 2018, including \$3.2 billion related to CoBiz. Excluding acquired deposits, demand deposit balances decreased \$694 million and time deposits decreased \$72 million. Average borrowed funds increased \$2.2 billion over the first quarter of 2018, primarily due to funds purchased and repurchase agreement balances.

Tax-equivalent net interest revenue decreased \$7.5 million compared to the fourth quarter of 2018. Net interest margin decreased 10 basis points compared to the fourth quarter of 2018. A decrease in average non-interest bearing demand deposits and an increase in average trading securities and related receivables combined to decrease net interest revenue and to compress the net interest margin. Due to the nature of trading activity, the increase in revenue associated with the increase in trading securities is recognized as brokerage and trading revenue, while the related funding costs remain in interest expense.

The yield on average earning assets was up 13 basis points over the prior quarter. The loan portfolio yield increased 17 basis points. The yield on interest-bearing cash and cash equivalents increased 33 basis points. The yield on the trading securities portfolio was down 22 basis points and the yield on the available for sale securities portfolio increased 6 basis points. Funding costs were 1.66 percent, up 24 basis points. The cost of interest-bearing deposits increased 17 basis points to 1.04 percent. The cost of other borrowed funds was up 21 basis points to 2.54 percent. The benefit to net interest margin from earning assets funded by non-interest bearing liabilities increased 1 basis point over the prior quarter.

Average earning assets increased \$675 million compared to the fourth quarter of 2018. Average loan balances grew by \$187 million. Average fair value option securities increased \$317 million. Average available for sale securities increased \$178 million. Trading securities balances increased \$39 million.

Average deposit balances decreased \$481 million compared to the fourth quarter of 2018. Demand deposit balances decreased \$661 million, partially offset by an increase in interest-bearing transaction account balances of \$158 million. The average balance of borrowed funds increased \$1.5 billion. The decrease in non-interest bearing demand deposits appears to have been driven primarily by seasonal factors along with commercial customers putting their cash to use.

Our overall objective is to manage the Company's balance sheet to be relatively neutral to changes in interest rates as is further described in the Market Risk section of this report. Approximately 77% of our commercial and commercial real estate loan portfolios are either variable rate or fixed rate that will reprice within one year. These loans are funded primarily by deposit accounts that are either non-interest bearing, or that reprice more slowly than the loans. The result is a balance sheet that would be asset sensitive, which means that assets generally reprice more quickly than liabilities. One of the strategies that we use to manage toward a relative rate-neutral position is to purchase fixed-rate residential mortgage-backed securities issued primarily by U.S. government agencies and fund them with market-rate-sensitive liabilities. The liability-sensitive nature of this strategy provides an offset to the asset-sensitive characteristics of our loan portfolio. We also may use derivative instruments to manage our interest rate risk.

The effectiveness of these strategies is reflected in the overall change in net interest revenue due to changes in interest rates as shown in Table 1 and in the interest rate sensitivity projections as shown in the Market Risk section of this report.

Table 1 -- Volume/Rate Analysis
(In thousands)

	Three Months Ended March 31, 2019 / 2018		
	Change	Change Due To ¹	
		Volume	Yield/Rate
Tax-equivalent interest revenue:			
Interest-bearing cash and cash equivalents	\$ (4,585)	\$ (7,753)	\$ 3,168
Trading securities	10,981	9,224	1,757
Investment securities	317	(966)	1,283
Available for sale securities	10,873	2,780	8,093
Fair value option securities	418	(597)	1,015
Restricted equity securities	1,228	811	417
Residential mortgage loans held for sale	(181)	(549)	368
Loans	92,754	53,853	38,901
Total tax-equivalent interest revenue	111,805	56,803	55,002
Interest expense:			
Transaction deposits	16,210	2,736	13,474
Savings deposits	72	12	60
Time deposits	2,916	3	2,913
Funds purchased and repurchase agreements	9,834	4,561	5,273
Other borrowings	21,527	3,746	17,781
Subordinated debentures	1,742	1,796	(54)
Total interest expense	52,301	12,854	39,447
Tax-equivalent net interest revenue	59,504	43,949	15,555
Change in tax-equivalent adjustment	1,138		
Net interest revenue	\$ 58,366		

¹ Changes attributable to both volume and yield/rate are allocated to both volume and yield/rate on an equal basis.

Other Operating Revenue

Other operating revenue was \$157.3 million for the first quarter of 2019, a \$1.3 million increase over the first quarter of 2018 and a \$20.8 million increase over the fourth quarter of 2018. The change in the fair value of mortgage servicing rights, net of economic hedges, decreased other operating revenue by \$6.6 million in the first quarter of 2018 and \$12.4 million in the fourth quarter of 2018. In addition, other net gains and losses improved \$11.3 million compared to the fourth quarter of 2018, largely related to assets held to offset changes in deferred compensation.

Table 2 – Other Operating Revenue

(In thousands)

	Three Months Ended March 31,		Increase (Decrease)	% Increase (Decrease)	Three Months Ended Dec. 31, 2018	Increase (Decrease)	% Increase (Decrease)
	2019	2018					
Brokerage and trading revenue	\$ 31,617	\$ 30,648	\$ 969	3 %	\$ 28,101	\$ 3,516	13 %
Transaction card revenue	20,738	20,990	(252)	(1)%	20,664	74	— %
Fiduciary and asset management revenue	43,358	41,832	1,526	4 %	43,665	(307)	(1)%
Deposit service charges and fees	28,243	27,161	1,082	4 %	29,393	(1,150)	(4)%
Mortgage banking revenue	23,834	26,025	(2,191)	(8)%	21,880	1,954	9 %
Other revenue	12,762	12,958	(196)	(2)%	16,404	(3,642)	(22)%
Total fees and commissions revenue	160,552	159,614	938	1 %	160,107	445	— %
Other gains (losses), net	2,976	(1,292)	4,268	N/A	(8,305)	11,281	N/A
Loss on derivatives, net	4,667	(5,685)	10,352	N/A	11,167	(6,500)	N/A
Gain (loss) on fair value option securities, net	9,665	(17,564)	27,229	N/A	(282)	9,947	N/A
Change in fair value of mortgage servicing rights	(20,666)	21,206	(41,872)	N/A	(24,233)	3,567	N/A
Gain (loss) on available for sale securities, net	76	(290)	366	N/A	(1,999)	2,075	N/A
Total other operating revenue	\$ 157,270	\$ 155,989	\$ 1,281	1 %	\$ 136,455	\$ 20,815	15 %

Certain percentage increases (decreases) in non-fees and commissions revenue are not meaningful for comparison purposes based on the nature of the item.

Fees and commissions revenue

Diversified sources of fees and commissions revenue are a significant part of our business strategy and represented 37 percent of total revenue for the first quarter of 2019, excluding provision for credit losses and gains and losses on other assets, securities and derivatives and the change in the fair value of mortgage servicing rights. We believe that a variety of fee revenue sources provides an offset to changes in interest rates, values in the equity markets, commodity prices and consumer spending, all of which can be volatile. As an example of this strength, many of the economic factors such as rising interest rates resulting in growth in net interest revenue or fiduciary and asset management revenue, may also decrease mortgage production volumes. We expect growth in other operating revenue to come through offering new products and services and by further development of our presence in other markets. However, current and future economic conditions, regulatory constraints, increased competition and saturation in our existing markets could affect the rate of future increases.

Brokerage and Trading Revenue

Brokerage and trading revenue, which includes revenues from trading, customer hedging, retail brokerage and investment banking, increased \$969 thousand or 3 percent compared to the first quarter of 2018.

Trading revenue includes net realized and unrealized gains and losses primarily related to sales of U.S. government securities, residential mortgage-backed securities guaranteed by U.S. government agencies, municipal securities and asset-backed securities to institutional customers and related derivative instruments. Trading revenue was \$12.9 million for the first quarter of 2019, a \$2.5 million or 24 percent increase compared to the first quarter of 2018. Average trading securities increased \$1.0 billion compared to the first quarter of 2018.

Customer hedging revenue is based primarily on realized and unrealized changes in the fair value of derivative contracts held for customer risk management programs. As more fully discussed under Customer Derivative Programs in Note 3 of the Consolidated Financial Statements, we offer commodity, interest rate, foreign exchange and equity derivatives to our customers. Customer hedging revenue totaled \$6.7 million for the first quarter of 2019, a \$4.2 million or 39 percent decrease compared to the first quarter of 2018, largely related to energy contracts.

Brokerage and trading revenue increased \$3.5 million compared to the previous quarter, primarily due to increased trading volumes.

Fiduciary and Asset Management Revenue

Fiduciary and asset management revenue is earned through managing or holding of assets for customers and executing transactions or providing related services. Approximately 80 percent of fiduciary and asset management revenue is primarily based on the fair value of assets. Rates applied to asset values vary based on the nature of the relationship. Fiduciary relationships and managed asset relationships generally have higher fee rates than non-fiduciary and/or managed relationships. Fiduciary and asset management revenue increased \$1.5 million or 4 percent over the first quarter of 2018 and was consistent compared to the fourth quarter of 2018.

A distribution of assets under management or administration and related fiduciary and asset management revenue follows:

Table 3 -- Assets Under Management or Administration

	Three Months Ended								
	March 31, 2019			March 31, 2018			December 31, 2018		
	Balance	Revenue ¹	Margin ²	Balance	Revenue ¹	Margin ²	Balance	Revenue ¹	Margin ²
Managed fiduciary assets:									
Personal	\$ 8,428,218	\$ 23,276	1.10%	\$ 7,577,717	\$ 22,632	1.19%	\$ 8,115,503	\$ 23,773	1.17%
Institutional	14,026,020	6,138	0.18%	13,322,472	5,469	0.16%	13,119,497	5,918	0.18%
Total managed fiduciary assets	22,454,238	29,414	0.52%	20,900,189	28,101	0.54%	21,235,000	29,691	0.56%
Non-managed assets:									
Fiduciary	23,946,911	13,528	0.23%	25,748,101	12,997	0.20%	23,606,339	13,454	0.23%
Non-fiduciary	16,215,999	416	0.01%	16,321,458	734	0.02%	15,964,854	521	0.01%
Safekeeping and brokerage assets under administration	16,235,136	—	—%	15,909,241	—	—%	15,473,584	—	—%
Total non-managed assets	56,398,046	13,944	0.10%	57,978,800	13,731	0.09%	55,044,777	13,975	0.10%
Total assets under management or administration	\$ 78,852,284	\$ 43,358	0.22%	\$ 78,878,989	\$ 41,832	0.21%	\$ 76,279,777	\$ 43,666	0.23%

¹ Fiduciary and asset management revenue includes asset-based and other fees associated with the assets.

² Annualized revenue divided by period-end balance.

A summary of changes in assets under management or administration for the three months ended March 31, 2019 and 2018 follows:

Table 4 -- Changes in Assets Under Management or Administration

	Three Months Ended March 31,	
	2019	2018
Beginning balance	\$ 76,279,777	\$ 81,827,797
Net inflows (outflows)	(989,398)	(3,434,649)
Net change in fair value	3,561,905	485,841
Ending balance	\$ 78,852,284	\$ 78,878,989

Mortgage Banking Revenue

Mortgage banking revenue decreased \$2.2 million or 8 percent compared to the first quarter of 2018. Mortgage loan production volumes decreased \$127 million or 17 percent as average primary mortgage rates have increased.

Mortgage banking revenue increased \$2.0 million or 9 percent compared to the fourth quarter of 2018. Lower mortgage interest rates during the quarter led to an increase in mortgage applications.

Table 5 – Mortgage Banking Revenue

(In thousands)

	Three Months Ended March 31,		Increase (Decrease)	% Increase (Decrease)	Three Months Ended Dec. 31, 2018		Increase (Decrease)	% Increase (Decrease)
	2019	2018			2019	2018		
Mortgage production revenue	\$ 7,868	\$ 9,452	\$ (1,584)	(17)%	\$ 5,073	\$ 2,795	55 %	
Mortgage loans funded for sale	\$ 510,527	\$ 664,958			\$ 497,353			
Add: Current period end outstanding commitments	263,434	298,318			160,848			
Less: Prior period end outstanding commitments	160,848	222,919			197,752			
Total mortgage production volume	\$ 613,113	\$ 740,357	\$ (127,244)	(17)%	\$ 460,449	\$ 152,664	33 %	
Mortgage loan refinances to mortgage loans funded for sale	30%	42%	(1,200bps)		23%	700 bps		
Gains on sale margin	1.28%	1.28%	—		1.10%	18 bps		
Primary mortgage interest rates:								
Average	4.37%	4.28%	9 bps		4.78%	(41bps)		
Period end	4.06%	4.44%	(38bps)		4.55%	(49bps)		
Mortgage servicing revenue	\$ 15,966	\$ 16,573	\$ (607)	(4)%	\$ 16,807	\$ (841)	(5)%	
Average outstanding principal balance of mortgage loans serviced for others	21,581,835	22,027,726	(445,891)	(2)%	21,706,541	(124,706)	(1)%	
Average mortgage servicing revenue rates	0.30%	0.31%	(1) bp		0.31%	(1) bp		

Primary rates disclosed in Table 5 above represent rates generally available to borrowers on 30 year conforming mortgage loans.

Net gains on other assets, securities and derivatives

Other net gains totaled \$3.0 million in the first quarter of 2019 compared to net losses of \$1.3 million in the first quarter of 2018. Other net losses totaled \$8.3 million in the fourth quarter of 2018. These fluctuations are primarily related to changes in the fair value of investments related to deferred compensation that are largely offset by deferred compensation expense.

As discussed in the Market Risk section following, the fair value of our mortgage servicing rights ("MSRs") changes in response to changes in primary mortgage loan rates and other assumptions. We attempt to mitigate the earnings volatility caused by changes in the fair value of MSRs by designating certain financial instruments as an economic hedge. Changes in the fair value of these instruments are generally expected to partially offset changes in the fair value of MSRs.

Table 6 - Gain (Loss) on Mortgage Servicing Rights
(In thousands)

	Three Months Ended		
	Mar. 31, 2019	Dec. 31, 2018	Mar. 31, 2018
Gain (loss) on mortgage hedge derivative contracts, net	\$ 4,432	\$ 12,162	\$ (5,698)
Gain (loss) on fair value option securities, net	9,665	(282)	(17,564)
Gain (loss) on economic hedge of mortgage servicing rights, net	14,097	11,880	(23,262)
Gain (loss) on change in fair value of mortgage servicing rights	(20,666)	(24,233)	21,206
Gain (loss) on changes in fair value of mortgage servicing rights, net of economic hedges included in other operating revenue	(6,569)	(12,353)	(2,056)
Net interest revenue on fair value option securities ¹	1,129	695	1,800
Total economic benefit (cost) of changes in the fair value of mortgage servicing rights, net of economic hedges	\$ (5,440)	\$ (11,658)	\$ (256)

¹ Actual interest earned on fair value option securities less internal transfer-priced cost of funds.

Other Operating Expense

Other operating expense for the first quarter of 2019 totaled \$287.2 million, up \$42.7 million compared to the first quarter of 2018. Operating expenses in the first quarter of 2019 included \$12.7 million of CoBiz integration costs and \$26.6 million of CoBiz operating expenses. CoBiz added \$14.5 million in integration costs and \$29.7 million in operating costs during the fourth quarter of 2018.

Table 7 – Other Operating Expense

(In thousands)

	Three Months Ended March 31,		Increase (Decrease)	% Increase (Decrease)	Three Months Ended Dec. 31, 2018	Increase (Decrease)	% Increase (Decrease)
	2019	2018					
Regular compensation	\$ 100,650	\$ 84,991	\$ 15,659	18 %	\$ 100,796	\$ (146)	— %
Incentive compensation:							
Cash-based	32,137	29,549	2,588	9 %	39,681	(7,544)	(19)%
Share-based	5,162	2,902	2,260	78 %	(1,904)	7,066	371 %
Deferred compensation	3,911	44	3,867	N/A	(3,489)	7,400	N/A
Total incentive compensation	41,210	32,495	8,715	27 %	34,288	6,922	20 %
Employee benefits	27,368	22,461	4,907	22 %	25,622	1,746	7 %
Total personnel expense	169,228	139,947	29,281	21 %	160,706	8,522	5 %
Business promotion	7,874	6,010	1,864	31 %	9,207	(1,333)	(14)%
Charitable contributions to BOKF Foundation	—	—	—	N/A	2,846	(2,846)	N/A
Professional fees and services	16,139	10,200	5,939	58 %	20,712	(4,573)	(22)%
Net occupancy and equipment	29,521	24,046	5,475	23 %	27,780	1,741	6 %
Insurance	4,839	6,593	(1,754)	(27)%	4,248	591	14 %
Data processing and communications	31,449	27,817	3,632	13 %	27,575	3,874	14 %
Printing, postage and supplies	4,885	4,089	796	19 %	5,232	(347)	(7)%
Net losses and operating expenses of repossessed assets	1,996	7,705	(5,709)	(74)%	2,581	(585)	(23)%
Amortization of intangible assets	5,191	1,300	3,891	299 %	5,331	(140)	(3)%
Mortgage banking costs	9,906	10,149	(243)	(2)%	11,518	(1,612)	(14)%
Other expense	6,129	6,574	(445)	(7)%	6,907	(778)	(11)%
Total other operating expense	\$ 287,157	\$ 244,430	\$ 42,727	17 %	\$ 284,643	\$ 2,514	1 %
Average number of employees (full- time equivalent)	5,291	4,899	392	8 %	4,974	317	6 %

Certain percentage increases (decreases) are not meaningful for comparison purposes.

Personnel expense

Personnel expense increased \$29.3 million over the first quarter of 2018. CoBiz integration costs added \$3.3 million and CoBiz operating expenses added \$16.4 million to the first quarter of 2019. The remaining increase of \$9.6 million is largely attributed to standard annual merit increases in regular compensation and incentive compensation.

Personnel expense increased \$8.5 million over the fourth quarter of 2018. CoBiz integration costs added \$3.3 million to the first quarter of 2019 and \$5.7 million to the fourth quarter of 2018. The remaining \$10.9 million increase is primarily due to incentive compensation and a seasonal increase in payroll tax expense.

Non-personnel operating expense

Non-personnel operating expense increased \$13.4 million over the first quarter of 2018. CoBiz integration costs added \$9.4 million and CoBiz operating expenses added \$10.2 million to the first quarter of 2019. The remaining decrease of \$6.2 million is largely attributed to net losses and operating expenses of repossessed assets. The first quarter of 2018 included a \$5.0 million write-down of certain oil and gas properties.

Non-personnel expense decreased \$6.0 million compared to the fourth quarter of 2018. CoBiz integration costs added \$9.4 million in the first quarter of 2019 and \$8.8 million to the fourth quarter of 2018. The remaining \$6.6 million decrease is related to a \$2.8 million charitable donation to the BOKF Foundation made in the fourth quarter combined with decreases in business promotion and mortgage banking related to seasonality. These were partially offset by an increase in data processing and communications expense.

Income Taxes

Income tax expense was \$30.0 million or 21 percent of net income before taxes for the first quarter of 2019, compared to \$30.9 million or 23 percent of net income before taxes for the first quarter of 2018 and \$20.1 million or 16 percent of net income before taxes for the fourth quarter of 2018.

In 2018, we completed our accounting for uncertainties that resulted from the Tax Reform Act. Resolution of these uncertainties and revaluation of deferred taxes increased tax expense for the first quarter of 2018 by \$1.9 million. Excluding these adjustments, the effective tax rate for the first quarter of 2018 would have been 21.3%. Resolution of uncertainties decreased fourth quarter of 2018 tax expense by \$7.8 million. Excluding these adjustments, the fourth quarter 2018 effective tax rate would have been 21.7%.

Unrecognized tax benefits totaled \$19.5 million at March 31, 2019, \$18.9 million at December 31, 2018 and \$19.6 million at March 31, 2018. BOK Financial operates in numerous jurisdictions, which requires judgment regarding the allocation of income, expense and earnings under various laws and regulations of each of these taxing jurisdictions. Each jurisdiction may audit our tax returns and may take different positions with respect to these allocations.

Lines of Business

We operate three principal lines of business: Commercial Banking, Consumer Banking and Wealth Management. Commercial Banking includes lending, treasury and cash management services and customer risk management products for small businesses, middle market and larger commercial customers. Commercial Banking also includes the TransFund EFT network. Consumer Banking includes retail lending and deposit services, lending and deposit services to small business customers served through our consumer branch network and all mortgage banking activities. Wealth Management provides fiduciary services, private banking services and investment advisory services in all markets. Wealth Management also underwrites state and municipal securities and engages in brokerage and trading activities.

In addition to our lines of business, we have a Funds Management unit. The primary purpose of this unit is to manage our overall liquidity needs and interest rate risk. Each line of business borrows funds from and provides funds to the Funds Management unit as needed to support their operations. Operating results for Funds Management and other include the effect of interest rate risk positions and risk management activities, securities gains and losses including impairment charges, the provision for credit losses in excess of net loans charged off, tax planning strategies and certain executive compensation costs that are not attributed to the lines of business.

The operations of CoBiz were not yet allocated to the operating segments at March 31, 2019 and are included in Funds Management and other.

We allocate resources and evaluate the performance of our lines of business using the net direct contribution, which includes the allocation of funds, actual net credit losses and capital costs. In addition, we measure the performance of our business lines after allocation of certain indirect expenses and taxes based on statutory rates.

The cost of funds borrowed from the Funds Management unit by the operating lines of business is transfer priced at rates that approximate market rates for funds with similar repricing and cash flow characteristics. Market rates are generally based on the applicable LIBOR or interest rate swap rates, adjusted for prepayment and liquidity risk. This method of transfer-pricing funds that supports assets of the operating lines of business tends to insulate them from interest rate risk.

The value of funds provided by the operating lines of business to the Funds Management unit is also based on rates that approximate wholesale market rates for funds with similar repricing and cash flow characteristics. Market rates are generally based on LIBOR or interest rate swap rates. The funds credit formula applied to deposit products with indeterminate maturities is established based on their repricing characteristics reflected in a combination of the short-term LIBOR rate and a moving average of an intermediate-term swap rate, with an appropriate spread applied to both. Shorter duration products are weighted towards the short-term LIBOR rate and longer duration products are weighted towards the intermediate-term swap rates. The expected duration ranges from 30 days for certain rate-sensitive deposits to five years. During 2018 the funds transfer pricing rates for non-maturity deposits became inverted due to the flattening of the yield curve. Short term rates continued to increase while long term rates remained relatively flat. In order to appropriately reflect the organizational value of these deposits to the lines of business, effective January 1, 2019 we made adjustments that push more deposit credit value to the business lines, with the offset to Funds Management and other.

Economic capital is assigned to the business units by a capital allocation model that reflects management's assessment of risk. This model assigns capital based upon credit, operating, interest rate and other market risk inherent in our business lines and recognizes the diversification benefits among the units. The level of assigned economic capital is a combination of the risk taken by each business line, based on its actual exposures and calibrated to its own loss history where possible. Average invested capital includes economic capital and amounts we have invested in the lines of business.

As shown in Table 8, net income attributable to our lines of business was up \$17.2 million or 16 percent over the first quarter of 2018. Net interest revenue grew by \$36.6 million over the prior year, primarily due to the change in the deposit funding credit noted above, combined with growth in average loan balances. Net charge-offs increased \$10.3 million. Other operating revenue decreased by \$5.6 million and operating expense decreased by \$2.8 million compared to the first quarter of 2018.

Table 8 -- Net Income by Line of Business
(In thousands)

	Three Months Ended March 31,		Increase (Decrease)	% Increase (Decrease)	Three Months Ended Dec. 31,		Increase (Decrease)	% Increase (Decrease)
	2019	2018			2018			
Commercial Banking	\$ 86,143	\$ 79,247	\$ 6,896	9%	\$ 84,588	\$ 1,555	2%	
Consumer Banking	15,584	9,374	6,210	66%	2,741	12,843	469%	
Wealth Management	23,719	19,609	4,110	21%	17,472	6,247	36%	
Subtotal	125,446	108,230	17,216	16%	104,801	20,645	20%	
Funds Management and other	(14,834)	(2,668)	(12,166)	N/A	3,655	(18,489)	N/A	
Total	\$ 110,612	\$ 105,562	\$ 5,050	5%	\$ 108,456	\$ 2,156	2%	

Certain percentage increases (decreases) in non-fees and commissions revenue are not meaningful for comparison purposes based on the nature of the item.

Commercial Banking

Commercial Banking contributed \$86.1 million to consolidated net income in the first quarter of 2019, an increase of \$6.9 million or 9 percent over the first quarter of 2018. Growth in net interest revenue was partially offset by increased net loans charged off.

Table 9 -- Commercial Banking

(Dollars in thousands)

	Three Months Ended March 31,		Increase (Decrease)	% Increase (Decrease)	Three Months Ended Dec. 31,		Increase (Decrease)	% Increase (Decrease)
	2019	2018			2018			
Net interest revenue from external sources	\$ 204,209	\$ 160,414	\$ 43,795	27 %	\$ 196,897	\$ 7,312	4 %	
Net interest expense from internal sources	(52,562)	(28,343)	(24,219)	85 %	(48,538)	(4,024)	8 %	
Total net interest revenue	151,647	132,071	19,576	15 %	148,359	3,288	2 %	
Net loans charged off	11,245	627	10,618	1,693 %	11,577	(332)	(3)%	
Net interest revenue after net loans charged off	140,402	131,444	8,958	7 %	136,782	3,620	3 %	
Fees and commissions revenue	38,046	40,017	(1,971)	(5)%	39,667	(1,621)	(4)%	
Other gains (losses), net	(434)	(341)	(93)	N/A	173	(607)	N/A	
Other operating revenue	37,612	39,676	(2,064)	(5)%	39,840	(2,228)	(6)%	
Personnel expense	31,217	28,921	2,296	8 %	31,918	(701)	(2)%	
Non-personnel expense	18,960	19,449	(489)	(3)%	19,710	(750)	(4)%	
Other operating expense	50,177	48,370	1,807	4 %	51,628	(1,451)	(3)%	
Net direct contribution	127,837	122,750	5,087	4 %	124,994	2,843	2 %	
Gain on financial instruments, net	18	7	11	N/A	13	5	N/A	
Loss on repossessed assets, net	(346)	(4,166)	3,820	N/A	(431)	85	N/A	
Corporate expense allocations	10,148	10,603	(455)	(4)%	9,112	1,036	11 %	
Income before taxes	117,361	107,988	9,373	9 %	115,464	1,897	2 %	
Federal and state income tax	31,218	28,741	2,477	9 %	30,492	726	2 %	
Net income	\$ 86,143	\$ 79,247	\$ 6,896	9 %	\$ 84,972	\$ 1,171	1 %	
Average assets	\$ 19,330,249	\$ 17,793,820	\$ 1,536,429	9 %	\$ 18,766,165	\$ 564,084	3 %	
Average loans	15,992,749	14,426,750	1,565,999	11 %	15,628,731	364,018	2 %	
Average deposits	8,261,543	8,664,452	(402,909)	(5)%	8,393,016	(131,473)	(2)%	
Average invested capital	1,638,130	1,335,896	302,234	23 %	1,519,983	118,147	8 %	

Certain percentage increases (decreases) in non-fees and commissions revenue are not meaningful for comparison purposes based on the nature of the item.

Net interest revenue increased \$19.6 million or 15 percent over the prior year. Growth in net interest revenue was due to increased yields and an increase in average loan balances. Yields on deposits sold to the funds management unit also went up due to the increase in short-term interest rates. Net loans charged-off increased \$10.6 million.

Fees and commissions revenue decreased \$2.0 million or 5 percent while operating expense increased \$1.8 million or 4 percent compared to the first quarter of 2018. Corporate expense allocations decreased \$455 thousand or 4 percent compared to the prior year.

The average outstanding balance of loans attributed to Commercial Banking were up \$1.6 billion or 11 percent over the first quarter of 2018 to \$16.0 billion. See the Loans section of Management's Discussion and Analysis of Financial Condition following for additional discussion of changes in commercial and commercial real estate loans, which are primarily attributed to the Commercial Banking segment.

Average deposits attributed to Commercial Banking were \$8.3 billion for the first quarter of 2019, a 5 percent decrease compared to the first quarter of 2018. See Management's Discussion and Analysis of Financial Condition and Results of Operations – Liquidity and Capital for further discussion of change.

Net interest revenue increased \$3.3 million or 2 percent over the fourth quarter of 2018. Fees and commissions revenue decreased \$1.6 million or 4 percent, offset by a decrease in operating expense of \$1.5 million.

Average loan balances increased \$364 million or 2 percent, largely impacted by acquired loans. Average customer deposits decreased \$131 million or 2 percent. The deposit mix continues to shift with a \$411 million decrease in demand deposit balances partially offset by a \$277 million increase in interest-bearing transaction account balances.

Consumer Banking

Consumer Banking provides retail banking services through four primary distribution channels: traditional branches, the 24-hour ExpressBank call center, Internet banking and mobile banking. Consumer Banking also conducts mortgage banking activities through offices located outside of our Consumer Banking markets. In the first quarter of 2019, the strategic decision was made to exit our online lead buying business, HomeDirect, to focus more on our high margin, core competency of developing complete, long-term relationships with our clients through our traditional mortgage origination channel.

Consumer Banking contributed \$15.6 million to consolidated net income for the first quarter of 2019, an increase of \$6.2 million over the first quarter of 2018. Improved performance by Consumer Banking was largely due to the effect of changes in pricing of funds sold to the Funds Management unit, partially offset by net changes in the fair value of mortgage servicing rights.

Table 10 -- Consumer Banking

(Dollars in thousands)

	Three Months Ended March 31,		Increase (Decrease)	% Increase (Decrease)	Three Months Ended Dec. 31,		Increase (Decrease)	% Increase (Decrease)
	2019	2018			2018			
Net interest revenue from external sources	\$ 21,595	\$ 21,753	\$ (158)	(1)%	\$ 19,727	\$ 1,868	9 %	
Net interest revenue from internal sources	29,507	15,224	14,283	94 %	21,637	7,870	36 %	
Total net interest revenue	51,102	36,977	14,125	38 %	41,364	9,738	24 %	
Net loans charged off	1,085	1,300	(215)	(17)%	1,253	(168)	(13)%	
Net interest revenue after net loans charged off	50,017	35,677	14,340	40 %	40,111	9,906	25 %	
Fees and commissions revenue	42,821	44,963	(2,142)	(5)%	42,839	(18)	— %	
Other losses, net	(73)	(16)	(57)	N/A	(7)	(66)	N/A	
Other operating revenue	42,748	44,947	(2,199)	(5)%	42,832	(84)	— %	
Personnel expense	24,330	24,341	(11)	— %	22,765	1,565	7 %	
Non-personnel expense	29,176	30,354	(1,178)	(4)%	33,316	(4,140)	(12)%	
Total other operating expense	53,506	54,695	(1,189)	(2)%	56,081	(2,575)	(5)%	
Net direct contribution	39,259	25,929	13,330	51 %	26,862	12,397	46 %	
Gain (loss) on financial instruments, net	14,097	(23,262)	37,359	N/A	11,880	2,217	N/A	
Change in fair value of mortgage servicing rights	(20,666)	21,206	(41,872)	N/A	(24,234)	3,568	N/A	
Gain (loss) on repossessed assets, net	103	(108)	211	N/A	267	(164)	N/A	
Corporate expense allocations	11,883	11,188	695	6 %	11,098	785	7 %	
Income before taxes	20,910	12,577	8,333	66 %	3,677	17,233	469 %	
Federal and state income tax	5,326	3,203	2,123	66 %	936	4,390	469 %	
Net income	\$ 15,584	\$ 9,374	\$ 6,210	66 %	\$ 2,741	\$ 12,843	469 %	
Average assets	\$ 8,371,683	\$ 8,468,101	\$ (96,418)	(1)%	\$ 8,071,978	\$ 299,705	4 %	
Average loans	1,750,642	1,746,136	4,506	— %	1,745,642	5,000	— %	
Average deposits	6,544,665	6,538,096	6,569	— %	6,542,188	2,477	— %	
Average invested capital	302,195	298,438	3,757	1 %	291,846	10,349	4 %	

Certain percentage increases (decreases) in non-fees and commissions revenue are not meaningful for comparison purposes based on the nature of the item.

Net interest revenue from Consumer Banking activities grew by \$14.1 million or 38 percent over the the first quarter of 2018, primarily due to increased rates received on deposit balances sold to the Funds Management unit. Average consumer deposits were relatively consistent compared to the first quarter of 2018. Demand deposit balances grew by \$131 million or 7 percent, offset by a decrease of \$133 million or 4 percent in interest-bearing transaction account balances.

Fees and commissions revenue decreased \$2.1 million or 5 percent compared to the first quarter of 2018. Higher average interest rates decreased mortgage loan origination volumes. This was offset by a decrease of \$1.2 million in operating expense. Corporate expense allocations were \$695 thousand or 6 percent higher than the prior year.

Changes in the fair value of mortgage servicing rights, net of economic hedges, decreased pre-tax net income for first quarter of 2019 by \$6.6 million compared to a \$2.1 million decrease in pre-tax net income in the first quarter of 2018.

Net interest revenue from Consumer Banking activities increased \$9.7 million or 24 percent over the fourth quarter of 2018, primarily due to increased yields on deposits sold to the Funds Management unit. In addition, lower recent interest rates increased mortgage application volume in the first quarter of 2019.

Revenues from mortgage banking activities increased \$1.9 million over the prior quarter, partially offset by a decrease of \$1.6 million in service charges driven by two less days in the quarter. Operating expense decreased \$2.6 million or 5 percent. Personnel expenses increased \$1.6 million mainly due to increased incentive compensation costs. Non-personnel expense decreased \$4.1 million. Mortgage banking costs decreased \$1.6 million primarily affected by seasonality. Occupancy and equipment costs decreased \$1.0 million.

Average consumer loans and deposits remained relatively consistent compared to the prior quarter at \$1.8 billion and \$6.5 billion, respectively.

Wealth Management

Wealth Management contributed \$23.7 million to consolidated net income in the first quarter of 2019, up \$4.1 million or 21 percent over the first quarter of 2018. Improved performance by Wealth Management was primarily due to an increase in net interest revenue and a decrease in operating expenses.

Table 11 -- Wealth Management

(Dollars in thousands)

	Three Months Ended March 31,		Increase (Decrease)	% Increase (Decrease)	Three Months Ended Dec. 31,		Increase (Decrease)	% Increase (Decrease)
	2019	2018			2018			
Net interest revenue from external sources	\$ 21,486	\$ 15,407	\$ 6,079	39 %	\$ 24,218	\$ (2,732)	(11)%	
Net interest revenue from internal sources	6,770	9,932	(3,162)	(32)%	5,074	1,696	33 %	
Total net interest revenue	28,256	25,339	2,917	12 %	29,292	(1,036)	(4)%	
Net loans charged off (recovered)	(119)	(48)	(71)	148 %	(52)	(67)	129 %	
Net interest revenue after net loans charged off (recovered)	28,375	25,387	2,988	12 %	29,344	(969)	(3)%	
Fees and commissions revenue	73,256	74,807	(1,551)	(2)%	67,607	5,649	8 %	
Other gains (losses), net	158	(41)	199	N/A	(4)	162	N/A	
Other operating revenue	73,414	74,766	(1,352)	(2)%	67,603	5,811	9 %	
Personnel expense	43,991	46,947	(2,956)	(6)%	45,973	(1,982)	(4)%	
Non-personnel expense	17,516	17,995	(479)	(3)%	18,576	(1,060)	(6)%	
Other operating expense	61,507	64,942	(3,435)	(5)%	64,549	(3,042)	(5)%	
Net direct contribution	40,282	35,211	5,071	14 %	32,398	7,884	24 %	
Corporate expense allocations	8,360	8,815	(455)	(5)%	8,828	(468)	(5)%	
Income before taxes	31,922	26,396	5,526	21 %	23,570	8,352	35 %	
Federal and state income tax	8,203	6,787	1,416	21 %	6,098	2,105	35 %	
Net income	\$ 23,719	\$ 19,609	\$ 4,110	21 %	\$ 17,472	\$ 6,247	36 %	
Average assets	\$ 9,312,154	\$ 8,095,794	\$ 1,216,360	15 %	\$ 8,687,234	\$ 624,920	7 %	
Average loans	1,448,718	1,389,926	58,792	4 %	1,448,805	(87)	— %	
Average deposits	5,659,771	5,662,470	(2,699)	— %	5,483,455	176,316	3 %	
Average invested capital	265,572	246,673	18,899	8 %	255,948	9,624	4 %	

Net interest revenue increased \$2.9 million or 12 percent over the first quarter of 2018. Average trading securities balances increased \$1.0 billion and average loans attributed to the Wealth Management segment increased \$59 million or 4 percent. Average deposit balances were largely unchanged compared to the first quarter of 2018. Growth in interest-bearing transaction account balances of \$118 million or 3 percent was offset by a decrease of \$90 million in demand deposit balances and \$34 million in time deposit balances.

Fees and commissions revenue was relatively unchanged compared to the first quarter of 2018. Operating expense decreased \$3.4 million or 5 percent compared to the first quarter of 2018. Personnel expense decreased \$3.0 million primarily due to a decrease in incentive compensation. Non-personnel expense was consistent with the first quarter of 2018. Corporate expense allocations decreased \$455 thousand or 5 percent compared to the prior year.

Net interest revenue decreased \$1.0 million or 4 percent compared to the fourth quarter of 2018. Brokerage and trading revenue increased \$6.4 million or 33 percent compared to the fourth quarter of 2018. This increase was partially offset by a decrease in interest received on trading securities and an increase in funding costs.

Average loans were largely unchanged at \$1.4 billion. Average deposits increased \$176 million or 3 percent, primarily due to an increase of \$150 million in interest-bearing transaction account balances.

Financial Condition

Securities

We maintain a securities portfolio to enhance profitability, manage interest rate risk, provide liquidity and comply with regulatory requirements. Securities are classified as trading, held for investment, or available for sale. See Note 2 to the Consolidated Financial Statements for the composition of the securities portfolio as of March 31, 2019 and December 31, 2018.

We hold an inventory of trading securities in support of sales to a variety of customers, including banks, corporations, insurance companies, money managers and others. Trading securities increased \$183 million to \$2.1 billion during the first quarter of 2019. As discussed in the Market Risk section of this report, trading activities involve risk of loss from adverse price movement. We mitigate this risk within board-approved limits through the use of derivative contracts, short-sales and other techniques. These limits remain unchanged from levels set before our expanded trading activities.

At March 31, 2019, the carrying value of investment (held-to-maturity) securities was \$331 million and the fair value was \$348 million. Investment securities consist primarily of residential mortgage-backed securities issued by U.S. government agencies, long-term, fixed rate Oklahoma and Texas municipal bonds, and taxable Texas school construction bonds.

Available for sale securities, which may be sold prior to maturity, are carried at fair value. Unrealized gains or losses, net of deferred taxes, are recorded as accumulated other comprehensive income in shareholders' equity. The amortized cost of available for sale securities totaled \$9.0 billion at March 31, 2019, a \$75 million increase compared to December 31, 2018. At March 31, 2019, the available for sale securities portfolio consisted primarily of U.S. government agency residential mortgage-backed securities and U.S. government agency commercial mortgage-backed securities. Both residential and commercial mortgage-backed securities have credit risk from delinquency or default of the underlying loans. We mitigate this risk by primarily investing in securities issued by U.S. government agencies. Principal and interest payments on the underlying loans are fully guaranteed. Commercial mortgage-backed securities have prepayment penalties similar to commercial loans.

A primary risk of holding residential mortgage-backed securities comes from extension during periods of rising interest rates or prepayment during periods of falling interest rates. We evaluate this risk through extensive modeling of risk both before making an investment and throughout the life of the security. Our best estimate of the duration of the combined residential mortgage-backed securities portfolio held in investment and available for sale securities at March 31, 2019 is 3.0 years. Management estimates the duration extends to 3.8 years assuming an immediate 200 basis point upward shock. The estimated duration contracts to 2.5 years assuming a 100 basis point decline in the current low rate environment.

The aggregate gross amount of unrealized losses on available for sale securities totaled \$69 million at March 31, 2019, compared to \$138 million at December 31, 2018. On a quarterly basis, we perform an evaluation on debt securities to determine if the unrealized losses are temporary as more fully described in Note 2 of the Consolidated Financial Statements. No other-than-temporary impairment charges were recognized in earnings during the first quarter of 2019.

Loans

The aggregate loan portfolio before allowance for loan losses totaled \$21.8 billion at March 31, 2019, up \$102 million over December 31, 2018, primarily due to growth in commercial loans, partially offset by a decrease in commercial real estate loans.

Table 12 -- Loans

(In thousands)

	Mar. 31, 2019	Dec. 31, 2018	Sept. 30, 2018	June 30, 2018	Mar. 31, 2018
Commercial:					
Energy	\$ 3,705,099	\$ 3,590,333	\$ 3,294,867	\$ 3,147,219	\$ 2,969,618
Services	3,287,563	3,258,192	2,603,862	2,516,676	2,488,065
Healthcare	2,915,885	2,799,277	2,437,323	2,353,722	2,359,928
Wholesale/retail	1,706,900	1,621,158	1,650,729	1,699,554	1,531,576
Public finance	803,083	804,550	418,578	433,408	445,814
Manufacturing	742,374	730,521	660,582	647,816	559,695
Other commercial and industrial	801,071	832,047	510,160	550,644	564,971
Total commercial	13,961,975	13,636,078	11,576,101	11,349,039	10,919,667
Commercial real estate:					
Multifamily	1,210,358	1,288,065	1,120,166	1,056,984	1,008,903
Office	1,033,158	1,072,920	824,829	820,127	737,144
Retail	890,685	919,082	759,423	768,024	750,396
Industrial	767,757	778,106	696,774	653,384	613,608
Residential construction and land development	149,686	148,584	101,872	118,999	117,458
Other commercial real estate	549,007	558,056	301,611	294,702	279,273
Total commercial real estate	4,600,651	4,764,813	3,804,675	3,712,220	3,506,782
Residential mortgage:					
Permanent mortgage	1,098,481	1,122,610	1,094,926	1,068,412	1,047,785
Permanent mortgages guaranteed by U.S. government agencies	193,308	190,866	180,718	169,653	177,880
Home equity	900,831	916,557	696,098	704,185	720,104
Total residential mortgage	2,192,620	2,230,033	1,971,742	1,942,250	1,945,769
Personal	1,003,734	1,025,806	996,941	1,000,187	965,632
Total	\$ 21,758,980	\$ 21,656,730	\$ 18,349,459	\$ 18,003,696	\$ 17,337,850

Commercial

Commercial loans represent loans for working capital, facilities acquisition or expansion, purchases of equipment and other needs of commercial customers primarily located within our geographical footprint. Commercial loans are underwritten individually and represent ongoing relationships based on a thorough knowledge of the customer, the customer's industry and market. While commercial loans are generally secured by the customer's assets including real property, inventory, accounts receivable, operating equipment, interests in mineral rights and other property and may also include personal guarantees of the owners and related parties, the primary source of repayment of the loans is the ongoing cash flow from operations of the customer's business. Inherent lending risks are centrally monitored on a continuous basis from underwriting throughout the life of the loan for compliance with commercial lending policies.

Commercial loans totaled \$14.0 billion or 64 percent of the loan portfolio at March 31, 2019, an increase of \$326 million over December 31, 2018. Healthcare sector loan balances were up \$117 million. Energy loan balances grew by \$115 million. Wholesale/retail sector loans increased \$86 million. This growth was partially offset by a \$31 million decrease in other commercial and industrial loans.

Table 13 presents the commercial sector of our loan portfolio distributed primarily by collateral location. Loans for which collateral location is less relevant, such as unsecured loans and reserve-based energy loans, are distributed by the borrower's primary operating location.

Table 13 -- Commercial Loans by Collateral Location

(In thousands)

	Oklahoma	Texas	New Mexico	Arkansas	Colorado	Arizona	Kansas/Missouri	Other	Total
Energy	\$ 765,840	\$ 2,089,600	\$ 34,802	\$ 2,483	\$ 353,639	\$ 4,564	\$ 108,588	\$ 345,583	\$ 3,705,099
Services	615,903	761,921	168,742	3,971	634,929	433,433	280,158	388,506	3,287,563
Healthcare	217,785	382,523	128,468	81,713	333,306	235,783	251,574	1,284,733	2,915,885
Wholesale/retail	239,075	678,453	38,597	29,436	175,128	111,786	65,831	368,594	1,706,900
Public finance	87,663	157,819	42,604	—	167,447	121,124	—	226,426	803,083
Manufacturing	97,019	172,356	697	5,761	185,771	130,571	70,249	79,950	742,374
Other commercial and industrial	111,899	165,405	3,404	49,514	120,115	45,155	63,255	242,324	801,071
Total commercial loans	\$ 2,135,184	\$ 4,408,077	\$ 417,314	\$ 172,878	\$ 1,970,335	\$ 1,082,416	\$ 839,655	\$ 2,936,116	\$ 13,961,975

The majority of the collateral securing our commercial loan portfolio is located within our geographical footprint with 32 percent concentrated in the Texas market, 15 percent concentrated in the Oklahoma market and 14 percent in the Colorado market. At March 31, 2019, the Other category is primarily composed of California - \$561 million or 4 percent of the commercial loan portfolio, Florida - \$279 million or 2 percent of the commercial loan portfolio, Pennsylvania - \$167 million or 1 percent of the commercial loan portfolio, Ohio - \$162 million or 1 percent of the commercial loan portfolio and Louisiana - \$155 million or 1 percent of the commercial loan portfolio. All other states individually represent less than one percent of total commercial loans.

Supporting the energy industry with loans to producers and other energy-related entities has been a hallmark of the Company since its founding and represents a large portion of our commercial loan portfolio. In addition, energy production and related industries have a significant impact on the economy in our primary markets. Loans collateralized by oil and gas properties are subject to a semi-annual engineering review by our internal staff of petroleum engineers. This review is utilized as the basis for developing the expected cash flows supporting the loan amount. The projected cash flows are discounted according to risk characteristics of the underlying oil and gas properties. Loans are evaluated to demonstrate with reasonable certainty that crude oil, natural gas and natural gas liquids can be recovered from known oil and gas reservoirs under existing economic and operating conditions at current pricing levels and with existing conventional equipment and operating methods and costs. As part of our evaluation of credit quality, we analyze rigorous stress tests over a range of commodity prices and take proactive steps to mitigate risk when appropriate.

Outstanding energy loans totaled \$3.7 billion or 17 percent of total loans at March 31, 2019. Unfunded energy loan commitments were \$3.4 billion at March 31, 2019, up \$221 million over December 31, 2018. Approximately \$3.0 billion of energy loans were to oil and gas producers, growing \$77 million over December 31, 2018. The majority of this portfolio is first lien, senior secured, reserve-based lending, which we believe is the lowest risk form of energy lending. Approximately 57 percent of the committed production loans are secured by properties primarily producing oil and 43 percent of the committed production loans are secured by properties primarily producing natural gas. Loans to midstream oil and gas companies totaled \$463 million at March 31, 2019, an increase of \$43 million over December 31, 2018. Loans to borrowers that provide services to the energy industry totaled \$173 million at March 31, 2019, unchanged compared to the prior quarter. Loans to other energy borrowers, including those engaged in wholesale or retail energy sales, totaled \$60 million, a \$2.0 million decrease compared to the prior quarter.

The services sector of the loan portfolio totaled \$3.3 billion or 15 percent of total loans and consists of a large number of loans to a variety of businesses, including commercial services, Native American tribal governments, entertainment & recreation, financial services and consumer services. Service sector loans increased by \$29 million compared to December 31, 2018. Approximately \$1.7 billion of the services category is made up of loans with individual balances of less than \$10 million. Service sector loans are generally secured by the assets of the borrower with repayment coming from the cash flows of ongoing operations of the customer's business.

The healthcare sector of the loan portfolio totaled \$2.9 billion or 13 percent of total loans and consists primarily of loans for the development and operation of senior housing and care facilities, including independent living, assisted living and skilled nursing. Healthcare also includes loans to hospitals and other medical service providers.

We participate in shared national credits when appropriate to obtain or maintain business relationships with local customers. Shared national credits are defined by banking regulators as credits of more than \$100 million and with three or more non-affiliated banks as participants. At March 31, 2019, the outstanding principal balance of these loans totaled \$4.4 billion. Substantially all of these loans are to borrowers with local market relationships. We serve as the agent lender in approximately 18 percent of our shared national credits, based on dollars committed. We hold shared national credits to the same standard of analysis and perform the same level of review as internally originated credits. Our lending policies generally avoid loans in which we do not have the opportunity to maintain or achieve other business relationships with the customer. In addition to management's quarterly assessment of credit risk, banking regulators annually review a sample of shared national credits for proper risk grading.

Commercial Real Estate

Commercial real estate represents loans for the construction of buildings or other improvements to real estate and property held by borrowers for investment purposes generally within our geographical footprint. Our larger concentrations are in Texas, Colorado and Oklahoma representing 27 percent, 13 percent and 10 percent of the total commercial real estate portfolio at March 31, 2019, respectively. We require collateral values in excess of the loan amounts, demonstrated cash flows in excess of expected debt service requirements, equity investment in the project and a portion of the project already sold, leased or permanent financing already secured. The expected cash flows from all significant new or renewed income producing property commitments are stress tested to reflect the risks in varying interest rates, vacancy rates and rental rates. As with commercial loans, inherent lending risks are centrally monitored on a continuous basis from underwriting throughout the life of the loan for compliance with applicable lending policies.

Commercial real estate loans totaled \$4.6 billion or 21 percent of the loan portfolio at March 31, 2019. The outstanding balance of commercial real estate loans decreased \$164 million compared to December 31, 2018. Loans secured by multifamily residential properties decreased \$78 million. Loans secured by office buildings decreased \$40 million. Loans secured by retail facilities decreased \$28 million. The commercial real estate loan balance as a percentage of our total loan portfolio has ranged from 19 percent to 21 percent over the past five years.

The commercial real estate sector of our loan portfolio distributed by collateral location follows in Table 14.

Table 14 -- Commercial Real Estate Loans by Collateral Location

(In thousands)

	Oklahoma	Texas	New Mexico	Arkansas	Colorado	Arizona	Kansas/Missouri	Other	Total
Multifamily	\$ 160,566	\$ 434,105	\$ 31,706	\$ 49,405	\$ 63,150	\$ 118,339	\$ 176,069	\$ 177,018	\$ 1,210,358
Office	107,021	275,583	96,161	16,669	130,895	73,767	36,288	296,774	1,033,158
Retail	56,621	255,901	136,992	5,469	102,068	73,138	14,057	246,439	890,685
Industrial	83,536	207,516	19,203	92	78,359	43,181	41,248	294,622	767,757
Residential construction and land development	5,243	13,890	13,385	559	59,999	13,278	11,097	32,235	149,686
Other commercial real estate	49,323	40,185	11,264	2,218	155,721	78,063	39,969	172,264	549,007
Total commercial real estate loans	\$ 462,310	\$ 1,227,180	\$ 308,711	\$ 74,412	\$ 590,192	\$ 399,766	\$ 318,728	\$ 1,219,352	\$ 4,600,651

The Other category is primarily composed of California - \$285 million or 6 percent of the commercial real estate portfolio, Utah - \$137 million or 3 percent of the commercial real estate portfolio and Nevada - \$108 million or 2 percent of the commercial real estate portfolio. All other states represent less than 2% individually.

While recent changes nationally in consumer purchasing trends from brick-and-mortar stores to online has created concern with regards to retail lending, our credit quality remains very good. The portfolio is highly diversified with no material exposure to a single borrower or tenant.

Residential Mortgage and Personal

Residential mortgage loans provide funds for our customers to purchase or refinance their primary residence or to borrow against the equity in their home. Residential mortgage loans are secured by a first or second-mortgage on the customer's primary residence. Personal loans consist primarily of loans to wealth management clients secured by the cash surrender value of insurance policies and marketable securities. It also includes direct loans secured by and for the purchase of automobiles, recreational and marine equipment as well as unsecured loans. Residential mortgage and personal loans are made in accordance with underwriting policies we believe to be conservative and are fully documented. Loans may be individually underwritten or credit scored based on size and other criteria. Credit scoring is assessed based on significant credit characteristics including credit history, residential and employment stability.

Residential mortgage loans totaled \$2.2 billion, a decrease of \$37 million compared to December 31, 2018. In general, we sell the majority of our conforming fixed rate loan originations in the secondary market and retain the majority of our non-conforming and adjustable-rate mortgage loans. We have no concentration in sub-prime residential mortgage loans. Our mortgage loan portfolio does not include payment option adjustable rate mortgage loans or adjustable rate mortgage loans with initial rates that are below market. Collateral for 92% of our residential mortgage loan portfolio is located within our geographical footprint.

The majority of our permanent mortgage loan portfolio is composed of various non-conforming mortgage programs to support customer relationships including jumbo mortgage loans, non-builder construction loans and special loan programs for high net worth individuals or certain professionals. Jumbo loans may be fixed or variable rate and are fully amortizing. The size of jumbo loans exceeds maximums set under government sponsored entity standards, but otherwise generally conform to those standards. These loans generally require a minimum FICO score of 720 and a maximum debt-to-income ratio ("DTI") of 38 percent. Loan-to-value ratios ("LTV") are tiered from 60 percent to 100 percent, depending on the market. Special mortgage programs include fixed and variable rate fully amortizing loans tailored to the needs of certain healthcare professionals. Variable rate loans are fully indexed at origination and may have fixed rates for three to ten years, then adjust annually thereafter.

At March 31, 2019, \$193 million of permanent residential mortgage loans are guaranteed by U.S. government agencies. We have limited credit exposure on loans guaranteed by the agencies. This amount includes residential mortgage loans previously sold into GNMA mortgage pools that the Company may repurchase when certain defined delinquency criteria are met. Because of this repurchase right, the Company is deemed to have regained effective control over these loans and must include them on the Consolidated Balance Sheet. Permanent residential mortgage loans guaranteed by U.S. government agencies increased \$2.4 million over December 31, 2018.

Home equity loans totaled \$901 million at March 31, 2019, a \$16 million decrease compared to December 31, 2018. Our home equity loan portfolio is primarily composed of first-lien, fully amortizing home equity loans. Home equity loans generally require a minimum FICO score of 700 and a maximum DTI of 50 percent. The maximum loan amount available for our home equity loan products is generally \$400 thousand. Revolving loans have a 10 year revolving period followed by a 15 year term of amortizing repayment. Interest-only home equity loans have a 5 year revolving period followed by a 15 year term of amortizing repayments and may not be extended for any additional revolving time. All other home equity loans may be extended at management's discretion for an additional 5 year revolving term subject to an update of certain credit information. A summary of our home equity loan portfolio at March 31, 2019 by lien position and amortizing status follows in Table 15.

Table 15 -- Home Equity Loans
(In thousands)

	Revolving	Amortizing	Total
First lien	\$ 87,364	\$ 520,691	\$ 608,055
Junior lien	175,625	117,151	292,776
Total home equity	\$ 262,989	\$ 637,842	\$ 900,831

The distribution of residential mortgage and personal loans at March 31, 2019 is as follows in Table 16. Residential mortgage loans are distributed by collateral location. Personal loans are generally distributed by borrower location.

Table 16 -- Residential Mortgage and Personal Loans by Collateral Location
(In thousands)

	<u>Oklahoma</u>	<u>Texas</u>	<u>New Mexico</u>	<u>Arkansas</u>	<u>Colorado</u>	<u>Arizona</u>	<u>Kansas/Missouri</u>	<u>Other</u>	<u>Total</u>
Residential mortgage:									
Permanent mortgage	\$ 168,755	\$ 436,600	\$ 60,691	\$ 12,960	\$ 196,222	\$ 106,324	\$ 63,996	\$ 52,933	\$ 1,098,481
Permanent mortgages guaranteed by U.S. government agencies	45,406	31,333	34,218	9,998	5,201	1,264	15,821	50,067	193,308
Home equity	360,862	137,082	80,170	7,973	156,039	39,547	52,389	66,769	900,831
Total residential mortgage	\$ 575,023	\$ 605,015	\$ 175,079	\$ 30,931	\$ 357,462	\$ 147,135	\$ 132,206	\$ 169,769	\$ 2,192,620
Personal	\$ 316,266	\$ 418,582	\$ 12,210	\$ 11,696	\$ 72,738	\$ 55,643	\$ 52,910	\$ 63,689	\$ 1,003,734

The Company secondarily evaluates loan portfolio performance based on the primary geographical market managing the loan. Loans attributed to a geographical market may not represent the location of the borrower or the collateral. All permanent mortgage loans serviced by our mortgage banking unit and held for investment by the Company are centrally managed by the Bank of Oklahoma.

Table 17 -- Loans Managed by Primary Geographical Market
(In thousands)

	Mar. 31, 2019	Dec. 31, 2018	Sept. 30, 2018	June 30, 2018	Mar. 31, 2018
Oklahoma:					
Commercial	\$ 3,551,054	\$ 3,491,117	\$ 3,609,109	\$ 3,465,407	\$ 3,265,013
Commercial real estate	665,190	700,756	651,315	662,665	668,031
Residential mortgage	1,417,381	1,440,566	1,429,843	1,403,658	1,419,281
Personal	374,807	375,543	376,201	362,846	353,128
Total Oklahoma	6,008,432	6,007,982	6,066,468	5,894,576	5,705,453
Texas:					
Commercial	5,754,018	5,438,133	5,115,646	4,922,451	4,715,841
Commercial real estate	1,344,810	1,341,783	1,354,679	1,336,101	1,254,421
Residential mortgage	265,927	266,805	253,265	243,400	229,761
Personal	396,794	394,743	381,452	394,021	363,608
Total Texas	7,761,549	7,441,464	7,105,042	6,895,973	6,563,631
New Mexico:					
Commercial	342,915	340,489	325,048	305,167	315,701
Commercial real estate	371,416	383,670	392,494	386,878	348,485
Residential mortgage	85,326	87,346	88,110	90,581	93,490
Personal	11,065	10,662	11,659	11,107	11,667
Total New Mexico	810,722	822,167	817,311	793,733	769,343
Arkansas:					
Commercial	79,286	111,338	102,237	93,217	94,430
Commercial real estate	142,551	141,898	106,701	90,807	88,700
Residential mortgage	7,731	7,537	7,278	6,927	7,033
Personal	11,550	11,955	12,126	12,331	9,916
Total Arkansas	241,118	272,728	228,342	203,282	200,079
Colorado:					
Commercial	2,231,703	2,275,069	1,132,500	1,165,721	1,180,655
Commercial real estate	957,348	963,575	354,543	267,065	210,801
Residential mortgage	241,722	251,849	68,694	64,839	64,530
Personal	65,812	72,916	56,999	60,504	63,118
Total Colorado	3,496,585	3,563,409	1,612,736	1,558,129	1,519,104
Arizona:					
Commercial	1,335,140	1,320,139	621,658	681,852	624,106
Commercial real estate	791,466	889,903	666,562	710,784	672,319
Residential mortgage	98,973	97,959	44,659	47,010	39,227
Personal	61,875	68,546	67,280	65,541	57,023
Total Arizona	2,287,454	2,376,547	1,400,159	1,505,187	1,392,675
Kansas/Missouri:					
Commercial	667,859	659,793	669,903	715,224	723,921
Commercial real estate	327,870	343,228	278,381	257,920	264,025
Residential mortgage	75,560	77,971	79,893	85,835	92,447
Personal	81,831	91,441	91,224	93,837	107,172
Total Kansas/Missouri	1,153,120	1,172,433	1,119,401	1,152,816	1,187,565
Total BOK Financial loans	\$ 21,758,980	\$ 21,656,730	\$ 18,349,459	\$ 18,003,696	\$ 17,337,850

Loan Commitments

We enter into certain off-balance sheet arrangements in the normal course of business as shown in Table 18. Loan commitments may be unconditional obligations to provide financing or conditional obligations that depend on the borrower's financial condition, collateral value or other factors. Standby letters of credit are unconditional commitments to guarantee the performance of our customer to a third party. Since some of these commitments are expected to expire before being drawn upon, the total commitment amounts do not necessarily represent future cash requirements.

Table 18 – Off-Balance Sheet Credit Commitments

(In thousands)

	Mar. 31, 2019	Dec. 31, 2018	Sept. 30, 2018	June 30, 2018	Mar. 31, 2018
Loan commitments	\$ 12,243,886	\$ 11,944,524	\$ 10,715,964	\$ 10,294,211	\$ 10,249,729
Standby letters of credit	720,451	582,196	671,844	659,867	664,342
Mortgage loans sold with recourse	94,938	98,623	101,512	116,269	121,197

Customer Derivative Programs

We offer programs that permit our customers to hedge various risks, including fluctuations in energy, cattle and other agricultural product prices, interest rates and foreign exchange rates. Each of these programs work essentially the same way. Derivative contracts are executed between the customers and the Company. Offsetting contracts are executed between the Company and selected counterparties to minimize market risk due to changes in commodity prices, interest rates or foreign exchange rates. The counterparty contracts are identical to the customer contracts, except for a fixed pricing spread or a fee paid to us as compensation for administrative costs, credit risk and profit.

The customer derivative programs create credit risk for potential amounts due to the Company from our customers and from the counterparties. Customer credit risk is monitored through existing credit policies and procedures. The effects of changes in commodity prices, interest rates or foreign exchange rates are evaluated across a range of possible scenarios to determine the maximum exposure we are willing to have individually to any customer. Customers may also be required to provide cash margin or other collateral in conjunction with our credit agreements to further limit our credit risk.

Counterparty credit risk is evaluated through existing policies and procedures. This evaluation considers the total relationship between BOK Financial and each of the counterparties. Individual limits are established by management, approved by Credit Administration and reviewed by the Asset/Liability Committee. Margin collateral is required if the exposure between the Company and any counterparty exceeds established limits. Based on declines in the counterparties' credit ratings, these limits may be reduced and additional margin collateral may be required.

A deterioration of the credit standing of one or more of the customers or counterparties to these contracts may result in BOK Financial recognizing a loss as the fair value of the affected contracts may no longer move in tandem with the offsetting contracts. This occurs if the credit standing of the customer or counterparty deteriorated such that either the fair value of underlying collateral no longer supported the contract or the customer or the counterparty's ability to provide margin collateral was impaired. Credit losses on customer derivatives reduce brokerage and trading revenue in the Consolidated Statements of Earnings.

Derivative contracts are carried at fair value. At March 31, 2019, the net fair values of derivative contracts, before consideration of cash margin, reported as assets under these programs totaled \$354 million compared to \$427 million at December 31, 2018. At March 31, 2019, the net fair value of our derivative contracts included \$223 million for foreign exchange contracts, \$58 million of to-be-announced residential mortgage-backed securities, \$39 million for energy contracts and \$28 million for interest rate swaps. The aggregate net fair value of derivative contracts, before consideration of cash margin, held under these programs reported as liabilities totaled \$343 million at March 31, 2019 and \$413 million at December 31, 2018.

At March 31, 2019, total derivative assets were reduced by \$12 million of cash collateral received from counterparties and total derivative liabilities were reduced by \$75 million of cash collateral paid to counterparties related to instruments executed with the same counterparty under a master netting agreement.

A table showing the notional and fair value of derivative assets and liabilities on both a gross and net basis is presented in Note 3 to the Consolidated Financial Statements.

The fair value of derivative contracts reported as assets under these programs, net of cash margin held by the Company, by category of debtor at March 31, 2019 follows in Table 19.

Table 19 -- Fair Value of Derivative Contracts
(In thousands)

Customers	\$	212,147
Banks and other financial institutions		129,213
Exchanges and clearing organizations		1,141
Fair value of customer risk management program asset derivative contracts, net	\$	342,501

At March 31, 2019, our largest derivative exposure was to a counterparty for energy contracts of \$8.5 million.

Our customer derivative program also introduces liquidity and capital risk. We are required to provide cash margin to certain counterparties when the net negative fair value of the contracts exceeds established limits. Also, changes in commodity prices affect the amount of regulatory capital we are required to hold as support for the fair value of our derivative assets. These risks are modeled as part of the management of these programs. Based on current prices, a decrease in market prices equivalent to \$29.10 per barrel of oil would not be great enough to create a scenario in which we are owed by our customers. An increase in prices equivalent to \$72.05 per barrel of oil would increase the fair value of derivative assets by \$127 million. Further increases in price to the equivalent of \$89.92 per barrel of oil would increase the fair value of our derivative assets by \$320 million with lending customers comprising the bulk of the assets. Liquidity requirements of this program may also be affected by our credit rating. At March 31, 2019, a decrease in our credit rating to below investment grade did not have a significant impact on our obligation to post cash margin on existing contracts. The fair value of our to-be-announced residential mortgage-backed securities and interest rate swap derivative contracts is affected by changes in interest rates. Based on our assessment as of March 31, 2019, changes in interest rates would not materially impact regulatory capital or liquidity needed to support this portion of our customer derivative program.

Summary of Loan Loss Experience

We maintain an allowance for loan losses and an accrual for off-balance sheet credit risk. At March 31, 2019, the combined allowance for loan losses and off-balance sheet credit losses totaled \$207 million or 0.95 percent of outstanding loans and 142 percent of nonaccruing loans, excluding loans guaranteed by U.S. government agencies. Excluding acquired loans measured at acquisition date fair value, the combined allowance for loan losses was 1.09 percent of outstanding loans and 159 percent of nonaccruing loans. The allowance for loan losses was \$205 million and the accrual for off-balance sheet credit losses was \$1.8 million. At December 31, 2018, the combined allowance for credit losses was \$209 million or 0.97 percent of outstanding loans and 134 percent of nonaccruing loans, excluding loans guaranteed by U.S. government agencies. Excluding acquired loans measured at acquisition date fair value, the combined allowance for loan losses was 1.12 percent of outstanding loans and 146 percent of nonaccruing loans. The allowance for loan losses was \$207 million and the accrual for off-balance sheet credit losses was \$1.8 million.

The provision for credit losses is the amount necessary to maintain the allowance for loan losses and an accrual for off-balance sheet credit risk at an amount determined by management to be appropriate based on its evaluation. The provision includes the combined charge to expense for both the allowance for loan losses and the accrual for off-balance sheet credit risk. All losses incurred from lending activities will ultimately be reflected in charge-offs against the allowance for loan losses following funds advanced against outstanding commitments. Based on an evaluation of all credit factors, including overall loan growth, the trends in nonaccruing loans, potential problem loans and net charge-offs, the Company determined that \$8.0 million provision for credit losses was appropriate for the first quarter of 2019. The Company recorded \$9.0 million provision for credit losses in the fourth quarter of 2018.

Table 20 -- Summary of Loan Loss Experience
(In thousands)

	Three Months Ended				
	Mar. 31, 2019	Dec. 31, 2018	Sept. 30, 2018	June 30, 2018	Mar. 31, 2018
Allowance for loan losses:					
Beginning balance	\$ 207,457	\$ 210,569	\$ 215,142	\$ 223,967	\$ 230,682
Loans charged off:					
Commercial	(10,468)	(12,940)	(9,602)	(13,775)	(1,563)
Commercial real estate	—	—	—	—	—
Residential mortgage	(42)	(52)	(91)	(135)	(100)
Personal	(1,265)	(1,523)	(1,380)	(1,195)	(1,227)
Total	(11,775)	(14,515)	(11,073)	(15,105)	(2,890)
Recoveries of loans previously charged off:					
Commercial	711	1,267	1,263	298	488
Commercial real estate	112	232	40	3,097	183
Residential mortgage	154	71	229	505	242
Personal	712	598	560	678	663
Total	1,689	2,168	2,092	4,578	1,576
Net loans recovered (charged off)	(10,086)	(12,347)	(8,981)	(10,527)	(1,314)
Provision for loan losses	7,969	9,235	4,408	1,702	(5,401)
Ending balance	\$ 205,340	\$ 207,457	\$ 210,569	\$ 215,142	\$ 223,967
Accrual for off-balance sheet credit losses:					
Beginning balance	\$ 1,790	\$ 2,025	\$ 2,433	\$ 4,135	\$ 3,734
Provision for off-balance sheet credit losses	31	(235)	(408)	(1,702)	401
Ending balance	\$ 1,821	\$ 1,790	\$ 2,025	\$ 2,433	\$ 4,135
Total combined provision for credit losses	\$ 8,000	\$ 9,000	\$ 4,000	\$ —	\$ (5,000)
Allowance for loan losses to loans outstanding at period-end	0.94%	0.96%	1.15%	1.19%	1.29%
Net charge-offs (recoveries) (annualized) to average loans	0.19%	0.23%	0.20%	0.24%	0.03%
Total provision for credit losses (annualized) to average loans	0.15%	0.17%	0.09%	—%	(0.12)%
Recoveries to gross charge-offs	14.34%	14.94%	18.89%	30.31%	54.53%
Accrual for off-balance sheet credit losses to off-balance sheet credit commitments	0.01%	0.01%	0.02%	0.02%	0.04%
Combined allowance for credit losses to loans outstanding at period-end	0.95%	0.97%	1.16%	1.21%	1.32%

Allowance for Loan Losses

The appropriateness of the allowance for loan losses is assessed by management based on an ongoing quarterly evaluation of the probable estimated losses inherent in the portfolio. The allowance consists of specific allowances attributed to certain impaired loans, general allowances based on estimated loss rates by loan class and non-specific allowances based on general economic conditions, concentration in loans with large balances and other relevant factors.

Loans are considered to be impaired when it is probable that we will not collect all amounts due according to the original contractual terms of the loan agreement. This includes all nonaccruing loans, all loans modified in troubled debt restructurings and all government guaranteed loans repurchased from GNMA pools. A specific allowance is required when the outstanding principal balance of the loan is not supported by either the discounted cash flows expected to be received from the borrower or the fair value of collateral for collateral dependent loans. At March 31, 2019, impaired loans totaled \$339 million, including \$8.0 million with specific allowances of \$3.5 million and \$331 million with no specific allowances. At December 31, 2018, impaired loans totaled \$347 million, including \$35 million of impaired loans with specific allowances of \$8.7 million and \$312 million with no specific allowances.

General allowances for unimpaired loans are based on an estimated loss rate by loan class. Estimated loss rates for risk-graded loans are either increased or decreased based on changes in risk grading for each loan class. Estimated loss rates for both risk-graded and non-risk graded loans may be further adjusted for inherent risk identified for the given loan class which have not yet been captured in the loss rate.

The aggregate amount of general allowances for all unimpaired loans totaled \$183 million at March 31, 2019. The general allowance for unimpaired loans increased \$2 million compared to December 31, 2018, primarily due to a decrease in general allowances related to residential mortgage loans, partially offset by an increase in general allowances related to the commercial loan segment.

Nonspecific allowances are maintained for risks beyond factors specific to a particular portfolio segment or loan class. These factors include trends in the economy in our primary lending areas, concentrations in loans with large balances and other relevant factors. Nonspecific allowances totaled \$19 million at March 31, 2019, a \$1.4 million increase over December 31, 2018.

An allocation of the allowance for loan losses by portfolio segment is included in Note 4 to the Consolidated Financial Statements.

Our loan monitoring process also identified certain accruing substandard loans that possess more than the normal amount of risk due to deterioration in the financial condition of the borrower or the value of the collateral. Because the borrowers are still performing in accordance with the original terms of the loan agreements, and no loss of principal or interest is anticipated, these loans were not included in nonperforming assets. Known information does, however, cause management concern as to the borrowers' ability to comply with current repayment terms. These potential problem loans totaled \$169 million at March 31, 2019 and were primarily composed of \$81 million or 2.19 percent of energy loans, \$28 million or less than 1 percent of service sector loans, \$21 million or 2.87 percent of manufacturing sector loans and \$14 million or less than 1 percent of healthcare sector loans. Potential problem loans totaled \$215 million at December 31, 2018.

Based on regulatory guidelines, other loans especially mentioned are in compliance with the original terms of the agreement but may have a weakness that deserves management's close attention. Other loans especially mentioned totaled \$196 million at March 31, 2019 and were composed primarily of \$60 million or 1.84 percent of service sector loans, \$39 million or 1.06 percent of energy sector loans, \$34 million or 4.58 percent of manufacturing sector loans and \$21 million or 1.24 percent of wholesale/retail sector loans and \$14 million or 0.47 percent healthcare sector loans. Other loans especially mentioned totaled \$182 million at December 31, 2018.

Net Loans Charged Off

Loans are charged off against the allowance for loan losses when the loan balance or a portion of the loan balance is no longer covered by the paying capacity of the borrower based on an evaluation of available cash resources and collateral value. Internally risk graded loans are evaluated quarterly and charge-offs are taken in the quarter in which the loss is identified. Non-risk graded loans are generally charged off when payments are between 60 days and 180 days past due, depending on loan class. In addition, non-risk graded loans are generally charged-down to collateral value within 60 days of being notified of a borrower's bankruptcy filing, regardless of payment status.

BOK Financial had net charge-offs of \$10.1 million in the first quarter of 2019, compared to net charge-offs of \$12.3 million in the fourth quarter of 2018 and net charge-offs of \$1.3 million in the first quarter of 2018. The ratio of net loans charged off to average loans on an annualized basis was 0.19 percent for the first quarter of 2019, compared with 0.23 percent for the fourth quarter of 2018 and 0.03 percent for the first quarter of 2018.

Net charge-offs of commercial loans were \$10 million in the first quarter of 2019, primarily related to a single energy production borrower and a single healthcare sector borrower. Net commercial real estate loan recoveries were \$112 thousand in the first quarter of 2019. Net recoveries of residential mortgage loans were \$112 thousand and net charge-offs of personal loans were \$553 thousand for the first quarter. Personal loan net charge-offs include deposit account overdraft losses.

Nonperforming Assets

Table 21 -- Nonperforming Assets

(In thousands)

	Mar. 31, 2019	Dec. 31, 2018	Sept. 30, 2018	June 30, 2018	Mar. 31, 2018
Nonaccruing loans:					
Commercial	\$ 90,358	\$ 99,841	\$ 109,490	\$ 120,978	\$ 131,460
Commercial real estate	21,508	21,621	1,316	1,996	2,470
Residential mortgage	40,409	41,555	41,917	42,343	45,794
Personal	302	230	269	340	340
Total nonaccruing loans	152,577	163,247	152,992	165,657	180,064
Accruing renegotiated loans guaranteed by U.S. government agencies					
	91,787	86,428	83,347	75,374	74,418
Real estate and other repossessed assets	17,139	17,487	24,515	27,891	23,652
Total nonperforming assets	\$ 261,503	\$ 267,162	\$ 260,854	\$ 268,922	\$ 278,134
Total nonperforming assets excluding those guaranteed by U.S. government agencies	\$ 162,770	\$ 173,602	\$ 169,717	\$ 185,981	\$ 194,833

Nonaccruing loans by loan portfolio segment and class:

Commercial:					
Energy	\$ 35,332	\$ 47,494	\$ 54,033	\$ 65,597	\$ 89,942
Healthcare	18,768	16,538	15,704	16,125	15,342
Manufacturing	9,548	8,919	9,202	2,991	3,002
Services	9,555	8,567	4,097	4,377	2,109
Wholesale/retail	1,425	1,316	9,249	14,095	2,564
Public finance	—	—	—	—	—
Other commercial and industrial	15,730	17,007	17,205	17,793	18,501
Total commercial	90,358	99,841	109,490	120,978	131,460
Commercial real estate:					
Retail	20,159	20,279	777	1,068	264
Residential construction and land development	350	350	350	350	1,613
Multifamily	—	301	—	—	—
Office	855	—	—	275	275
Industrial	—	—	—	—	—
Other commercial real estate	144	691	189	303	318
Total commercial real estate	21,508	21,621	1,316	1,996	2,470
Residential mortgage:					
Permanent mortgage	22,937	23,951	22,855	23,105	24,578
Permanent mortgage guaranteed by U.S. government agencies	6,946	7,132	7,790	7,567	8,883
Home equity	10,526	10,472	11,272	11,671	12,333
Total residential mortgage	40,409	41,555	41,917	42,343	45,794
Personal	302	230	269	340	340
Total nonaccruing loans	\$ 152,577	\$ 163,247	\$ 152,992	\$ 165,657	\$ 180,064

Ratios:

Allowance for loan losses to nonaccruing loans ¹	141.00%	132.89%	145.02%	136.09%	130.84%
Accruing loans 90 days or more past due ¹	\$ 610	\$ 1,338	\$ 518	\$ 879	\$ 90

¹ Excludes residential mortgages guaranteed by agencies of the U.S. Government.

Nonperforming assets totaled \$262 million or 1.20 percent of outstanding loans and repossessed assets at March 31, 2019. Nonaccruing loans totaled \$153 million, accruing renegotiated residential mortgage loans totaled \$92 million and real estate and other repossessed assets totaled \$17 million. All accruing renegotiated residential mortgage loans and \$6.9 million of nonaccruing loans are guaranteed by U.S. government agencies. Excluding assets guaranteed by U.S. government agencies, nonperforming assets decreased \$11 million compared to the fourth quarter of 2018, primarily due to a decrease in nonaccruing energy loans. The Company generally retains nonperforming assets to maximize potential recovery, which may cause future nonperforming assets to decrease more slowly.

Loans are generally classified as nonaccruing when it becomes probable that we will not collect the full contractual principal and interest. As more fully discussed in Note 4 to the Consolidated Financial Statements, we may modify loans in troubled debt restructurings. Modifications may include extension of payment terms and rate concessions. We generally do not forgive principal or accrued but unpaid interest. All loans modified in troubled debt restructurings, except for residential mortgage loans guaranteed by U.S. government agencies, are currently classified as nonaccruing. We may also renew matured nonaccruing loans. All nonaccruing loans, including those renewed or modified in troubled debt restructurings, are charged off when the loan balance is no longer covered by the paying capacity of the borrower based on a quarterly evaluation of available cash resources and collateral value. Nonaccruing loans generally remain on nonaccrual status until full collection of principal and interest in accordance with the original terms, including principal previously charged off, is probable. We generally do not voluntarily modify personal loans to troubled borrowers. Personal loans modified at the direction of bankruptcy court orders are identified as troubled debt restructurings and classified as nonaccruing.

Renegotiated loans currently consist solely of accruing residential mortgage loans guaranteed by U.S. government agencies that have been modified in troubled debt restructurings. See Note 4 to the Consolidated Financial Statements for additional discussion of troubled debt restructurings. Generally, we modify residential mortgage loans primarily by reducing interest rates and extending the number of payments in accordance with U.S. government agency guidelines. Generally, no unpaid principal or interest is forgiven. Interest continues to accrue based on the modified terms of the loan. Modified loans guaranteed by U.S. government agencies under residential mortgage loan programs may be sold once they become eligible according to U.S. government agency guidelines.

A rollforward of nonperforming assets for the three months ended March 31, 2019 follows in Table 22.

Table 22 -- Rollforward of Nonperforming Assets
(In thousands)

	Three Months Ended			
	March 31, 2019			
	Nonaccruing Loans	Renegotiated Loans	Real Estate and Other Repossessed Assets	Total Nonperforming Assets
Balance, December 31, 2018	\$ 163,247	\$ 86,428	\$ 17,487	\$ 267,162
Additions	26,868	14,316	—	41,184
Payments	(22,175)	(633)	—	(22,808)
Charge-offs	(11,775)	—	—	(11,775)
Net losses and write-downs	—	—	(245)	(245)
Foreclosure of nonperforming loans	(1,032)	—	1,032	—
Foreclosure of loans guaranteed by U.S. government agencies	(680)	(2,524)	—	(3,204)
Proceeds from sales	—	(6,054)	(1,135)	(7,189)
Return to accrual status	(1,876)	—	—	(1,876)
Other, net	—	254	—	254
Balance, March 31, 2019	\$ 152,577	\$ 91,787	\$ 17,139	\$ 261,503

We foreclose on loans guaranteed by U.S. government agencies in accordance with agency guidelines. Generally these loans are not eligible for modification programs or have failed to comply with modified loan terms. Principal is guaranteed by agencies of the U.S. government, subject to limitations and credit risk is limited. These properties will be conveyed to the agencies once applicable criteria have been met.

Commercial

Nonaccruing commercial loans totaled \$90 million or 0.65 percent of total commercial loans at March 31, 2019 and \$100 million or 0.73 percent of commercial loans at December 31, 2018. There were \$20 million in newly identified nonaccruing commercial loans during the quarter, offset by \$20 million in payments and \$10 million of charge-offs of nonaccruing commercial loans during the first quarter.

Nonaccruing commercial loans at March 31, 2019 were primarily composed of \$35 million or 0.95 percent of total energy loans, \$19 million or 0.64 percent of total healthcare sector loans and \$16 million or 1.96 percent of total other commercial and industrial sector loans.

Commercial Real Estate

Nonaccruing commercial real estate loans totaled \$22 million or 0.47 percent of outstanding commercial real estate loans at March 31, 2019, compared to \$22 million or 0.45 percent of outstanding commercial real estate loans at December 31, 2018. Newly identified nonaccruing commercial real estate loans of \$855 thousand were offset by \$132 thousand of cash payments received.

Nonaccruing commercial real estate loans were primarily composed of \$20 million or 2.26 percent of loans secured by retail facilities.

Residential Mortgage and Personal

Nonaccruing residential mortgage loans totaled \$40 million or 1.84 percent of outstanding residential mortgage loans at March 31, 2019, a \$1.1 million decrease compared to December 31, 2018. Newly identified nonaccruing residential mortgage loans totaling \$4.1 million were offset by \$2.5 million of payments and \$931 thousand of foreclosures.

Nonaccruing residential mortgage loans primarily consist of non-guaranteed permanent residential mortgage loans, which totaled \$23 million or 2.09 percent of outstanding non-guaranteed permanent residential mortgage loans at March 31, 2019. Nonaccruing home equity loans totaled \$11 million or 1.17 percent of total home equity loans.

Payments of accruing residential mortgage loans and personal loans may be delinquent. The composition of residential mortgage loans and personal loans past due but still accruing is included in the following Table 23. Substantially all non-guaranteed residential loans past due 90 days or more are nonaccruing. Residential mortgage loans 30 to 59 days past due increased \$5.2 million in the first quarter to \$10 million at March 31, 2019. Residential mortgage loans 60 to 89 days past due decreased by \$550 thousand. Personal loans past due 30 to 59 days decreased by \$132 thousand and personal loans 60 to 89 days decreased \$780 thousand.

Table 23 -- Residential Mortgage and Personal Loans Past Due

(In thousands)

	March 31, 2019			December 31, 2018		
	90 Days or More	60 to 89 Days	30 to 59 Days	90 Days or More	60 to 89 Days	30 to 59 Days
Residential mortgage:						
Permanent mortgage ¹	\$ —	\$ —	\$ 5,394	\$ —	\$ 366	\$ 3,196
Home equity	—	168	4,118	59	352	1,102
Total residential mortgage	\$ —	\$ 168	\$ 9,512	59	\$ 718	\$ 4,298
Personal	\$ —	\$ 16	\$ 347	\$ 3	\$ 796	\$ 479

¹ Excludes past due residential mortgage loans guaranteed by agencies of the U.S. government.

Real Estate and Other Repossessed Assets

Real estate and other repossessed assets are assets acquired in partial or total forgiveness of loans. The assets are carried at the lower of cost as determined by fair value at the date of foreclosure or current fair value, less estimated selling costs.

Real estate and other repossessed assets totaled \$17 million at March 31, 2019, composed primarily of \$6.0 million of oil and gas properties, \$4.6 million of 1-4 family residential properties, \$3.3 million of developed commercial real estate and \$3.3 million of undeveloped land primarily zoned for commercial development. Real estate and other repossessed assets totaled \$17 million at December 31, 2018.

Liquidity and Capital

Based on the average balances for the first quarter of 2019, approximately 62 percent of our funding was provided by deposit accounts, 23 percent from borrowed funds, less than 1 percent from long-term subordinated debt and 11 percent from equity. Our funding sources, which primarily include deposits and borrowings from the Federal Home Loan Banks and other banks, provide adequate liquidity to meet our operating needs.

Subsidiary Bank

Deposits and borrowed funds are the primary sources of liquidity for BOKF, NA, the wholly owned subsidiary bank of BOK Financial. We compete for retail and commercial deposits by offering a broad range of products and services and focusing on customer convenience. Retail deposit growth is supported through personal and small business checking, online bill paying services, mobile banking services, an extensive network of branch locations and ATMs and our ExpressBank call center. Commercial deposit growth is supported by offering treasury management and lockbox services. We also acquire brokered deposits when the cost of funds is advantageous to other funding sources.

Average deposits for the first quarter of 2019 totaled \$25 billion, a decrease of \$481 million compared to the fourth quarter of 2018. Interest-bearing transaction account balances increased \$158 million and time deposits increased \$6 million. Demand deposits decreased \$661 million compared to the fourth quarter of 2018.

Table 24 - Average Deposits by Line of Business
(In thousands)

	Three Months Ended				
	Mar. 31, 2019	Dec. 31, 2018	Sept. 30, 2018	June 30, 2018	Mar. 31, 2018
Commercial Banking	\$ 8,261,543	\$ 8,393,016	\$ 8,633,204	\$ 8,379,584	\$ 8,664,452
Consumer Banking	6,544,665	6,542,188	6,580,395	6,579,635	6,538,096
Wealth Management	5,659,771	5,483,455	5,492,048	5,834,669	5,662,470
Subtotal	20,465,979	20,418,659	20,705,647	20,793,888	20,865,018
Funds Management and other	4,148,500	4,676,736	1,230,648	1,261,344	1,261,877
Total	\$ 24,614,479	\$ 25,095,395	\$ 21,936,295	\$ 22,055,232	\$ 22,126,895

Average Commercial Banking deposit balances decreased \$131 million compared to fourth quarter of 2018. Demand deposit balances decreased \$411 million and interest-bearing transaction account balances increased \$277 million. Despite the series of federal funds rate increases from the Federal Reserve, as well as modest increases in our earnings credit, commercial customers continue to retain large cash reserves primarily due to a combination of factors including uncertainty about the economic environment and potential for growth, lack of preferable liquid alternatives and a desire to minimize deposit service charges through the earnings credit. The earnings credit is a non-cash method that enables commercial customers to offset deposit service charges based on account balances. Commercial deposit balances may decrease as the economic outlook continues to improve and if short-term rates continue to move higher, enhancing their investment alternatives. As short-term rates move higher, related increases to the earnings credit rate may be appropriate, which will reduce the amount of deposits required to offset service charges.

Average Consumer Banking deposit balances increased \$2.5 million over the prior quarter. Demand deposit and time deposit balances grew by \$11 million and \$6.9 million, respectively. This growth was offset by a decrease of \$31 million in interest-bearing transaction account balances.

Average Wealth Management deposits increased \$176 million over the fourth quarter of 2018 primarily due to customers deploying funds in other off-balance sheet investment alternatives. Interest-bearing transaction account balances were up \$150 million, demand deposit balances increased \$12 million, and time deposits balances were up \$12 million.

Average time deposits for the first quarter of 2019 included \$270 million of brokered deposits, an increase of \$23 million over the fourth quarter of 2018. Average interest-bearing transaction accounts for the first quarter included \$819 million of brokered deposits, a increase of \$2.7 million over the fourth quarter of 2018.

The distribution of our period end deposit account balances among principal markets follows in Table 25.

Table 25 -- Period End Deposits by Principal Market Area

(In thousands)

	Mar. 31, 2019	Dec. 31, 2018	Sept. 30, 2018	June 30, 2018	Mar. 31, 2018
Oklahoma:					
Demand	\$ 3,432,239	\$ 3,610,593	\$ 3,564,307	\$ 3,867,934	\$ 4,201,843
Interest-bearing:					
Transaction	6,542,548	6,445,831	6,010,972	5,968,459	6,051,301
Savings	309,875	288,210	288,080	289,202	289,351
Time	1,217,371	1,118,643	1,128,810	1,207,471	1,203,534
Total interest-bearing	8,069,794	7,852,684	7,427,862	7,465,132	7,544,186
Total Oklahoma	11,502,033	11,463,277	10,992,169	11,333,066	11,746,029
Texas:					
Demand	2,966,743	3,291,433	3,357,669	3,321,980	3,019,483
Interest-bearing:					
Transaction	2,385,305	2,295,169	2,182,114	2,169,155	2,208,892
Savings	101,849	99,624	97,909	97,809	98,852
Time	419,269	423,880	453,119	445,500	475,967
Total interest-bearing	2,906,423	2,818,673	2,733,142	2,712,464	2,783,711
Total Texas	5,873,166	6,110,106	6,090,811	6,034,444	5,803,194
New Mexico:					
Demand	662,362	691,692	722,188	770,974	695,060
Interest-bearing:					
Transaction	573,203	571,347	593,760	586,593	555,414
Savings	61,497	58,194	57,794	59,415	60,596
Time	228,212	224,515	221,513	212,689	216,306
Total interest-bearing	862,912	854,056	873,067	858,697	832,316
Total New Mexico	1,525,274	1,545,748	1,595,255	1,629,671	1,527,376
Arkansas:					
Demand	31,624	36,800	36,579	39,896	35,291
Interest-bearing:					
Transaction	147,964	91,593	128,001	143,298	94,206
Savings	1,785	1,632	1,826	1,885	1,960
Time	8,321	8,726	10,214	10,771	11,878
Total interest-bearing	158,070	101,951	140,041	155,954	108,044
Total Arkansas	189,694	138,751	176,620	195,850	143,335

	Mar. 31, 2019	Dec. 31, 2018	Sept. 30, 2018	June 30, 2018	Mar. 31, 2018
Colorado:					
Demand	1,897,547	1,658,473	593,442	529,912	521,963
Interest-bearing:					
Transaction	1,844,632	1,899,203	622,520	701,362	687,785
Savings	58,919	57,289	40,308	38,176	37,232
Time	261,235	274,877	217,628	208,049	215,330
Total interest-bearing	2,164,786	2,231,369	880,456	947,587	940,347
Total Colorado	4,062,333	3,889,842	1,473,898	1,477,499	1,462,310
Arizona:					
Demand	695,238	707,402	365,878	383,627	326,581
Interest-bearing:					
Transaction	621,735	575,567	130,105	193,687	247,926
Savings	12,144	10,545	3,559	3,935	4,116
Time	44,004	43,051	23,927	22,447	21,009
Total interest-bearing	677,883	629,163	157,591	220,069	273,051
Total Arizona	1,373,121	1,336,565	523,469	603,696	599,632
Kansas/Missouri:					
Demand	410,799	418,199	423,560	459,636	505,802
Interest-bearing:					
Transaction	361,590	327,866	322,747	401,545	381,447
Savings	13,815	13,721	13,125	13,052	13,845
Time	19,977	19,688	20,635	20,805	22,230
Total interest-bearing	395,382	361,275	356,507	435,402	417,522
Total Kansas/Missouri	806,181	779,474	780,067	895,038	923,324
Total BOK Financial deposits	\$ 25,331,802	\$ 25,263,763	\$ 21,632,289	\$ 22,169,264	\$ 22,205,200

In addition to deposits, liquidity is provided primarily by federal funds purchased, securities repurchase agreements and Federal Home Loan Bank borrowings. Federal funds purchased consist primarily of unsecured, overnight funds acquired from other financial institutions. Funds are primarily purchased from bankers' banks and Federal Home Loan banks from across the country. The largest single source of wholesale federal funds purchased totaled \$490 million at March 31, 2019. Securities repurchase agreements generally mature within 90 days and are secured by certain available for sale securities. Federal Home Loan Bank borrowings are generally short-term and are secured by a blanket pledge of eligible collateral (generally unencumbered U.S. Treasury and agency mortgage-backed securities, 1-4 family residential mortgage loans, multifamily and other qualifying commercial real estate loans). Amounts borrowed from the Federal Home Loan Bank of Topeka averaged \$5.7 billion during the quarter, compared to \$6.5 billion in the fourth quarter of 2018.

At March 31, 2019, the estimated unused credit available to BOKF, NA from collateralized sources was approximately \$7.1 billion.

A summary of other borrowings for BOK Financial on a consolidated basis follows in Table 26.

Table 26 -- Borrowed Funds
(In thousands)

	Three Months Ended March 31, 2019				Three Months Ended December 31, 2018			
	Mar. 31, 2019	Average Balance During the Quarter	Rate	Maximum Outstanding At Any Month End During the Quarter	Dec. 31, 2018	Average Balance During the Quarter	Rate	Maximum Outstanding At Any Month End During the Quarter
Parent Company and Other Non-Bank Subsidiaries:								
Other borrowings	25,946	5,877	1.25%	\$ 25,946	5,207	5,254	1.06%	5,255
Subordinated debentures	275,880	275,882	5.51%	\$ 275,880	275,913	276,378	5.38%	276,141
Total parent company and other non-bank subsidiaries	301,826	281,759	5.43%		281,120	281,632	5.35%	
BOKF, NA:								
Funds purchased	1,018,117	1,622,580	2.47%	1,862,316	402,450	658,539	2.19%	488,823
Repurchase agreements	421,556	410,456	0.46%	421,556	615,961	547,029	0.36%	615,961
Other borrowings:								
Federal Home Loan Bank advances	7,300,000	7,013,333	2.67%	7,300,000	6,100,000	6,335,946	2.50%	6,100,000
GNMA repurchase liability	11,466	17,413	4.51%	19,581	15,552	15,844	4.41%	16,529
Other	3,681	3,656	5.55%	3,681	3,631	4,097	5.33%	4,187
Total other borrowings	7,315,147	7,034,402	2.67%		6,119,183	6,355,887	2.50%	
Total BOKF, NA	8,754,820	9,067,438	2.54%		7,137,594	7,561,455	2.32%	
Total other borrowed funds and subordinated debentures	\$ 9,056,646	\$ 9,349,197	2.63%		\$ 7,418,714	\$ 7,843,087	2.43%	

BOKF, NA also has a liability related to the repurchase of certain delinquent residential mortgage loans previously sold in GNMA mortgage pools. Interest is payable monthly at rates contractually due to investors.

Parent Company

At March 31, 2019, cash and interest-bearing cash and cash equivalents held by the parent company totaled \$168 million. The primary sources of liquidity for BOK Financial are cash on hand and dividends from BOKF, NA. Dividends from the bank are limited by various banking regulations to net profits, as defined, for the year plus retained profits for the two preceding years. Dividends are further restricted by minimum capital requirements. At March 31, 2019, based upon the most restrictive limitations as well as management's internal capital policy, BOKF, NA could declare up to \$67 million of dividends without regulatory approval. Dividend constraints may be alleviated through increases in retained earnings, capital issuances or changes in risk weighted assets. Future losses or increases in required regulatory capital at the bank could affect its ability to pay dividends to the parent company.

Our equity capital at March 31, 2019 was \$4.5 billion, an \$89 million increase over December 31, 2018. Net income less cash dividends paid increased equity \$77 million during the first quarter of 2019. Changes in interest rates resulted in a decrease in the accumulated other comprehensive loss to \$3.5 million at March 31, 2019, compared to \$73 million at December 31, 2018. Capital is managed to maximize long-term value to the shareholders. Factors considered in managing capital include projections of future earnings including expected benefits from lower federal income tax rates, asset growth and acquisition strategies, and regulatory and debt covenant requirements. Capital management may include subordinated debt or perpetual preferred stock issuance, share repurchase and stock and cash dividends.

On October 27, 2015, the board of directors authorized the Company to purchase up to five million common shares, subject to market conditions, securities law and other regulatory compliance limitations. As of March 31, 2019, a cumulative total of 4,280,692 shares have been repurchased under this authorization. The Company repurchased 705,609 shares in the first quarter of 2019 at an average price of \$85.85. The Company repurchased 525,000 shares in the fourth quarter of 2018 at an average price of \$85.82 per share.

BOK Financial and BOKF, NA are subject to various capital requirements administered by federal agencies. Failure to meet minimum capital requirements can result in certain mandatory and possibly additional discretionary actions by regulators that could have a material impact on operations. These capital requirements include quantitative measures of assets, liabilities and off-balance sheet items. The capital standards are also subject to qualitative judgments by the regulators.

A summary of minimum capital requirements, including capital conservation buffer follows in Table 27. A bank which falls below these levels, including the capital conservation buffer, would be subject to regulatory restrictions on capital distributions (including but not limited to dividends and share repurchases) and executive bonus payments.

The capital ratios for BOK Financial on a consolidated basis are presented in Table 27.

Table 27 -- Capital Ratios

	Minimum Capital Requirement	Capital Conservation Buffer	Minimum Capital Requirement Including Capital Conservation Buffer	Mar. 31, 2019	Dec. 31, 2018	Mar. 31, 2018
Risk-based capital:						
Common equity Tier 1	4.50%	2.50%	7.00%	10.71%	10.92%	12.06%
Tier 1 capital	6.00%	2.50%	8.50%	10.71%	10.92%	12.06%
Total capital	8.00%	2.50%	10.50%	12.24%	12.50%	13.49%
Tier 1 Leverage	4.00%	N/A	4.00%	8.76%	8.96%	9.40%
Average total equity to average assets						
				11.29%	11.31%	10.31%
Tangible common equity ratio						
				8.64%	8.82%	9.18%

Capital resources of financial institutions are also regularly measured by the tangible common shareholders' equity ratio. Tangible common shareholders' equity is shareholders' equity as defined by generally accepted accounting principles in the United States of America ("GAAP") less intangible assets and equity which does not benefit common shareholders. Equity that does not benefit common shareholders includes preferred equity. This non-GAAP measure is a valuable indicator of a financial institution's capital strength since it eliminates intangible assets from shareholders' equity and retains the effect of unrealized losses on securities and other components of accumulated other comprehensive income in shareholders' equity.

Table 28 provides a reconciliation of the non-GAAP measures with financial measures defined by GAAP.

Table 28 -- Non-GAAP Measure

(Dollars in thousands)

	Mar. 31, 2019	Dec. 31, 2018	Sept. 30, 2018	June 30, 2018	Mar. 31, 2018
Tangible common equity ratio:					
Total shareholders' equity	\$ 4,522,873	\$ 4,432,109	\$ 3,615,032	\$ 3,553,431	\$ 3,495,029
Less: Goodwill and intangible assets, net	1,177,573	1,184,112	480,800	481,366	477,088
Tangible common equity	3,345,300	3,247,997	3,134,232	3,072,065	3,017,941
Total assets	39,882,962	38,020,504	33,289,864	33,833,107	33,361,492
Less: Goodwill and intangible assets, net	1,177,573	1,184,112	480,800	481,366	477,088
Tangible assets	\$ 38,705,389	\$ 36,836,392	\$ 32,809,064	\$ 33,351,741	\$ 32,884,404
Tangible common equity ratio	8.64%	8.82%	9.55%	9.21%	9.18%

Off-Balance Sheet Arrangements

See Note 7 to the Consolidated Financial Statements for a discussion of the Company's significant off-balance sheet commitments.

Market Risk

Market risk is a broad term for the risk of economic loss due to adverse changes in the fair value of a financial instrument. These changes may be the result of various factors, including interest rates, foreign exchange rates, commodity prices or equity prices. Financial instruments that are subject to market risk can be classified either as held for trading or held for purposes other than trading. Market risk excludes changes in fair value due to credit of the individual issuers of financial instruments.

BOK Financial is subject to market risk primarily through the effect of changes in interest rates on both its assets held for purposes other than trading and trading assets. The effects of other changes, such as foreign exchange rates, commodity prices or equity prices do not pose significant market risk to BOK Financial. BOK Financial has no material investments in assets that are affected by changes in foreign exchange rates or equity prices. Energy and agricultural product derivative contracts, which are affected by changes in commodity prices, are matched against offsetting contracts as previously discussed.

The Asset/Liability Committee is responsible for managing market risk in accordance with policy limits established by the Board of Directors. The Committee monitors projected variation in net interest revenue, net income and economic value of equity due to specified changes in interest rates. These limits also set maximum levels for short-term borrowings, short-term assets, public funds and brokered deposits and establish minimum levels for unpledged assets, among other things. Further, the Board approved market risk limits for fixed income trading, mortgage pipeline and mortgage servicing assets inclusive of economic hedge benefits. Exposure is measured daily and compliance is reviewed monthly. Deviations from the Board approved limits, which periodically occur throughout the reporting period, may require management to develop and execute plans to reduce exposure. These plans are subject to escalation to and approval by the Board.

The simulations used to manage market risk are based on numerous assumptions regarding the effects of changes in interest rates on the timing and extent of repricing characteristics, future cash flows and customer behavior. These assumptions are inherently uncertain and, as a result, models cannot precisely estimate or precisely predict the impact of higher or lower interest rates. Actual results will differ from simulated results due to timing, magnitude and frequency of interest rate changes, market conditions and management strategies, among other factors.

Interest Rate Risk – Other than Trading

As previously noted in the Net Interest Revenue section of this report, management has implemented strategies to manage the Company's balance sheet to have relatively limited exposure to changes in interest rates over a twelve-month period. The effectiveness of these strategies in managing the overall interest rate risk is evaluated through the use of an asset/liability model. BOK Financial performs a sensitivity analysis to identify more dynamic interest rate risk exposures, including embedded option positions, on net interest revenue. A simulation model is used to estimate the effect of changes in interest rates on our performance across multiple interest rate scenarios. Our current internal policy limit for net interest revenue variation due to a 200 basis point parallel change in market interest rates over twelve months is a maximum decline of 5%. The results of a 200 basis point decrease in interest rates in the current low-rate environment are not meaningful. Until such time as it becomes meaningful, we will instead report the effect of a 100 basis point decrease in interest rates.

The Company's primary interest rate exposures include the Federal Funds rate, which affects short-term borrowings, and the prime lending rate and LIBOR, which are the basis for much of the variable rate loan pricing. Additionally, residential mortgage rates directly affect the prepayment speeds for residential mortgage-backed securities and mortgage servicing rights. Derivative financial instruments and other financial instruments used for purposes other than trading are included in this simulation. In addition, the impact on the level and composition of demand deposit accounts and other core deposit balances resulting from a significant increase in short-term market interest rates and the overall interest rate environment is likely to be material. The simulation incorporates assumptions regarding the effects of such changes based on a combination of historical analysis and expected behavior. The impact of planned growth and new business activities is factored into the simulation model.

Table 29 -- Interest Rate Sensitivity
(Dollars in thousands)

	200 bp Increase		100 bp Decrease ¹	
	March 31,		March 31,	
	2019	2018	2019	2018
Anticipated impact over the next twelve months on net interest revenue	\$ (4,451)	\$ (1,846)	\$ 42,977	\$ (36,571)
	(0.38)%	(0.20)%	(3.70)%	(3.87)%

¹ The results of a 200 basis point decrease in interest rates in the low-rate environment are not meaningful, therefore we will instead report the effect of a 100 basis point decrease in interest rates.

BOK Financial is also subjected to market risk through changes in the fair value of mortgage servicing rights. Changes in the fair value of mortgage servicing rights are highly dependent on changes in primary mortgage rates offered to borrowers, intermediate-term interest rates that affect the value of custodial funds, and assumptions about servicing revenues, servicing costs and discount rates. As primary mortgage rates increase, prepayment speeds slow and the value of our mortgage servicing rights increases. As primary mortgage rates fall, prepayment speeds increase and the value of our mortgage servicing rights decreases.

We maintain a portfolio of financial instruments, which may include debt securities issued by the U.S. government or its agencies and interest rate derivative contracts, held as an economic hedge of the changes in the fair value of our mortgage servicing rights. Composition of this portfolio will change based on our assessment of market risk. Changes in the fair value of residential mortgage-backed securities are highly dependent on changes in secondary mortgage rates required by investors, and interest rate derivative contracts are highly dependent on changes in other market interest rates. While primary and secondary mortgage rates generally move in the same direction, the spread between them may widen and narrow due to market conditions and government intervention. Changes in the forward-looking spread between the primary and secondary rates can cause significant earnings volatility.

Management performs a stress test to measure market risk due to changes in interest rates inherent in its MSR portfolio and hedges. The stress test shocks applicable interest rates up and down 50 basis points and calculates an estimated change in fair value, net of economic hedging activity, that may result. The Board has approved a \$20 million market risk limit for mortgage servicing rights, net of economic hedges.

Table 30 -- MSR Asset and Hedge Sensitivity Analysis
(Dollars in thousands)

	March 31,			
	2019		2018	
	Up 50 bp	Down 50 bp	Up 50 bp	Down 50 bp
MSR Asset	\$ 25,936	\$ (33,750)	\$ 23,504	\$ (26,145)
MSR Hedge	(31,698)	26,211	(24,994)	22,132
Net Exposure	(5,762)	(7,539)	(1,490)	(4,013)

Trading Activities

The Company bears market risk by originating residential mortgages held for sale ("RMHFS"). RMHFS are generally outstanding for 60 to 90 days, which represents the typical period from commitment to originate a loan to sale of the closed loan to an investor. Primary mortgage interest rate changes during this period affect the value of RMHFS commitments and loans. We use forward sale contracts to mitigate market risk on all closed mortgage loans held for sale and on an estimate of mortgage loan commitments that are expected to result in closed loans.

A variety of methods are used to monitor market risk of mortgage origination activities. These methods include daily marking of all positions to market value, independent verification of inventory pricing, and revenue sensitivity limits.

Management performs a stress test to measure market risk due to changes in interest rates inherent in the mortgage production pipeline. The stress test shocks applicable interest rates up and down 50 basis points and calculates an estimated change in fair

value, net of economic hedging activity that may result. The Board has approved a \$7 million market risk limit for the mortgage production pipeline, net of forward sale contracts.

Table 31 -- Mortgage Pipeline Sensitivity Analysis

(Dollars in thousands)

	Three Months Ended March 31,			
	2019		2018	
	Up 50 bp	Down 50 bp	Up 50 bp	Down 50 bp
Average ¹	\$ 29	\$ (810)	\$ 185	\$ (619)
Low ²	436	(344)	942	699
High ³	(405)	(1,343)	(1,015)	(1,504)
Period End	127	(1,013)	390	(1,201)

¹ Average represents the simple average of each daily value observed during the reporting period.

² Low represents least risk of loss in fair value measured as the smallest negative value or the largest positive value observed daily during the reporting period.

³ High represents the greatest risk of loss in fair value measured as the largest negative value or the smallest positive value observed daily during the reporting period.

BOK Financial engages in trading activities both as an intermediary for customers and for its own account. As an intermediary, we take positions in securities, generally residential mortgage-backed securities, government agency securities and municipal bonds. These securities are purchased for resale to customers, which include individuals, corporations, foundations and financial institutions. On a limited basis, we may also take trading positions in U.S. Treasury securities, residential mortgage-backed securities, and municipal bonds to enhance returns on securities portfolios. Both of these activities involve interest rate, liquidity and price risk. BOK Financial has an insignificant exposure to foreign exchange risk and does not take positions in commodity derivatives.

A variety of methods are used to monitor the interest rate risk of trading activities. These methods include daily marking of all positions to market value, independent verification of inventory pricing, and position limits for each trading activity. Economic hedges in either the futures or cash markets may be used to reduce the risk associated with some trading programs.

Management performs a stress test to measure market risk from changes in interest rates on its trading portfolio. The stress test shocks applicable interest rates up and down 50 basis points and calculates an estimated change in fair value, net of economic hedging activity that may result. The Board has approved an \$8 million market risk limit for the trading portfolio, net of economic hedges.

Table 32 -- Trading Sensitivity Analysis

(Dollars in thousands)

	Three Months Ended March 31,			
	2019		2018	
	Up 50 bp	Down 50 bp	Up 50 bp	Down 50 bp
Average ¹	\$ (1,707)	\$ 1,577	\$ (563)	\$ 358
Low ²	857	3,440	849	2,321
High ³	(3,665)	(729)	(2,808)	(1,206)
Period End	127	(1,013)	579	(841)

¹ Average represents the simple average of each daily value observed during the reporting period.

² Low represents least risk of loss in fair value measured as the smallest negative value or the largest positive value observed daily during the reporting period.

³ High represents the greatest risk of loss in fair value measured as the largest negative value or the smallest positive value observed daily during the reporting period.

Controls and Procedures

As required by Rule 13a-15(b), BOK Financial's management, including the Chief Executive Officer and Chief Financial Officer, conducted an evaluation as of the end of the period covered by their report, of the effectiveness of the Company's disclosure controls and procedures as defined in Exchange Act Rule 13a-15(e). Based on that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that the disclosure controls and procedures were effective as of the end of the period covered by this report. As required by Rule 13a-15(d), BOK Financial's management, including the Chief Executive Officer and Chief Financial Officer, also conducted an evaluation of the Company's internal controls over financial reporting to determine whether any changes occurred during the quarter covered by this report that have materially affected, or are reasonably likely to materially affect, the Company's internal controls over financial reporting. Based on that evaluation, there has been no such change during the quarter covered by this report.

Forward-Looking Statements

This report contains forward-looking statements that are based on management's beliefs, assumptions, current expectations, estimates and projections about BOK Financial, the financial services industry and the economy generally. Words such as "anticipates," "believes," "estimates," "expects," "forecasts," "plans," "projects," "will," "intends," variations of such words and similar expressions are intended to identify such forward-looking statements. Management judgments relating to and discussion of the provision and allowance for credit losses, allowance for uncertain tax positions, accruals for loss contingencies and valuation of mortgage servicing rights involve judgments as to expected events and are inherently forward-looking statements. Assessments that BOK Financial's acquisitions, including its latest acquisition of CoBiz Financial, Inc., and other growth endeavors will be profitable are necessary statements of belief as to the outcome of future events based in part on information provided by others which BOK Financial has not independently verified. These statements are not guarantees of future performance and involve certain risks, uncertainties, and assumptions which are difficult to predict with regard to timing, extent, likelihood and degree of occurrence. Therefore, actual results and outcomes may materially differ from what is expected, implied or forecasted in such forward-looking statements. Internal and external factors that might cause such a difference include, but are not limited to changes in commodity prices, interest rates and interest rate relationships, inflation, demand for products and services, the degree of competition by traditional and nontraditional competitors, changes in banking regulations, tax laws, prices, levies and assessments, the impact of technological advances, and trends in customer behavior as well as their ability to repay loans. There may also be difficulties and delays in integrating CoBiz Financial Inc.'s business or fully realizing cost savings and other benefits including, but not limited to, business disruption and customer acceptance of BOK Financial Corporation's products and services. BOK Financial and its affiliates undertake no obligation to update, amend or clarify forward-looking statements, whether as a result of new information, future events, or otherwise.

Annualized, pro forma, projected and estimated numbers are used for illustrative purpose only, are not forecasts and may not reflect actual results.

In this report we may sometimes use non-GAAP Financial information. Please note that although non-GAAP financial measures provide useful insight to analysts, investors and regulators, they should not be considered in isolation or relied upon as a substitute for analysis using GAAP measures. If applicable, we provide GAAP reconciliations for non-GAAP financial measures.

Consolidated Statements of Earnings (Unaudited)

(In thousands, except share and per share data)

	Three Months Ended	
	March 31,	
	2019	2018
Interest revenue		
Loans	\$ 279,872	\$ 188,091
Residential mortgage loans held for sale	1,663	1,844
Trading securities	18,695	7,738
Investment securities	4,034	3,857
Available for sale securities	56,831	45,959
Fair value option securities	5,237	4,819
Restricted equity securities	6,345	5,117
Interest-bearing cash and cash equivalents	3,397	7,982
Total interest revenue	376,074	265,407
Interest expense		
Deposits	37,417	18,219
Borrowed funds	56,810	25,449
Subordinated debentures	3,745	2,003
Total interest expense	97,972	45,671
Net interest revenue	278,102	219,736
Provision for credit losses	8,000	(5,000)
Net interest revenue after provision for credit losses	270,102	224,736
Other operating revenue		
Brokerage and trading revenue	31,617	30,648
Transaction card revenue	20,738	20,990
Fiduciary and asset management revenue	43,358	41,832
Deposit service charges and fees	28,243	27,161
Mortgage banking revenue	23,834	26,025
Other revenue	12,762	12,958
Total fees and commissions	160,552	159,614
Other gains (losses), net	2,976	(1,292)
Gain (loss) on derivatives, net	4,667	(5,685)
Gain (loss) on fair value option securities, net	9,665	(17,564)
Change in fair value of mortgage servicing rights	(20,666)	21,206
Gain (loss) on available for sale securities, net	76	(290)
Total other operating revenue	157,270	155,989
Other operating expense		
Personnel	169,228	139,947
Business promotion	7,874	6,010
Professional fees and services	16,139	10,200
Net occupancy and equipment	29,521	24,046
Insurance	4,839	6,593
Data processing and communications	31,449	27,817
Printing, postage and supplies	4,885	4,089
Net losses and operating expenses of repossessed assets	1,996	7,705
Amortization of intangible assets	5,191	1,300
Mortgage banking costs	9,906	10,149
Other expense	6,129	6,574
Total other operating expense	287,157	244,430
Net income before taxes	140,215	136,295
Federal and state income taxes	29,950	30,948
Net income	110,265	105,347
Net income attributable to non-controlling interests	(347)	(215)
Net income attributable to BOK Financial Corporation shareholders	\$ 110,612	\$ 105,562
Earnings per share:		
Basic	\$ 1.54	\$ 1.61

Diluted	\$	1.54	\$	1.61
Average shares used in computation:				
Basic		71,387,070		64,847,334
Diluted		71,404,388		64,888,033
Dividends declared per share	\$	0.50	\$	0.45

See accompanying notes to consolidated financial statements.

Consolidated Statements of Comprehensive Income (Unaudited)

(In thousands, except share and per share data)

	Three Months Ended	
	March 31,	
	2019	2018
Net income	\$ 110,265	\$ 105,347
Other comprehensive income (loss) before income taxes:		
Net change in unrealized gain (loss)	92,739	(97,406)
Reclassification adjustments included in earnings:		
Loss (gain) on available for sale securities, net	(76)	290
Other comprehensive income (loss) before income taxes	92,663	(97,116)
Federal and state income taxes	23,609	(24,808)
Other comprehensive income (loss), net of income taxes	69,054	(72,308)
Comprehensive income	179,319	33,039
Comprehensive income attributable to non-controlling interests	(347)	(215)
Comprehensive income attributable to BOK Financial Corp. shareholders	\$ 179,666	\$ 33,254

See accompanying notes to consolidated financial statements.

Consolidated Balance Sheets

(In thousands, except share data)

	Mar. 31, 2019 (Unaudited)	Dec. 31, 2018 (Footnote 1)
Assets		
Cash and due from banks	\$ 718,297	\$ 741,749
Interest-bearing cash and cash equivalents	564,404	401,675
Trading securities	2,140,326	1,956,923
Investment securities (fair value: March 31, 2019 – \$348,488 ; December 31, 2018 – \$367,298)	331,466	355,187
Available for sale securities	9,025,198	8,857,120
Fair value option securities	707,994	283,235
Restricted equity securities	376,429	344,447
Residential mortgage loans held for sale	160,157	149,221
Loans	21,758,980	21,656,730
Allowance for loan losses	(205,340)	(207,457)
Loans, net of allowance	21,553,640	21,449,273
Premises and equipment, net	468,293	330,033
Receivables	224,887	204,960
Goodwill	1,048,091	1,049,263
Intangible assets, net	129,482	134,849
Mortgage servicing rights	238,193	259,254
Real estate and other repossessed assets, net of allowance (March 31, 2019 – \$12,586 ; December 31, 2018 – \$13,665)	17,139	17,487
Derivative contracts, net	359,223	320,929
Cash surrender value of bank-owned life insurance	384,174	381,608
Receivable on unsettled securities sales	966,455	336,400
Other assets	469,114	446,891
Total assets	\$ 39,882,962	\$ 38,020,504
Liabilities and Equity		
Liabilities:		
Noninterest-bearing demand deposits	\$ 10,096,552	\$ 10,414,592
Interest-bearing deposits:		
Transaction	12,476,977	12,206,576
Savings	559,884	529,215
Time	2,198,389	2,113,380
Total deposits	25,331,802	25,263,763
Funds purchased and repurchase agreements	1,439,673	1,018,411
Other borrowings	7,341,093	6,124,390
Subordinated debentures	275,880	275,913
Accrued interest, taxes and expense	173,434	192,826
Derivative contracts, net	299,698	362,306
Due on unsettled securities purchases	186,401	156,370
Other liabilities	303,272	183,480
Total liabilities	35,351,253	33,577,459
Shareholders' equity:		
Common stock (\$.00006 par value; 2,500,000,000 shares authorized; shares issued and outstanding: March 31, 2019 – 75,762,268 ; December 31, 2018 – 75,711,492)	5	5
Capital surplus	1,340,323	1,334,030
Retained earnings	3,447,076	3,369,654
Treasury stock (shares at cost: March 31, 2019 – 4,312,286 ; December 31, 2018 – 3,588,560)	(261,000)	(198,995)
Accumulated other comprehensive loss	(3,531)	(72,585)
Total shareholders' equity	4,522,873	4,432,109
Non-controlling interests	8,836	10,936
Total equity	4,531,709	4,443,045
Total liabilities and equity	\$ 39,882,962	\$ 38,020,504

See accompanying notes to consolidated financial statements.

Consolidated Statements of Changes in Equity (Unaudited)

(In thousands)

	Common Stock		Capital Surplus	Retained Earnings	Treasury Stock		Accumulated Other Comprehensive Income (Loss)	Total Shareholders' Equity	Non-Controlling Interests	Total Equity
	Shares	Amount			Shares	Amount				
Balance, December 31, 2017	75,148	\$ 4	\$ 1,035,895	\$ 3,048,487	9,753	\$(552,845)	\$ (36,174)	\$ 3,495,367	\$ 22,967	\$ 3,518,334
Transition adjustment of net unrealized gains on equity securities	—	—	—	2,709	—	—	(2,709)	—	—	—
Balance, December 31, 2017, Adjusted	75,148	4	1,035,895	3,051,196	9,753	(552,845)	(38,883)	3,495,367	22,967	3,518,334
Net income	—	—	—	105,562	—	—	—	105,562	(215)	105,347
Other comprehensive income	—	—	—	—	—	—	(72,308)	(72,308)	—	(72,308)
Repurchase of common stock	—	—	—	—	83	(7,584)	—	(7,584)	—	(7,584)
Share-based compensation plans:										
Stock options exercised	43	—	2,274	—	—	—	—	2,274	—	2,274
Non-vested shares awarded, net	127	—	—	—	—	—	—	—	—	—
Vesting of non-vested shares	—	—	—	—	23	(2,172)	—	(2,172)	—	(2,172)
Share-based compensation	—	—	3,073	—	—	—	—	3,073	—	3,073
Cash dividends on common stock	—	—	—	(29,183)	—	—	—	(29,183)	—	(29,183)
Capital calls and distributions, net	—	—	—	—	—	—	—	—	(439)	(439)
Balance, March 31, 2018	75,318	\$ 4	\$ 1,041,242	\$ 3,127,575	9,859	\$(562,601)	\$ (111,191)	\$ 3,495,029	\$ 22,313	\$ 3,517,342
Balance, December 31, 2018	75,711	\$ 5	\$ 1,334,030	\$ 3,369,654	3,589	\$(198,995)	\$ (72,585)	\$ 4,432,109	\$ 10,936	\$ 4,443,045
Transition adjustment - Leasing Standard	—	—	—	2,862	—	—	—	2,862	—	2,862
Balance, January 1, 2019, Adjusted	75,711	5	1,334,030	3,372,516	3,589	(198,995)	(72,585)	4,434,971	10,936	4,445,907
Net income	—	—	—	110,612	—	—	—	110,612	(347)	110,265
Other comprehensive loss	—	—	—	—	—	—	69,054	69,054	—	69,054
Repurchase of common stock	—	—	—	—	705	(60,577)	—	(60,577)	—	(60,577)
Share-based compensation plans:										
Stock options exercised	18	—	879	—	—	—	—	879	—	879
Non-vested shares awarded, net	33	—	—	—	—	—	—	—	—	—
Vesting of non-vested shares	—	—	—	—	18	(1,428)	—	(1,428)	—	(1,428)
Share-based compensation	—	—	5,414	—	—	—	—	5,414	—	5,414
Cash dividends on common stock	—	—	—	(36,052)	—	—	—	(36,052)	—	(36,052)
Capital calls and distributions, net	—	—	—	—	—	—	—	—	(1,753)	(1,753)
Balance, March 31, 2019	75,762	\$ 5	\$ 1,340,323	\$ 3,447,076	4,312	\$(261,000)	\$ (3,531)	\$ 4,522,873	\$ 8,836	\$ 4,531,709

See accompanying notes to consolidated financial statements.

Consolidated Statements of Cash Flows (Unaudited)
(in thousands)

	Three Months Ended	
	March 31,	
	2019	2018
Cash Flows From Operating Activities:		
Net income	\$ 110,265	\$ 105,347
Adjustments to reconcile net income to net cash used in operating activities:		
Provision for credit losses	8,000	(5,000)
Change in fair value of mortgage servicing rights due to market changes	20,666	(21,206)
Change in the fair value of mortgage servicing rights due to principal payments	6,583	7,995
Net unrealized losses (gains) from derivative contracts	695	2,222
Share-based compensation	5,414	3,073
Depreciation and amortization	19,412	13,561
Net amortization of securities discounts and premiums	4,339	6,555
Net losses (gains) on financial instruments and other losses (gains), net	1,872	5,593
Net gain on mortgage loans held for sale	(5,640)	(7,549)
Mortgage loans originated for sale	(510,527)	(664,958)
Proceeds from sale of mortgage loans held for sale	507,459	670,598
Capitalized mortgage servicing rights	(6,188)	(8,900)
Change in trading and fair value option securities	(608,232)	(588,588)
Change in receivables	(682,957)	(33,631)
Change in other assets	(5,074)	(4,349)
Change in accrued interest, taxes and expense	(18,220)	(8,749)
Change in other liabilities	46,147	379,649
Net cash used in operating activities	(1,105,986)	(148,337)
Cash Flows From Investing Activities:		
Proceeds from maturities or redemptions of investment securities	23,227	44,031
Proceeds from maturities or redemptions of available for sale securities	337,822	412,391
Purchases of available for sale securities	(663,193)	(518,361)
Proceeds from sales of available for sale securities	245,259	44,790
Change in amount receivable on unsettled available for sale securities transactions	31,618	72,342
Loans originated, net of principal collected	(97,656)	(180,381)
Net payments on derivative asset contracts	(33,781)	(40,537)
Proceeds from disposition of assets	70,379	44,620
Purchases of assets	(116,692)	(59,788)
Net cash used in investing activities	(203,017)	(180,893)
Cash Flows From Financing Activities:		
Net change in demand deposits, transaction deposits and savings accounts	(16,970)	76,057
Net change in time deposits	84,828	67,838
Net change in other borrowed funds	1,614,995	544,157
Net proceeds on derivative liability contracts	36,250	41,486
Net change in derivative margin accounts	(150,722)	(24,490)
Change in amount due on unsettled available for sale securities transactions	(22,923)	(56,774)
Issuance of common and treasury stock, net	(549)	102
Repurchase of common stock	(60,577)	(7,584)
Dividends paid	(36,052)	(29,183)
Net cash provided by financing activities	1,448,280	611,609
Net increase in cash and cash equivalents	139,277	282,379
Cash and cash equivalents at beginning of period	1,143,424	2,317,054
Cash and cash equivalents at end of period	\$ 1,282,701	\$ 2,599,433
Supplemental Cash Flow Information:		
Cash paid for interest	\$ 94,660	\$ 47,165
Cash paid for taxes	\$ 898	\$ 1,548

Net loans and bank premises transferred to repossessed real estate and other assets	\$	1,032	\$	2,156
Residential mortgage loans guaranteed by U.S. government agencies that became eligible for repurchase during the period	\$	22,970	\$	19,332
Conveyance of other real estate owned guaranteed by U.S. government agencies	\$	8,404	\$	11,817

See accompanying notes to consolidated financial statements.

Notes to Consolidated Financial Statements (Unaudited)

(1) Significant Accounting Policies

Basis of Presentation

The accompanying unaudited consolidated financial statements of BOK Financial Corporation (“BOK Financial” or “the Company”) have been prepared in accordance with accounting principles for interim financial information generally accepted in the United States and with the instructions to Form 10-Q and Article 10 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by generally accepted accounting principles for complete financial statements. In the opinion of management, all adjustments (consisting of normal recurring accruals) considered necessary for a fair presentation have been included.

The unaudited consolidated financial statements include accounts of BOK Financial and its subsidiaries, principally BOKF, NA (“the Bank”), BOK Financial Securities, Inc., The Milestone Group, Inc. and Cavanal Hill Investment Management Inc. Operating divisions of the Bank include Bank of Albuquerque, Bank of Arkansas, Bank of Oklahoma, Bank of Texas, BOK Financial in Colorado and Arizona, Mobank, BOK Financial Mortgage and the TransFund electronic funds network.

Certain reclassifications have been made to conform to the current period presentation.

The financial information should be read in conjunction with BOK Financial’s 2018 Form 10-K filed with the Securities and Exchange Commission, which contains audited financial statements. Amounts presented as of December 31, 2018 have been derived from the audited financial statements included in BOK Financial’s 2018 Form 10-K but do not include all of the information and footnotes required by generally accepted accounting principles for complete financial statements. Operating results for the three-month period ended March 31, 2019 are not necessarily indicative of the results that may be expected for the year ending December 31, 2019.

Newly Adopted and Pending Accounting Policies

Financial Accounting Standards Board (“FASB”)

FASB Accounting Standards Update No. 2016-02, *Leases (Topic 842)* (“ASU 2016-02”)

On February 25, 2016, the FASB issued ASU 2016-02 to increase transparency and comparability by recognizing lease assets and liabilities on the balance sheet and disclosing key information about leasing arrangements. Lessees are required to recognize an obligation for future lease payments measured on a discounted basis and a right-of-use asset. The Company adopted the new standard January 1, 2019 through a cumulative effect adjustment to retained earnings. Prior periods were not restated. BOKF elected to apply all practical expedients other than the lessee’s practical expedient to combine lease and non-lease components which would further gross up lease liability and the related right-of-use asset. The implementation of ASU 2016-02 increased the reported right-of-use asset and lease liability by \$137 million. The effect on retained earnings was immaterial.

FASB Accounting Standards Update No. 2016-13, *Financial Instruments - Credit Losses (Topic 326): Assets Measured at Amortized Cost* (“ASU 2016-13”)

On June 16, 2016, the FASB issued ASU 2016-13 to provide more timely recording of credit losses on loans and other financial assets measured at amortized cost, effective for the Company for annual reporting periods beginning after December 15, 2019, including interim periods within those fiscal years.

The Company has established a CECL implementation team to evaluate the impact to the Company’s financial statements. The CECL implementation team, overseen by the Chief Credit Officer, Chief Financial Officer, and Chief Risk Officer, has developed a project plan that incorporates input from various departments within the bank including Credit, Financial Reporting, Risk, and Information Technology among others. The Audit Committee and Credit Committee of the Board of Directors is periodically updated on project progress. Key implementation activities for 2019 include model validation and quarterly parallel runs with development of governance, control, and disclosure frameworks. The Company will adopt the standard on January 1, 2020 through a cumulative-effect adjustment to retained earnings. The impact of adoption will depend on the composition of the loan and securities portfolios as well as current and expected economic conditions at that time.

FASB Accounting Standards Update No. 2019-01, *Leases (Topic 842): Codification Improvements ("ASU 2019-01")*

On March 5, 2019, the FASB issued ASU 2019-01 which amends certain aspects of leasing standard ASU 2016-02. ASU 2019-01 provides guidance for determining fair value of the underlying asset by lessors that are not manufacturers or dealers. The ASU also requires depository and lending lessors within the scope of ASC 942 to classify principal payments received from sales-type and direct financing leases within "investing activities" on the statement of cash flows. For the two issues above, the ASU is effective for the Company for fiscal years beginning after December 15, 2019, and interim periods therein; however early adoption is permitted. Additionally, ASU 2019-01 also clarifies interim disclosure requirements during transition and is effective with the original transition requirements in Topic 842. Adoption of ASU 2019-01 is not expected to have a material impact on the Company's financial statements.

(2) Securities

Trading Securities

The fair value and net unrealized gain (loss) included in trading securities are as follows (in thousands):

	March 31, 2019		December 31, 2018	
	Fair Value	Net Unrealized Gain (Loss)	Fair Value	Net Unrealized Gain (Loss)
U.S. government agency debentures	\$ 51,576	\$ 52	\$ 63,765	\$ 254
U.S. government agency residential mortgage-backed securities	1,952,742	12,377	1,791,584	9,966
Municipal and other tax-exempt securities	50,637	225	34,507	(1)
Asset-backed securities	40,890	128	42,656	685
Other trading securities	44,481	116	24,411	65
Total trading securities	\$ 2,140,326	\$ 12,898	\$ 1,956,923	\$ 10,969

Investment Securities

The amortized cost and fair values of investment securities are as follows (in thousands):

	March 31, 2019			
	Amortized Cost	Fair Value	Gross Unrealized	
			Gain	Loss
Municipal and other tax-exempt	\$ 126,544	\$ 129,072	\$ 2,712	\$ (184)
U.S. government agency residential mortgage-backed securities	12,106	12,388	349	(67)
Other debt securities	192,816	207,028	15,091	(879)
Total investment securities	\$ 331,466	\$ 348,488	\$ 18,152	\$ (1,130)

	December 31, 2018			
	Amortized Cost	Fair Value	Gross Unrealized	
			Gain	Loss
Municipal and other tax-exempt	\$ 137,296	\$ 138,562	\$ 1,858	\$ (592)
U.S. government agency residential mortgage-backed securities	12,612	12,770	293	(135)
Other debt securities	205,279	215,966	12,257	(1,570)
Total investment securities	\$ 355,187	\$ 367,298	\$ 14,408	\$ (2,297)

The amortized cost and fair values of investment securities at March 31, 2019, by contractual maturity, are as shown in the following table (dollars in thousands):

	Less than One Year	One to Five Years	Six to Ten Years	Over Ten Years	Total	Weighted Average Maturity¹
Fixed maturity debt securities:						
Amortized cost	\$ 52,230	\$ 105,189	\$ 136,731	\$ 25,210	\$ 319,360	5.23
Fair value	52,406	108,571	149,919	25,204	336,100	
Residential mortgage-backed securities:						
Amortized cost					\$ 12,106	2
Fair value					12,388	
Total investment securities:						
Amortized cost					\$ 331,466	
Fair value					348,488	

¹ Expected maturities may differ from contractual maturities, because borrowers may have the right to call or prepay obligations with or without penalty.

² The average expected lives of residential mortgage-backed securities were 4.7 years based upon current prepayment assumptions.

Available for Sale Securities

The amortized cost and fair value of available for sale securities are as follows (in thousands):

	March 31, 2019			
	Amortized	Fair	Gross Unrealized	
	Cost	Value	Gain	Loss
U.S. Treasury	\$ 1,880	\$ 1,878	\$ —	\$ (2)
Municipal and other tax-exempt	2,365	2,447	82	—
Mortgage-backed securities:				
Residential agency	6,056,710	6,040,086	35,131	(51,755)
Residential non-agency	33,305	47,958	14,653	—
Commercial agency	2,933,046	2,932,357	17,022	(17,711)
Other debt securities	500	472	—	(28)
Total available for sale securities	\$ 9,027,806	\$ 9,025,198	\$ 66,888	\$ (69,496)

	December 31, 2018			
	Amortized	Fair	Gross Unrealized	
	Cost	Value	Gain	Loss
U.S. Treasury	\$ 496	\$ 493	\$ —	\$ (3)
Municipal and other tax-exempt	2,782	2,864	82	—
Mortgage-backed securities:				
Residential agency	5,886,323	5,804,708	16,149	(97,764)
Residential non-agency	40,948	59,736	18,788	—
Commercial agency	2,986,297	2,953,889	7,955	(40,363)
Other debt securities	35,545	35,430	12	(127)
Total available for sale securities	\$ 8,952,391	\$ 8,857,120	\$ 42,986	\$ (138,257)

The amortized cost and fair values of available for sale securities at March 31, 2019, by contractual maturity, are as shown in the following table (dollars in thousands):

	Less than One Year	One to Five Years	Six to Ten Years	Over Ten Years	Total	Weighted Average Maturity¹
Fixed maturity debt securities:						
Amortized cost	\$ 94,933	\$ 983,438	\$ 1,467,481	\$ 391,939	\$ 2,937,791	7.30
Fair value	94,398	976,737	1,473,499	392,520	2,937,154	
Residential mortgage-backed securities:						
Amortized cost					\$ 6,090,015	²
Fair value					6,088,044	
Total available-for-sale securities:						
Amortized cost					\$ 9,027,806	
Fair value					9,025,198	

¹ Expected maturities may differ from contractual maturities because borrowers may have the right to call or prepay obligations with or without penalty.

² The average expected lives of mortgage-backed securities were 4.1 years based upon current prepayment assumptions.

Sales of available for sale securities resulted in gains and losses as follows (in thousands):

	Three Months Ended March 31,	
	2019	2018
Proceeds	\$ 245,259	\$ 44,790
Gross realized gains	5,298	193
Gross realized losses	(5,222)	(483)
Related federal and state income tax expense (benefit)	19	(74)

The fair value of debt securities pledged as collateral for repurchase agreements, public trust funds on deposit and for other purposes, as required by law was \$10.3 billion at March 31, 2019 and \$9.1 billion at December 31, 2018. The secured parties do not have the right to sell or repledge these securities.

Temporarily Impaired Securities as of March 31, 2019

(in thousands):

	Number of Securities	Less Than 12 Months		12 Months or Longer		Total	
		Fair Value	Unrealized Loss	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Investment:							
Municipal and other tax-exempt	50	\$ 234	\$ 1	\$ 52,434	\$ 183	\$ 52,668	\$ 184
U.S. government agency residential mortgage-backed securities	2	—	—	5,468	67	5,468	67
Other debt securities	30	25	1	16,932	878	16,957	879
Total investment securities	82	\$ 259	\$ 2	\$ 74,834	\$ 1,128	\$ 75,093	\$ 1,130

	Number of Securities	Less Than 12 Months		12 Months or Longer		Total	
		Fair Value	Unrealized Loss	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Available for sale:							
U.S. Treasury	1	\$ —	\$ —	\$ 495	\$ 2	\$ 495	\$ 2
Mortgage-backed securities:							
Residential agency	244	300,369	1,016	3,251,359	50,739	3,551,728	51,755
Commercial agency	169	432,254	833	1,590,803	16,878	2,023,057	17,711
Other debt securities	1	—	—	472	28	472	28
Total available for sale securities	415	\$ 732,623	\$ 1,849	\$ 4,843,129	\$ 67,647	\$ 5,575,752	\$ 69,496

Temporarily Impaired Securities as of December 31, 2018

(In thousands)

	Number of Securities	Less Than 12 Months		12 Months or Longer		Total	
		Fair Value	Unrealized Loss	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Investment:							
Municipal and other tax-exempt	72	\$ 18,255	\$ 69	\$ 66,141	\$ 523	\$ 84,396	\$ 592
U.S. government agency residential mortgage-backed securities	2	—	—	5,633	135	5,633	135
Other debt securities	72	13,372	64	23,028	1,506	36,400	1,570
Total investment securities	146	\$ 31,627	\$ 133	\$ 94,802	\$ 2,164	\$ 126,429	\$ 2,297

	Number of Securities	Less Than 12 Months		12 Months or Longer		Total	
		Fair Value	Unrealized Loss	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Available for sale:							
U.S. Treasury	1	\$ —	\$ —	\$ 493	\$ 3	\$ 493	\$ 3
Mortgage-backed securities:							
Residential agency	289	510,824	1,158	3,641,370	96,606	4,152,194	97,764
Commercial agency	197	179,258	394	1,969,504	39,969	2,148,762	40,363
Other debt securities	3	9,982	63	20,436	64	30,418	127
Total available for sale securities	490	\$ 700,064	\$ 1,615	\$ 5,631,803	\$ 136,642	\$ 6,331,867	\$ 138,257

Based on evaluations of impaired securities as of March 31, 2019, the Company does not intend to sell any impaired available for sale debt securities before fair value recovers to the current amortized cost and it is more-likely-than-not that the Company will not be required to sell impaired securities before fair value recovers, which may be maturity.

(3) Derivatives

Derivative instruments may be used by the Company as part of its internal risk management programs or may be offered to customers. All derivative instruments are carried at fair value and changes in fair value are reported in earnings as they occur. Credit risk is also considered in determining fair value. Deterioration in the credit rating of customer or other counterparties reduced the fair value of asset contracts. Deterioration of our credit rating could decrease the fair value of our derivative liabilities.

When bilateral netting agreements or similar arrangements exist between the Company and its counterparties that create a single legal claim or obligation to pay or receive the net amount in settlement of the individual derivative contracts, the Company reports derivative assets and liabilities on a net by derivative contract type by counterparty basis.

Derivative contracts may require the Company to provide or receive cash margin as collateral for derivative assets and liabilities. Derivative assets and liabilities are reported net of cash margin when certain conditions are met. In addition, derivative contracts executed with customers under Customer Risk Management Programs may be secured by non-cash collateral in conjunction with a credit agreement with that customer. Access to collateral in the event of default is reasonably assured.

None of these derivative contracts have been designated as hedging instruments for accounting purposes.

Customer Risk Management Programs

BOK Financial offers programs to permit its customers to manage various risks, including fluctuations in energy, cattle and other agricultural products, interest rates and foreign exchange rates with derivative contracts. Customers may also manage interest rate risk through interest rate swaps used by borrowers to modify interest rate terms of their loans or to-be-announced securities used by mortgage banking customers to hedge their loan production. Derivative contracts are executed between the customers and BOK Financial. Offsetting contracts are executed between BOK Financial and other selected counterparties to minimize the risk of changes in commodity prices, interest rates or foreign exchange rates. The counterparty contracts are identical to customer contracts, except for a fixed pricing spread or fee paid to BOK Financial as profit and compensation for administrative costs and credit risk which is recognized over the life of the contracts and included in Other operating revenue – Brokerage and trading revenue in the Consolidated Statements of Earnings.

Internal Risk Management Programs

BOK Financial may use derivative contracts in managing its interest rate sensitivity, as part of its economic hedge of the change in the fair value of mortgage servicing rights and to mitigate the market risk of holding trading securities. Changes in the fair value of derivative instruments used in managing interest rate sensitivity and as part of the economic hedge of changes in the fair value of mortgage servicing rights are included in Other operating revenue – Gain (loss) on derivatives, net in the Consolidated Statements of Earnings. Changes in the fair value of derivative instruments used to mitigate the market risk of holding trading securities are included in Other operating revenue – Brokerage and trading revenue.

As discussed in Note 6, certain derivative contracts not designated as hedging instruments related to mortgage loan commitments and forward sales contracts are included in Residential mortgage loans held for sale on the Consolidated Balance Sheets. See Note 6 for additional discussion of notional, fair value and impact on earnings of these contracts.

The following table summarizes the fair values of derivative contracts recorded as “derivative contracts” assets and liabilities in the balance sheet at March 31, 2019 (in thousands):

	Assets					
	Notional ¹	Gross Fair Value	Netting Adjustments	Net Fair Value Before Cash Collateral	Cash Collateral	Fair Value Net of Cash Collateral
Customer risk management programs:						
Interest rate contracts						
To-be-announced residential mortgage-backed securities	\$ 11,338,256	\$ 91,727	\$ (33,983)	\$ 57,744	\$ —	\$ 57,744
Interest rate swaps	2,047,117	36,602	(8,296)	28,306	(593)	27,713
Energy contracts	1,501,876	123,485	(84,482)	39,003	(10,130)	28,873
Agricultural contracts	23,660	2,696	(64)	2,632	—	2,632
Foreign exchange contracts	224,741	223,329	—	223,329	—	223,329
Equity option contracts	86,944	3,140	—	3,140	(930)	2,210
Total customer risk management programs	15,222,594	480,979	(126,825)	354,154	(11,653)	342,501
Internal risk management programs	25,928,716	132,974	(116,252)	16,722	—	16,722
Total derivative contracts	\$ 41,151,310	\$ 613,953	\$ (243,077)	\$ 370,876	\$ (11,653)	\$ 359,223

	Liabilities					
	Notional ¹	Gross Fair Value	Netting Adjustments	Net Fair Value Before Cash Collateral	Cash Collateral	Fair Value Net of Cash Collateral
Customer risk management programs:						
Interest rate contracts						
To-be-announced residential mortgage-backed securities	\$ 11,140,756	\$ 89,929	\$ (33,983)	\$ 55,946	\$ (55,879)	\$ 67
Interest rate swaps	2,047,117	36,644	(8,296)	28,348	(14,345)	14,003
Energy contracts	1,433,137	119,097	(84,482)	34,615	(4,608)	30,007
Agricultural contracts	23,636	2,662	(64)	2,598	—	2,598
Foreign exchange contracts	219,893	218,400	—	218,400	(414)	217,986
Equity option contracts	86,944	3,140	—	3,140	—	3,140
Total customer risk management programs	14,951,483	469,872	(126,825)	343,047	(75,246)	267,801
Internal risk management programs	27,041,772	151,686	(116,252)	35,434	(3,537)	31,897
Total derivative contracts	\$ 41,993,255	\$ 621,558	\$ (243,077)	\$ 378,481	\$ (78,783)	\$ 299,698

¹ Notional amounts for commodity contracts are converted into dollar-equivalent amounts based on dollar prices at the inception of the contract.

The following table summarizes the fair values of derivative contracts recorded as “derivative contracts” assets and liabilities in the balance sheet at December 31, 2018 (in thousands):

	Assets					
	Notional ¹	Gross Fair Value	Netting Adjustments	Net Fair Value Before Cash Collateral	Cash Collateral	Fair Value Net of Cash Collateral
Customer risk management programs:						
Interest rate contracts						
To-be-announced residential mortgage-backed securities	\$ 10,671,151	\$ 92,231	\$ (26,787)	\$ 65,444	\$ —	\$ 65,444
Interest rate swaps	1,924,131	36,112	(6,688)	29,424	(7,934)	21,490
Energy contracts	1,472,209	206,418	(60,983)	145,435	(106,752)	38,683
Agricultural contracts	21,210	842	(201)	641	—	641
Foreign exchange contracts	184,990	183,759	—	183,759	—	183,759
Equity option contracts	89,085	2,021	—	2,021	(648)	1,373
Total customer risk management programs	14,362,776	521,383	(94,659)	426,724	(115,334)	311,390
Internal risk management programs	15,909,988	50,410	(40,871)	9,539	—	9,539
Total derivative contracts	\$ 30,272,764	\$ 571,793	\$ (135,530)	\$ 436,263	\$ (115,334)	\$ 320,929

	Liabilities					
	Notional ¹	Gross Fair Value	Netting Adjustments	Net Fair Value Before Cash Collateral	Cash Collateral	Fair Value Net of Cash Collateral
Customer risk management programs:						
Interest rate contracts						
To-be-announced residential mortgage-backed securities	\$ 10,558,151	\$ 90,388	\$ (26,787)	\$ 63,601	\$ (63,596)	\$ 5
Interest rate swaps	1,924,131	36,288	(6,688)	29,600	(4,110)	25,490
Energy contracts	1,434,247	202,494	(60,983)	141,511	(1,490)	140,021
Agricultural contracts	21,214	812	(201)	611	—	611
Foreign exchange contracts	177,423	175,922	—	175,922	—	175,922
Equity option contracts	89,085	2,021	—	2,021	—	2,021
Total customer risk management programs	14,204,251	507,925	(94,659)	413,266	(69,196)	344,070
Internal risk management programs	19,634,642	66,422	(40,871)	25,551	(7,315)	18,236
Total derivative contracts	\$ 33,838,893	\$ 574,347	\$ (135,530)	\$ 438,817	\$ (76,511)	\$ 362,306

¹ Notional amounts for commodity contracts are converted into dollar-equivalent amounts based on dollar prices at the inception of the contract.

The following summarizes the pre-tax net gains (losses) on derivative instruments and where they are recorded in the income statement (in thousands):

	Three Months Ended			
	March 31, 2019		March 31, 2018	
	Brokerage and Trading Revenue	Gain (Loss) on Derivatives, Net	Brokerage and Trading Revenue	Gain (Loss) on Derivatives, Net
Customer risk management programs:				
Interest rate contracts				
To-be-announced residential mortgage-backed securities	\$ 5,700	\$ —	\$ 6,819	\$ —
Interest rate swaps	593	—	756	—
Energy contracts	226	—	3,140	—
Agricultural contracts	4	—	15	—
Foreign exchange contracts	154	—	176	—
Equity option contracts	—	—	—	—
Total customer risk management programs	6,677	—	10,906	—
Internal risk management programs	(7,295)	4,667	(1,883)	(5,685)
Total derivative contracts	\$ (618)	\$ 4,667	\$ 9,023	\$ (5,685)

(4) Loans and Allowances for Credit Losses

Loans

Loans are either secured or unsecured based on the type of loan and the financial condition of the borrower. Repayment is generally expected from cash flow or proceeds from the sale of selected assets of the borrower. BOK Financial is exposed to risk of loss on loans due to the borrower's difficulties, which may arise from any number of factors, including problems within the respective industry or local economic conditions. Access to collateral, in the event of borrower default, is reasonably assured through adherence to applicable lending laws and through sound lending standards and credit review procedures. Accounting policies for all loans, excluding residential mortgage loans guaranteed by U.S. government agencies, are as follows.

Interest is accrued at the applicable interest rate on the principal amount outstanding. Loans are placed on nonaccruing status when, in the opinion of management, full collection of principal or interest is uncertain. Internally risk graded loans are individually evaluated for nonaccruing status quarterly. Non-risk graded loans are generally placed on nonaccruing status when more than 90 days past due or within 60 days of being notified of the borrower's bankruptcy filing. Interest previously accrued but not collected is charged against interest income when the loan is placed on nonaccruing status. Payments on nonaccruing loans are applied to principal or recognized as interest income, according to management's judgment as to the collectability of principal. Loans may be returned to accruing status when, in the opinion of management, full collection of principal and interest, including principal previously charged off, is probable based on improvements in the borrower's financial condition or a sustained period of performance.

Loans to borrowers experiencing financial difficulties may be modified in troubled debt restructurings ("TDRs"). All TDRs are classified as nonaccruing, excluding loans guaranteed by U.S. government agencies. Modifications generally consist of extension of payment terms or interest rate concessions and may result either voluntarily through negotiations with the borrower or involuntarily through court order. Generally, principal and accrued but unpaid interest is not voluntarily forgiven.

Performing loans may be renewed under the current collateral value, debt service ratio and other underwriting standards. Nonaccruing loans may be renewed and will remain classified as nonaccruing.

Occasionally, loans, other than residential mortgage loans, may be held for sale in order to manage credit concentration. These loans are carried at the lower of cost or fair value with gains or losses recognized in other gains (losses), net in the Statements of Earnings.

All loans are charged off when the loan balance or a portion of the loan balance is no longer supported by the paying capacity of the borrower or when the required cash flow is reduced in a TDR. The charge-off amount is determined through a quarterly evaluation of available cash resources and collateral value and charge-offs are taken in the quarter in which the loss is identified. Non-risk graded loans that are past due between 60 days and 180 days, based on the loan product type, are charged off. Loans to borrowers whose personal obligation has been discharged through Chapter 7 bankruptcy proceedings are charged off within 60 days of notice of the bankruptcy filing, regardless of payment status.

Loan origination and commitment fees and direct loan acquisition and origination costs are deferred and amortized as an adjustment to yield over the life of the loan or over the commitment period, as applicable. Amortization does not anticipate loan prepayments. Net unamortized fees are recognized in full at time of payoff.

Qualifying residential mortgage loans guaranteed by U.S. government agencies have been sold into GNMA pools. Under certain performance conditions specified in government programs, the Company may have the right, but not the obligation to repurchase loans from GNMA pools. These loans no longer qualify for sale accounting and are recognized in the Consolidated Balance Sheets. Guaranteed loans are considered impaired because we do not expect to receive all principal and interest based on the loan's contractual terms. The original principal guarantee remains; however, interest accrues at a curtailed rate as specified in the programs. The carrying value of these loans is reduced based on an estimate of the expected cash flows discounted at the original note rate plus a liquidity spread. Guaranteed loans may be modified in TDRs in accordance with U.S. government agency guidelines. Interest continues to accrue based on the modified rate. Guaranteed loans may either be resold into GNMA pools after a performance period specified by the programs or foreclosed and conveyed to the guarantors.

Loans are disaggregated into portfolio segments and further disaggregated into classes. The portfolio segment is the level at which the Company develops and documents a systematic method for determining its allowance for credit losses. Classes are a further disaggregation of portfolio segments based on the risk characteristics of the loans and the Company's method for monitoring and assessing credit risk.

Portfolio segments of the loan portfolio are as follows (in thousands):

	March 31, 2019				December 31, 2018			
	Fixed Rate	Variable Rate	Non-accrual	Total	Fixed Rate	Variable Rate	Non-accrual	Total
Commercial	\$ 3,336,747	\$ 10,534,870	\$ 90,358	\$ 13,961,975	\$ 2,251,188	\$ 11,285,049	\$ 99,841	\$ 13,636,078
Commercial real estate	1,004,692	3,574,451	21,508	4,600,651	1,477,274	3,265,918	21,621	4,764,813
Residential mortgage	1,777,510	374,701	40,409	2,192,620	1,830,224	358,254	41,555	2,230,033
Personal	160,472	842,960	302	1,003,734	190,687	834,889	230	1,025,806
Total	\$ 6,279,421	\$ 15,326,982	\$ 152,577	\$ 21,758,980	\$ 5,749,373	\$ 15,744,110	\$ 163,247	\$ 21,656,730
Accruing loans past due (90 days) ¹			\$ 610				\$ 1,338	

¹ Excludes residential mortgage loans guaranteed by agencies of the U.S. government

Credit Commitments

Commitments to extend credit are agreements to lend to a customer as long as there is no violation of conditions established in the contract. Commitments generally have fixed expiration dates or other termination clauses and may require payment of a fee. At March 31, 2019, outstanding commitments totaled \$12 billion. Because some commitments are expected to expire before being drawn upon, the total commitment amounts do not necessarily represent future cash requirements. BOK Financial uses the same credit policies in making commitments as it does loans.

The amount of collateral obtained, if deemed necessary, is based upon management's credit evaluation of the borrower.

Standby letters of credit are conditional commitments issued to guarantee the performance of a customer to a third party. Because the credit risk involved in issuing standby letters of credit is essentially the same as that involved in extending loan commitments, BOK Financial uses the same credit policies in evaluating the creditworthiness of the customer. Additionally, BOK Financial uses the same evaluation process in obtaining collateral on standby letters of credit as it does for loan commitments. The term of these standby letters of credit is defined in each commitment and typically corresponds with the underlying loan commitment. At March 31, 2019, outstanding standby letters of credit totaled \$720 million.

Allowances for Credit Losses

BOK Financial maintains an allowance for loan losses and an accrual for off-balance sheet credit risk. The accrual for off-balance sheet credit risk is maintained at a level that is appropriate to cover estimated losses associated with credit instruments that are not currently recognized as assets such as loan commitments, standby letters of credit or guarantees. As discussed in greater detail in Note 6, the Company also has separate accruals for off-balance sheet credit risk related to residential mortgage loans previously sold with full or partial recourse and for residential mortgage loans sold to government sponsored agencies under standard representations and warranties.

The appropriateness of the allowance for loan losses and accrual for off-balance sheet credit losses (collectively "allowance for credit losses") is assessed by management based on an ongoing quarterly evaluation of the probable estimated losses inherent in the portfolio, including probable losses on both outstanding loans and unused commitments.

The allowance for loan losses consists of specific allowances attributed to impaired loans that have not yet been charged down to amounts we expect to recover, general allowances for unimpaired loans based on estimated loss rates by loan class and nonspecific allowances based on general economic conditions, risk concentration and related factors. There have been no material changes in the approach or techniques utilized in developing the allowance for loan losses and the accrual for off-balance sheet credit losses for the three months ended March 31, 2019.

Loans are considered to be impaired when it becomes probable that BOK Financial will be unable to collect all amounts due according to the contractual terms of the loan agreements. Internally risk graded loans are evaluated individually for impairment. Substantially all commercial and commercial real estate loans and certain residential mortgage and consumer loans are risk graded based on evaluation of the borrowers' ability to repay. Certain commercial loans and most residential mortgage and consumer loans are small balance, homogeneous pools of loans that are not risk graded. Non-risk graded loans are identified as impaired based on performance status. Generally, non-risk graded loans 90 days or more past due or modified in a TDR or in bankruptcy are considered to be impaired.

Specific allowances for impaired loans are measured by an evaluation of estimated future cash flows discounted at the loans' initial effective interest rate or the fair value of collateral for certain collateral dependent loans. Collateral value of real property is generally based on third party appraisals that conform to Uniform Standards of Professional Appraisal Practice, less estimated selling costs. Appraised values are on an "as-is" basis and are generally not adjusted by the Company. Updated appraisals are obtained at least annually or more frequently if market conditions indicate collateral values have declined. Collateral value of mineral rights is generally determined by our internal staff of engineers based on projected cash flows under current market conditions. Collateral values and available cash resources that support impaired loans are evaluated quarterly. Historical statistics may be used as a practical way to estimate impairment in limited situations, such as when a collateral dependent loan is identified as impaired at the end of a reporting period, until an updated appraisal of collateral value is received or a full assessment of future cash flows is completed. Estimates of future cash flows and collateral values require significant judgments and may be volatile.

General allowances for unimpaired loans are based on estimated loss rates by loan class. The gross loss rate for each loan class is determined by the greater of the current gross loss rate based on the most recent twelve months or a ten-year gross loss rate. Recoveries are not directly considered in the estimation of loss rates. Recoveries generally do not follow predictable patterns and are not received until well after the charge-off date as a result of protracted legal actions. For risk graded loans, gross loss rates are adjusted for changes in risk grading. For each loan class, the current weighted average risk grade is compared to the long-term average risk grade. This comparison determines whether credit risk in each loan class is increasing or decreasing. Loss rates are adjusted upward or downward in proportion to changes in average risk grading. General allowances for unimpaired loans also consider inherent risks identified for each loan class. Inherent risks consider loss rates that most appropriately represent the current credit cycle and other factors attributable to specific loan classes which have not yet been represented in the gross loss rates or risk grading. These factors include changes in commodity prices or engineering imprecision, which may affect the value of reserves that secure our energy loan portfolio, construction risk that may affect commercial real estate loans, changes in regulations and public policy that may disproportionately impact health care loans and changes in loan products.

Nonspecific allowances are maintained for risks beyond factors specific to a particular loan or loan class. These factors include trends in the economy of our primary lending areas, concentrations in large balance loans and other relevant factors.

An accrual for off-balance sheet credit losses is included in Other liabilities in the Consolidated Balance Sheets. The appropriateness of this accrual is determined in the same manner as the allowance for loan losses.

A provision for credit losses is charged against or credited to earnings in amounts necessary to maintain an appropriate allowance for credit losses. Recoveries of loans previously charged off are added to the allowance when received.

The activity in the allowance for loan losses and the allowance for off-balance sheet credit losses related to loan commitments and standby letters of credit for the three months ended March 31, 2019 is summarized as follows (in thousands):

	<u>Commercial</u>	<u>Commercial Real Estate</u>	<u>Residential Mortgage</u>	<u>Personal</u>	<u>Nonspecific Allowance</u>	<u>Total</u>
Allowance for loan losses:						
Beginning balance	\$ 102,226	\$ 60,026	\$ 17,964	\$ 9,473	\$ 17,768	\$ 207,457
Provision for loan losses	11,108	(2,004)	(2,408)	(137)	1,410	7,969
Loans charged off	(10,468)	—	(42)	(1,265)	—	(11,775)
Recoveries	711	112	154	712	—	1,689
Ending balance	\$ 103,577	\$ 58,134	\$ 15,668	\$ 8,783	\$ 19,178	\$ 205,340
Allowance for off-balance sheet credit losses:						
Beginning balance	\$ 1,655	\$ 52	\$ 52	\$ 31	\$ —	\$ 1,790
Provision for off-balance sheet credit losses	70	(4)	(5)	(30)	—	31
Ending balance	\$ 1,725	\$ 48	\$ 47	\$ 1	\$ —	\$ 1,821
Total provision for credit losses	\$ 11,178	\$ (2,008)	\$ (2,413)	\$ (167)	\$ 1,410	\$ 8,000

The activity in the allowance for loan losses and the allowance for off-balance sheet credit losses related to loan commitments and standby letters of credit for the three months ended March 31, 2018 is summarized as follows (in thousands):

	<u>Commercial</u>	<u>Commercial Real Estate</u>	<u>Residential Mortgage</u>	<u>Personal</u>	<u>Nonspecific Allowance</u>	<u>Total</u>
Allowance for loan losses:						
Beginning balance	\$ 124,269	\$ 56,621	\$ 18,451	\$ 9,124	\$ 22,217	\$ 230,682
Provision for loan losses	(3,111)	266	(162)	(152)	(2,242)	(5,401)
Loans charged off	(1,563)	—	(100)	(1,227)	—	(2,890)
Recoveries	488	183	242	663	—	1,576
Ending balance	\$ 120,083	\$ 57,070	\$ 18,431	\$ 8,408	\$ 19,975	\$ 223,967
Allowance for off-balance sheet credit losses:						
Beginning balance	\$ 3,644	\$ 45	\$ 43	\$ 2	\$ —	\$ 3,734
Provision for off-balance sheet credit losses	383	(1)	19	—	—	401
Ending balance	\$ 4,027	\$ 44	\$ 62	\$ 2	\$ —	\$ 4,135
Total provision for credit losses	\$ (2,728)	\$ 265	\$ (143)	\$ (152)	\$ (2,242)	\$ (5,000)

The allowance for loan losses and recorded investment of the related loans by portfolio segment for each impairment measurement method at March 31, 2019 is as follows (in thousands):

	Collectively Measured for Impairment		Individually Measured for Impairment		Total	
	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance
Commercial	\$ 13,871,617	\$ 100,034	\$ 90,358	\$ 3,543	\$ 13,961,975	\$ 103,577
Commercial real estate	4,579,143	58,134	21,508	—	4,600,651	58,134
Residential mortgage	2,152,211	15,668	40,409	—	2,192,620	15,668
Personal	1,003,432	8,783	302	—	1,003,734	8,783
Total	21,606,403	182,619	152,577	3,543	21,758,980	186,162
Nonspecific allowance	—	—	—	—	—	19,178
Total	\$ 21,606,403	\$ 182,619	\$ 152,577	\$ 3,543	\$ 21,758,980	\$ 205,340

The allowance for loan losses and recorded investment of the related loans by portfolio segment for each impairment measurement method at December 31, 2018 is as follows (in thousands):

	Collectively Measured for Impairment		Individually Measured for Impairment		Total	
	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance
Commercial	\$ 13,536,237	\$ 93,494	\$ 99,841	\$ 8,732	\$ 13,636,078	\$ 102,226
Commercial real estate	4,743,192	60,026	21,621	—	4,764,813	60,026
Residential mortgage	2,188,478	17,964	41,555	—	2,230,033	17,964
Personal	1,025,576	9,473	230	—	1,025,806	9,473
Total	21,493,483	180,957	163,247	8,732	21,656,730	189,689
Nonspecific allowance	—	—	—	—	—	17,768
Total	\$ 21,493,483	\$ 180,957	\$ 163,247	\$ 8,732	\$ 21,656,730	\$ 207,457

Credit Quality Indicators

The Company utilizes loan class and risk grading as primary credit quality indicators. Substantially all commercial and commercial real estate loans and certain residential mortgage and consumer loans are risk graded based on a quarterly evaluation of the borrowers' ability to repay the loans. Certain commercial loans and most residential mortgage and consumer loans are small, homogeneous pools that are not risk graded.

The allowance for loan losses and recorded investment of the related loans by portfolio segment for risk graded and non-risk graded loans at March 31, 2019 is as follows (in thousands):

	Internally Risk Graded		Non-Graded		Total	
	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance
Commercial	\$ 13,931,425	\$ 102,646	\$ 30,550	\$ 931	\$ 13,961,975	\$ 103,577
Commercial real estate	4,600,651	58,134	—	—	4,600,651	58,134
Residential mortgage	275,875	3,176	1,916,745	12,492	2,192,620	15,668
Personal	912,343	6,627	91,391	2,156	1,003,734	8,783
Total	19,720,294	170,583	2,038,686	15,579	21,758,980	186,162
Nonspecific allowance	—	—	—	—	—	19,178
Total	\$ 19,720,294	\$ 170,583	\$ 2,038,686	\$ 15,579	\$ 21,758,980	\$ 205,340

The allowance for loan losses and recorded investment of the related loans by portfolio segment for risk graded and non-risk graded loans at December 31, 2018 is as follows (in thousands):

	Internally Risk Graded		Non-Graded		Total	
	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance
Commercial	\$ 13,586,654	\$ 101,303	\$ 49,424	\$ 923	\$ 13,636,078	\$ 102,226
Commercial real estate	4,764,813	60,026	—	—	4,764,813	60,026
Residential mortgage	505,046	3,310	1,724,987	14,654	2,230,033	17,964
Personal	948,890	6,633	76,916	2,840	1,025,806	9,473
Total	19,805,403	171,272	1,851,327	18,417	21,656,730	189,689
Nonspecific allowance	—	—	—	—	—	17,768
Total	\$ 19,805,403	\$ 171,272	\$ 1,851,327	\$ 18,417	\$ 21,656,730	\$ 207,457

Loans are considered to be performing if they are in compliance with the original terms of the agreement and currently exhibit no factors that cause management to have doubts about the borrowers' ability to remain in compliance with the original terms of the agreement, which is consistent with the regulatory guideline of "pass." Performing loans also include past due residential mortgages that are guaranteed by agencies of the U.S. government that continue to accrue interest based on criteria of the guarantors' programs. Other loans especially mentioned are currently performing in compliance with the original terms of the agreement but may have a potential weakness that deserves management's close attention, consistent with regulatory guidelines.

The risk grading process identified certain loans that have a well-defined weakness (e.g. inadequate debt service coverage or liquidity or marginal capitalization; repayment may depend on collateral or other risk mitigation) that may jeopardize liquidation of the debt and represent a greater risk due to deterioration in the financial condition of the borrower. This is consistent with the regulatory guideline for "substandard." Because the borrowers are still performing in accordance with the original terms of the loan agreements, these loans were not placed in nonaccruing status.

Nonaccruing loans represent loans for which full collection of principal and interest is uncertain. This is substantially the same criteria used to determine whether a loan is impaired and includes certain loans considered “substandard” and all loans considered “doubtful” by regulatory guidelines.

The following table summarizes the Company’s loan portfolio at March 31, 2019 by the risk grade categories (in thousands):

	Internally Risk Graded				Non-Graded		Total
	Performing				Performing	Nonaccrual	
	Pass	Other Loans Especially Mentioned	Accruing Substandard	Nonaccrual			
Commercial:							
Energy	\$ 3,549,167	\$ 39,285	\$ 81,315	\$ 35,332	\$ —	\$ —	\$ 3,705,099
Services	3,189,490	60,361	28,157	9,555	—	—	3,287,563
Wholesale/retail	1,675,248	21,100	9,127	1,425	—	—	1,706,900
Manufacturing	677,497	34,033	21,296	9,548	—	—	742,374
Healthcare	2,869,515	13,748	13,854	18,768	—	—	2,915,885
Public finance	803,083	—	—	—	—	—	803,083
Other commercial and industrial	744,082	3,190	7,580	15,669	30,489	61	801,071
Total commercial	13,508,082	171,717	161,329	90,297	30,489	61	13,961,975
Commercial real estate:							
Residential construction and land development	149,336	—	—	350	—	—	149,686
Retail	857,698	11,549	1,279	20,159	—	—	890,685
Office	1,024,892	4,219	3,192	855	—	—	1,033,158
Multifamily	1,203,220	7,136	2	—	—	—	1,210,358
Industrial	767,757	—	—	—	—	—	767,757
Other commercial real estate	546,942	1,071	850	144	—	—	549,007
Total commercial real estate	4,549,845	23,975	5,323	21,508	—	—	4,600,651
Residential mortgage:							
Permanent mortgage	272,741	—	2,225	909	800,578	22,028	1,098,481
Permanent mortgages guaranteed by U.S. government agencies	—	—	—	—	186,362	6,946	193,308
Home equity	—	—	—	—	890,305	10,526	900,831
Total residential mortgage	272,741	—	2,225	909	1,877,245	39,500	2,192,620
Personal	912,187	47	33	76	91,165	226	1,003,734
Total	\$ 19,242,855	\$ 195,739	\$ 168,910	\$ 112,790	\$ 1,998,899	\$ 39,787	\$ 21,758,980

The following table summarizes the Company's loan portfolio at December 31, 2018 by the risk grade categories (in thousands):

	Internally Risk Graded				Non-Graded		Total
	Performing				Performing	Nonaccrual	
	Pass	Other Loans Especially Mentioned	Accruing Substandard	Nonaccrual			
Commercial:							
Energy	\$ 3,414,039	\$ 42,176	\$ 86,624	\$ 47,494	\$ —	\$ —	\$ 3,590,333
Services	3,167,203	49,761	32,661	8,567	—	—	3,258,192
Wholesale/retail	1,593,902	18,809	7,131	1,316	—	—	1,621,158
Manufacturing	668,438	30,934	22,230	8,919	—	—	730,521
Healthcare	2,730,121	14,920	37,698	16,538	—	—	2,799,277
Public finance	804,550	—	—	—	—	—	804,550
Other commercial and industrial	756,815	1,266	7,588	16,954	49,371	53	832,047
Total commercial	13,135,068	157,866	193,932	99,788	49,371	53	13,636,078
Commercial real estate:							
Residential construction and land development	148,234	—	—	350	—	—	148,584
Retail	885,588	11,926	1,289	20,279	—	—	919,082
Office	1,059,334	10,532	3,054	—	—	—	1,072,920
Multifamily	1,287,471	281	12	301	—	—	1,288,065
Industrial	776,898	—	1,208	—	—	—	778,106
Other commercial real estate	555,301	1,188	876	691	—	—	558,056
Total commercial real estate	4,712,826	23,927	6,439	21,621	—	—	4,764,813
Residential mortgage:							
Permanent mortgage	269,678	52	9,730	1,991	819,199	21,960	1,122,610
Permanent mortgages guaranteed by U.S. government agencies	—	—	—	—	183,734	7,132	190,866
Home equity	223,298	—	296	—	682,491	10,472	916,557
Total residential mortgage	492,976	52	10,026	1,991	1,685,424	39,564	2,230,033
Personal	944,256	115	4,443	76	76,762	154	1,025,806
Total	\$ 19,285,126	\$ 181,960	\$ 214,840	\$ 123,476	\$ 1,811,557	\$ 39,771	\$ 21,656,730

Impaired Loans

Loans are considered to be impaired when it is probable that the Company will not be able to collect all amounts due according to the contractual terms of the loan agreement. This generally includes all nonaccruing loans, all loans modified in a TDR and all loans repurchased from GNMA pools.

A summary of impaired loans at March 31, 2019 follows (in thousands):

	As of					For the	
	March 31, 2019					Three Months Ended	
	Unpaid Principal Balance	Recorded Investment			Related Allowance	Average Recorded Investment	Interest Income Recognized
Total		With No Allowance	With Allowance				
Commercial:							
Energy	\$ 72,615	\$ 35,332	\$ 31,332	\$ 4,000	\$ 675	\$ 45,627	\$ —
Services	13,744	9,555	9,529	26	26	7,378	—
Wholesale/retail	1,642	1,425	1,142	283	101	1,047	—
Manufacturing ¹	9,697	9,548	9,307	241	241	8,851	—
Healthcare	30,189	18,768	15,270	3,498	2,500	14,926	—
Public finance	—	—	—	—	—	—	—
Other commercial and industrial	25,899	15,730	15,730	—	—	16,215	—
Total commercial	153,786	90,358	82,310	8,048	3,543	94,044	—
Commercial real estate:							
Residential construction and land development	1,306	350	350	—	—	350	—
Retail	20,491	20,159	20,159	—	—	20,219	—
Office	855	855	855	—	—	427	—
Multifamily	—	—	—	—	—	151	—
Industrial	—	—	—	—	—	—	—
Other commercial real estate	305	144	144	—	—	418	—
Total commercial real estate	22,957	21,508	21,508	—	—	21,565	—
Residential mortgage:							
Permanent mortgage	27,658	22,937	22,937	—	—	23,444	298
Permanent mortgage guaranteed by U.S. government agencies ²	198,882	193,308	193,308	—	—	196,407	1,905
Home equity	12,279	10,526	10,526	—	—	10,499	—
Total residential mortgage	238,819	226,771	226,771	—	—	230,350	2,203
Personal	358	302	302	—	—	266	—
Total	\$ 415,920	\$ 338,939	\$ 330,891	\$ 8,048	\$ 3,543	\$ 346,225	\$ 2,203

¹ Impaired manufacturing sector loans included \$4.7 million of loans from an affiliated entity, with no allowance as the fair value of the collateral exceeded the outstanding principal balance at March 31, 2019.

² All permanent mortgage loans guaranteed by U.S. government agencies are considered impaired as we do not expect full collection of contractual principal and interest. At March 31, 2019, the majority were accruing based on the guarantee by U.S. government agencies.

Generally, no interest income is recognized on impaired loans until all principal balances, including amounts charged-off, are recovered.

A summary of impaired loans at December 31, 2018 follows (in thousands):

	Unpaid Principal Balance	Recorded Investment			
		Total	With No Allowance	With Allowance	Related Allowance
Commercial:					
Energy	\$ 79,675	\$ 47,494	\$ 18,639	\$ 28,855	\$ 5,362
Services	13,437	8,567	8,489	78	74
Wholesale/retail	1,722	1,316	1,015	301	101
Manufacturing	10,055	8,919	8,673	246	246
Healthcare	24,319	16,538	10,563	5,975	2,949
Public finance	—	—	—	—	—
Other commercial and industrial	26,955	17,007	17,007	—	—
Total commercial	156,163	99,841	64,386	35,455	8,732
Commercial real estate:					
Residential construction and land development	1,306	350	350	—	—
Retail	27,680	20,279	20,279	—	—
Office	—	—	—	—	—
Multifamily	301	301	301	—	—
Industrial	—	—	—	—	—
Other commercial real estate	851	691	691	—	—
Total commercial real estate	30,138	21,621	21,621	—	—
Residential mortgage:					
Permanent mortgage	28,716	23,951	23,951	—	—
Permanent mortgage guaranteed by U.S. government agencies ¹	196,296	190,866	190,866	—	—
Home equity	12,196	10,472	10,472	—	—
Total residential mortgage	237,208	225,289	225,289	—	—
Personal					
Personal	278	230	230	—	—
Total	\$ 423,787	\$ 346,981	\$ 311,526	\$ 35,455	\$ 8,732

¹ All permanent mortgage loans guaranteed by U.S. government agencies are considered impaired as we do not expect full collection of contractual principal and interest. At December 31, 2018, the majority were accruing based on the guarantee by U.S. government agencies.

Troubled Debt Restructurings

At March 31, 2019 the Company had \$159 million in troubled debt restructurings (TDRs), of which \$92 million were accruing residential mortgage loans guaranteed by U.S. government agencies. Approximately \$81 million of TDRs were performing in accordance with the modified terms.

At December 31, 2018, the Company had \$166 million in TDRs, of which \$86 million were accruing residential mortgage loans guaranteed by U.S. government agencies. Approximately \$71 million of TDRs were performing in accordance with the modified terms.

TDRs generally consist of interest rate concessions, payment stream concessions or a combination of concessions to distressed borrowers. During the three months ended March 31, 2019, \$18 million of loans were restructured. During the three months ended March 31, 2018, \$37 million of loans were restructured.

Nonaccrual & Past Due Loans

Past due status for all loan classes is based on the actual number of days since the last payment was due according to the contractual terms of the loans.

A summary of loans currently performing, loans past due and accruing and nonaccrual loans as of March 31, 2019 is as follows (in thousands):

	Current	Past Due			Nonaccrual	Total
		30 to 59 Days	60 to 89 Days	90 Days or More		
Commercial:						
Energy	\$ 3,669,767	\$ —	\$ —	\$ —	\$ 35,332	\$ 3,705,099
Services	3,257,230	20,214	442	122	9,555	3,287,563
Wholesale/retail	1,704,415	833	227	—	1,425	1,706,900
Manufacturing	732,644	182	—	—	9,548	742,374
Healthcare	2,888,579	7,837	701	—	18,768	2,915,885
Public finance	803,083	—	—	—	—	803,083
Other commercial and industrial	782,507	2,695	—	139	15,730	801,071
Total commercial	13,838,225	31,761	1,370	261	90,358	13,961,975
Commercial real estate:						
Residential construction and land development	143,184	6,152	—	—	350	149,686
Retail	870,526	—	—	—	20,159	890,685
Office	1,032,239	—	64	—	855	1,033,158
Multifamily	1,209,726	283	—	349	—	1,210,358
Industrial	767,757	—	—	—	—	767,757
Other commercial real estate	547,563	1,187	113	—	144	549,007
Total commercial real estate	4,570,995	7,622	177	349	21,508	4,600,651
Residential mortgage:						
Permanent mortgage	1,070,150	5,394	—	—	22,937	1,098,481
Permanent mortgages guaranteed by U.S. government agencies	47,639	38,748	—	99,975	6,946	193,308
Home equity	886,019	4,118	168	—	10,526	900,831
Total residential mortgage	2,003,808	48,260	168	99,975	40,409	2,192,620
Personal	1,003,069	347	16	—	302	1,003,734
Total	\$ 21,416,097	\$ 87,990	\$ 1,731	\$ 100,585	\$ 152,577	\$ 21,758,980

A summary of loans currently performing, loans past due and accruing and nonaccrual loans as of December 31, 2018 is as follows (in thousands):

	Current	Past Due			Nonaccrual	Total
		30 to 59 Days	60 to 89 Days	90 Days or More		
Commercial:						
Energy	\$ 3,542,839	\$ —	\$ —	\$ —	\$ 47,494	\$ 3,590,333
Services	3,237,578	6,009	6,038	—	8,567	3,258,192
Wholesale/retail	1,619,290	515	37	—	1,316	1,621,158
Manufacturing	721,204	392	6	—	8,919	730,521
Healthcare	2,781,944	241	—	554	16,538	2,799,277
Public finance	804,550	—	—	—	—	804,550
Other commercial and industrial	814,489	518	25	8	17,007	832,047
Total commercial	13,521,894	7,675	6,106	562	99,841	13,636,078
Commercial real estate:						
Residential construction and land development	147,705	249	280	—	350	148,584
Retail	884,424	14,379	—	—	20,279	919,082
Office	1,072,920	—	—	—	—	1,072,920
Multifamily	1,287,483	281	—	—	301	1,288,065
Industrial	776,898	1,208	—	—	—	778,106
Other commercial real estate	556,239	412	—	714	691	558,056
Total commercial real estate	4,725,669	16,529	280	714	21,621	4,764,813
Residential mortgage:						
Permanent mortgage	1,095,097	3,196	366	—	23,951	1,122,610
Permanent mortgages guaranteed by U.S. government agencies	37,459	24,369	16,345	105,561	7,132	190,866
Home equity	904,572	1,102	352	59	10,472	916,557
Total residential mortgage	2,037,128	28,667	17,063	105,620	41,555	2,230,033
Personal	1,024,298	479	796	3	230	1,025,806
Total	\$ 21,308,989	\$ 53,350	\$ 24,245	\$ 106,899	\$ 163,247	\$ 21,656,730

(5) Leasing

Effective January 1, 2019, premises and equipment included right-of-use assets for leased office space and facilities. Leases are at market rates at inception and may contain escalations based on consumer price index or similar benchmarks and options to renew at then market rates. Renewal options, variable lease payments and residual value guarantees are included in the measurement of right-of-use assets when certain conditions are met. Lease component cash flows are discounted at the applicable FHLB advance rate.

Right-of-use assets initially recognized in the first quarter of 2019 were \$137 million.

The following represents a summary of operating lease activities (dollars in thousands):

	<u>March 31, 2019</u>
Operating lease cost recognized as occupancy and equipment expense	\$ 6,419
Operating cash flows from operating leases	5,914
Weighted-average remaining lease term	10.1 years
Weighted-average discount rate operating leases	3.50%

At March 31, 2019, un-discounted operating lease liabilities are scheduled to mature as follows: \$30.2 million in 2019, \$28.4 million in 2020, \$25.1 million in 2021, \$17.7 million in 2022, \$15.3 million in 2023 and \$97.6 million thereafter. Operating expense and short term lease costs total \$2.4 million for the three months ended March 31, 2019.

The Company may lease owned properties or sublease unoccupied leased facilities. Income on these leases is immaterial.

(6) Mortgage Banking Activities

Residential Mortgage Loan Production

The Company originates, markets and services conventional and government-sponsored residential mortgage loans. Generally, conforming fixed rate residential mortgage loans are held for sale in the secondary market and non-conforming and adjustable-rate residential mortgage loans are retained for investment. Residential mortgage loans originated for sale by the Company are carried at fair value based on sales commitments and market quotes. Changes in the fair value of mortgage loans held for sale are included in Other operating revenue – Mortgage banking revenue. Residential mortgage loans held for sale also includes the fair value of residential mortgage loan commitments and forward sales commitments, which are considered derivative contracts that have not been designated as hedging instruments for accounting purposes. The volume of mortgage loans originated for sale and secondary market prices are the primary drivers of originating and marketing revenue.

Residential mortgage loan commitments are generally outstanding for 60 to 90 days, which represents the typical period from commitment to originate a residential mortgage loan to when the closed loan is sold to an investor. Residential mortgage loan commitments are subject to both credit and interest rate risk. Credit risk is managed through underwriting policies and procedures, including collateral requirements, which are generally accepted by the secondary loan markets. Exposure to interest rate fluctuations is partially managed through forward sales of residential mortgage-backed securities and forward sales contracts. These latter contracts set the price for loans that will be delivered in the next 60 to 90 days.

The unpaid principal balance of residential mortgage loans held for sale, notional amounts of derivative contracts related to residential mortgage loan commitments and forward contract sales and their related fair values included in Mortgage loans held for sale on the Consolidated Balance Sheets were (in thousands):

	March 31, 2019		December 31, 2018	
	Unpaid Principal Balance/Notional	Fair Value	Unpaid Principal Balance/Notional	Fair Value
Residential mortgage loans held for sale	\$ 153,818	\$ 155,679	\$ 145,057	\$ 146,971
Residential mortgage loan commitments	263,434	8,091	160,848	5,378
Forward sales contracts	376,411	(3,613)	274,000	(3,128)
		\$ 160,157		\$ 149,221

No residential mortgage loans held for sale were 90 days or more past due or considered impaired as of March 31, 2019 or December 31, 2018. No credit losses were recognized on residential mortgage loans held for sale for the three month period ended March 31, 2019 and 2018.

Mortgage banking revenue was as follows (in thousands):

	Three Months Ended March 31,	
	2019	2018
Production revenue:		
Net realized gains on sale of mortgage loans	\$ 5,693	\$ 8,918
Net change in unrealized gain on mortgage loans held for sale	(53)	(1,369)
Net change in the fair value of mortgage loan commitments	2,713	2,074
Net change in the fair value of forward sales contracts	(485)	(171)
Total production revenue	7,868	9,452
Servicing revenue	15,966	16,573
Total mortgage banking revenue	\$ 23,834	\$ 26,025

Production revenue includes gain (loss) on residential mortgage loans held for sale and changes in the fair value of derivative contracts not designated as hedging instruments for accounting purposes related to residential mortgage loan commitments and forward sales contracts. Servicing revenue includes servicing fee income and late charges on loans serviced for others.

Residential Mortgage Servicing

Mortgage servicing rights may be originated or purchased. Both originated and purchased mortgage servicing rights are initially recognized at fair value. The Company has elected to carry all mortgage servicing rights at fair value. Changes in the fair value are recognized in earnings as they occur. The unpaid principal balance of loans serviced for others is the primary driver of servicing revenue.

The following represents a summary of mortgage servicing rights (dollars in thousands):

	March 31, 2019	December 31, 2018
Number of residential mortgage loans serviced for others	131,636,000	132,463,000
Outstanding principal balance of residential mortgage loans serviced for others	\$ 21,544,295	\$ 21,658,335
Weighted average interest rate	4.00%	3.99%
Remaining term (in months)	292	293

The following represents activity in capitalized mortgage servicing rights (in thousands):

	Three Months Ended March 31,	
	2019	2018
Beginning Balance	\$ 259,254	\$ 252,867
Additions, net	6,188	8,900
Change in fair value due to principal payments	(6,583)	(7,995)
Change in fair value due to market assumption changes	(20,666)	21,206
Ending Balance	\$ 238,193	\$ 274,978

Changes in the fair value of mortgage servicing rights due to market assumption changes are included in Other operating revenue in the Consolidated Statements of Earnings. Changes in fair value due to principal payments are included in Mortgage banking costs.

Mortgage servicing rights are not traded in active markets. Fair value is determined by discounting the projected net cash flows. Significant market assumptions used to determine fair value based on significant unobservable inputs were as follows:

	March 31, 2019	December 31, 2018
Discount rate – risk-free rate plus a market premium	9.83%	9.90%
Prepayment rate - based upon loan interest rate, original term and loan type	8.14% - 16.02%	8.05% - 15.74%
Loan servicing costs – annually per loan based upon loan type:		
Performing loans	\$68 - \$94	\$67 - \$93
Delinquent loans	\$150 - \$500	\$150 - \$500
Loans in foreclosure	\$1,000 - \$4,000	\$1,000 - \$4,000
Escrow earnings rate – indexed to rates paid on deposit accounts with comparable average life	2.29%	2.57%
Primary/secondary mortgage rate spread	105 bps	105 bps

Changes in primary residential mortgage interest rates directly affect the prepayment speeds used in valuing our mortgage servicing rights. A separate third party model is used to estimate prepayment speeds based on interest rates, housing turnover rates, estimated loan curtailment, anticipated defaults and other relevant factors. The prepayment model is updated periodically for changes in market conditions and adjusted to better correlate with actual performance of BOK Financial's servicing portfolio.

(7) Commitments and Contingent Liabilities

Litigation Contingencies

On June 24, 2015, BOKF, NA received a complaint alleging that an employee had colluded with a bond issuer and an individual in misusing revenues pledged to municipal bonds for which BOKF, NA served as trustee under the bond indenture. The Company conducted an investigation and concluded that employees in one of its Corporate Trust offices had, with respect to a single group of affiliated bond issuances, violated Company policies and procedures by waiving financial covenants, granting forbearances and accepting without disclosure to the bondholders, debt service payments from sources other than pledged revenues. The relationship manager was terminated. The Company reported the circumstances to, and cooperated with an investigation by, the Securities and Exchange Commission ("SEC"). On December 28, 2015, in an action brought by the SEC, the United States District Court for the District of New Jersey entered a judgment against the principals involved in issuing the bonds, precluding the principals from denying the alleged violations of the federal securities laws and requiring the principals to pay all outstanding principal, accrued interest, and other amounts required under the bond documents (now estimated to be approximately \$40 million, less the value of the facilities securing repayment of the bonds), subject to oversight by a court appointed monitor. The obligation of the principal to pay all principal and interest on the bonds is non-dischargeable in bankruptcy. On September 7, 2016, BOKF, NA agreed, and the SEC entered, a consent order finding that BOKF, NA had violated Section 17(a) of the Securities Act of 1933 and Section 10(b) of the Securities Exchange Act and requiring BOKF, NA to disgorge \$1,067,721 of fees and pay a civil penalty of \$600,000. BOKF, NA disgorged the fees and paid the penalty.

On August 26, 2016, BOKF, NA was sued in the United States District Court for New Jersey by two bondholders in a putative class action on behalf of all holders of the bonds alleging BOKF, NA participated in the fraudulent sale of securities by the principals. On September 14, 2016, BOKF, NA was sued in the District Court of Tulsa County, Oklahoma by 19 bondholders alleging BOKF, NA participated in the fraudulent sale of securities by the principals. Two separate small groups of bondholders have filed arbitration complaints with the Financial Institutions Regulatory Association respecting the bonds and other bonds for which BOKF, NA served as indenture trustee. Management has been advised by counsel that BOKF, NA has valid defenses to the claims. The time by which the principal must perform the Court ordered payment plan currently expires on June 20, 2019. BOKF, NA expects the Court ordered payment plan to be continued from time to time until the principals complete the payment of the bonds, though there is no assurance that it will be. No loss is probable at this time and no provision for loss has been made. If the payment plan does not result in payment of the bonds, a loss could become probable. A reasonable estimate cannot be made at this time though the amount could be material to the Company.

On March 5, 2018, BOKF, NA was sued in the Fulton, Georgia County District Court by the administratrix of a deceased resident who had sued for and obtained a judgment for wrongful death against one of the operators of a nursing home financed by one of the bonds which are the subject of the litigation discussed above. The judgment is alleged to total approximately \$8 million in principal and interest at this time. Plaintiff alleges that BOKF, in its capacity as indenture trustee for the bonds, colluded with the borrower and others to defraud creditors of the nursing home by misleading the public about the solvency of the nursing home. Plaintiff alleges that this conduct has prevented her from collecting on her judgment. BOKF, NA is advised by counsel that BOKF, NA has valid defenses to the plaintiffs' claims and no loss is probable.

On March 14, 2017, BOKF, NA was sued in the United States District Court for the Northern District of Oklahoma by bondholders in a second putative class action representing a different set of municipal securities. The bondholders in this second action allege two individuals purchased facilities from the principals who are the subject of the SEC New Jersey proceedings by means of the fraudulent sale of \$60 million of municipal securities for which BOKF, NA also served as indenture trustee. The bondholders allege BOKF, NA failed to disclose that the seller of the purchased facilities had engaged in the conduct complained of in the New Jersey action. BOKF, NA properly performed all duties as indenture trustee of this second set of municipal securities, timely commenced proceedings against the issuer of the securities when default occurred, is cooperating with the SEC in actions against the two principals, is not a target of the SEC proceedings, and has been advised by counsel that BOKF, NA has valid defenses to the claims of these bondholders. Management is advised by counsel that a loss is not probable and that the loss, if any, cannot be reasonably estimated.

On March 7, 2017, a plaintiff filed a putative class action in the United States District Court for the Northern District of Texas alleging an extended overdraft fee charged by BOKF, NA is interest and exceeds permitted rates. This action makes the same allegations as a putative class action that was dismissed by the United States District Court for the Northern District of Oklahoma on October 19, 2015. On August 22, 2018, a plaintiff filed a second putative class action in the United States District Court for New Mexico making the same allegations as the Texas action. On September 18, 2018, the District Court dismissed the Texas action. Management is advised by counsel that a loss is not probable in the New Mexico action or the Texas action and that the loss, if any, cannot be reasonably estimated.

On July 6, 2018, a plaintiff served a petition in a putative class action in the Oklahoma District Court for Tulsa County Oklahoma alleging BOKF NA breached its Demand Deposit Agreements by charging overdraft and not sufficient funds fees to deposit accounts on the day of the transaction triggering the fee and by the bank's debit hold process causing overdraft fees. Management is advised by counsel that a loss is not probable and that the loss, if any, cannot be reasonably estimated.

In the ordinary course of business, BOK Financial and its subsidiaries are subject to legal actions and complaints. Management believes, based upon the opinion of counsel, that the actions and liability or loss, if any, resulting from the final outcomes of the proceedings, will not have a material effect on the Company's financial condition, results of operations or cash flows.

Alternative Investment Commitments

The Company sponsors two private equity funds and invests in several tax credit entities and other funds as permitted by banking regulations. Consolidation of these investments is based on the variable interest model.

At March 31, 2019, the Company has \$232 million in interests in various alternative investments generally consisting of unconsolidated limited partnership interests in entities for which investment return is in the form of low income housing tax credits or other investments in merchant banking activities. This investment balance also includes \$67 million of unfunded commitments included in Other liabilities on the Consolidated Balance Sheets.

(8) Shareholders' Equity

On April 30, 2019, the Company declared a quarterly cash dividend of \$0.50 per common share payable on or about May 28, 2019 to shareholders of record as of May 13, 2019.

Dividends declared were \$0.50 per share during the three months ended March 31, 2019 and \$0.45 per share during the three months ended March 31, 2018.

Accumulated Other Comprehensive Income (Loss)

AOCI includes unrealized gains and losses on available for sale ("AFS") securities and non-credit related unrealized losses on AFS securities for which an other-than-temporary impairment has been recorded in earnings. Unrealized losses on employee benefit plans will be reclassified into income as pension plan costs are recognized over the remaining service period of plan participants. Gains and losses in AOCI are net of deferred income taxes.

A rollforward of the components of accumulated other comprehensive income (loss) is included as follows (in thousands):

	Unrealized Gain (Loss) on		
	Available for Sale Securities	Employee Benefit Plans	Total
Balance, December 31, 2017	\$ (35,385)	\$ (789)	\$ (36,174)
Transition adjustment for net unrealized gains on equity securities	(2,709)	—	(2,709)
Net change in unrealized gain (loss)	(97,406)	—	(97,406)
Reclassification adjustments included in earnings:			
Loss on available for sale securities, net	290	—	290
Other comprehensive income (loss), before income taxes	(97,116)	—	(97,116)
Federal and state income taxes ¹	(24,808)	—	(24,808)
Other comprehensive income (loss), net of income taxes	(72,308)	—	(72,308)
Balance, March 31, 2018	\$ (110,402)	\$ (789)	\$ (111,191)
Balance, December 31, 2018	\$ (70,999)	\$ (1,586)	\$ (72,585)
Net change in unrealized gain (loss)	92,739	—	92,739
Reclassification adjustments included in earnings:			
Gain on available for sale securities, net	(76)	—	(76)
Other comprehensive income (loss), before income taxes	92,663	—	92,663
Federal and state income taxes ¹	23,609	—	23,609
Other comprehensive income (loss), net of income taxes	69,054	—	69,054
Balance, March 31, 2019	\$ (1,945)	\$ (1,586)	\$ (3,531)

¹ Calculated using a 25 percent blended federal and state statutory tax rate.

(9) Earnings Per Share

(In thousands, except share and per share amounts)

	Three Months Ended March 31,	
	2019	2018
Numerator:		
Net income attributable to BOK Financial Corp. shareholders	\$ 110,612	\$ 105,562
Less: Earnings allocated to participating securities	828	1,022
Numerator for basic earnings per share – income available to common shareholders	109,784	104,540
Effect of reallocating undistributed earnings of participating securities	—	—
Numerator for diluted earnings per share – income available to common shareholders	\$ 109,784	\$ 104,540
Denominator:		
Weighted average shares outstanding	\$ 71,926,041	\$ 65,479,482
Less: Participating securities included in weighted average shares outstanding	538,971	632,148
Denominator for basic earnings per common share	71,387,070	64,847,334
Dilutive effect of employee stock compensation plans ¹	17,318	40,699
Denominator for diluted earnings per common share	\$ 71,404,388	\$ 64,888,033
Basic earnings per share	\$ 1.54	\$ 1.61
Diluted earnings per share	\$ 1.54	\$ 1.61
¹ Excludes employee stock options with exercise prices greater than current market price.	—	—

(10) Reportable Segments

Reportable segments reconciliation to the Consolidated Financial Statements for the three months ended March 31, 2019 is as follows (in thousands):

	Commercial	Consumer	Wealth Management	Funds Management and Other ¹	BOK Financial Consolidated
Net interest revenue from external sources	\$ 204,209	\$ 21,595	\$ 21,486	\$ 30,812	\$ 278,102
Net interest revenue (expense) from internal sources	(52,562)	29,507	6,770	16,285	—
Net interest revenue	151,647	51,102	28,256	47,097	278,102
Provision for credit losses	11,245	1,085	(119)	(4,211)	8,000
Net interest revenue after provision for credit losses	140,402	50,017	28,375	51,308	270,102
Other operating revenue	37,612	42,748	73,414	3,496	157,270
Other operating expense	50,177	53,506	61,507	121,967	287,157
Net direct contribution	127,837	39,259	40,282	(67,163)	140,215
Gain (loss) on financial instruments, net	18	14,097	—	(14,115)	—
Change in fair value of mortgage servicing rights	—	(20,666)	—	20,666	—
Gain (loss) on repossessed assets, net	(346)	103	—	243	—
Corporate expense allocations	10,148	11,883	8,360	(30,391)	—
Net income before taxes	117,361	20,910	31,922	(29,978)	140,215
Federal and state income taxes	31,218	5,326	8,203	(14,797)	29,950
Net income	86,143	15,584	23,719	(15,181)	110,265
Net income attributable to non-controlling interests	—	—	—	(347)	(347)
Net income attributable to BOK Financial Corp. shareholders	\$ 86,143	\$ 15,584	\$ 23,719	\$ (14,834)	\$ 110,612

Average assets	\$ 19,330,249	\$ 8,371,683	\$ 9,312,154	\$ 2,658,595	\$ 39,672,681
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¹ CoBiz operations are included in Funds Management and Other for the first quarter of 2019.

Reportable segments reconciliation to the Consolidated Financial Statements for the three months ended March 31, 2018 is as follows (in thousands):

	Commercial	Consumer	Wealth Management	Funds Management and Other	BOK Financial Consolidated
Net interest revenue from external sources	\$ 160,414	\$ 21,753	\$ 15,407	\$ 22,162	\$ 219,736
Net interest revenue (expense) from internal sources	(28,343)	15,224	9,932	3,187	—
Net interest revenue	132,071	36,977	25,339	25,349	219,736
Provision for credit losses	627	1,300	(48)	(6,879)	(5,000)
Net interest revenue after provision for credit losses	131,444	35,677	25,387	32,228	224,736
Other operating revenue	39,676	44,947	74,766	(3,400)	155,989
Other operating expense	48,370	54,695	64,942	76,423	244,430
Net direct contribution	122,750	25,929	35,211	(47,595)	136,295
Gain (loss) on financial instruments, net	7	(23,262)	—	23,255	—
Change in fair value of mortgage servicing rights	—	21,206	—	(21,206)	—
Gain (loss) on repossessed assets, net	(4,166)	(108)	—	4,274	—
Corporate expense allocations	10,603	11,188	8,815	(30,606)	—
Net income before taxes	107,988	12,577	26,396	(10,666)	136,295
Federal and state income taxes	28,741	3,203	6,787	(7,783)	30,948
Net income	79,247	9,374	19,609	(2,883)	105,347
Net income attributable to non-controlling interests	—	—	—	(215)	(215)
Net income (loss) attributable to BOK Financial Corp. shareholders	\$ 79,247	\$ 9,374	\$ 19,609	\$ (2,668)	\$ 105,562
Average assets	\$ 17,793,820	\$ 8,468,101	\$ 8,095,794	\$ (632,763)	\$ 33,724,952

(11) Fees and Commissions Revenue

Fees and commissions revenue is generated through the sales of products, consisting primarily of financial instruments, and the performance of services for customers under contractual obligations. Revenue from providing services for customers is recognized at the time services are provided in an amount that reflects the consideration we expect to be entitled to for those services. Revenue is recognized based on the application of five steps:

- Identify the contract with a customer
- Identify the performance obligations in the contract
- Determine the transaction price
- Allocate the transaction price to the performance obligations in the contract
- Recognize revenue when (or as) the Company satisfies a performance obligation

For contracts with multiple performance obligations, individual performance obligations are accounted for separately if the customer can benefit from the good or service on its own or with other resources readily available to the customer and the promise to transfer goods and services to the customer is separately identifiable in the contract. The transaction price is allocated to the performance obligations based on relative standalone selling prices.

Revenue is recognized on a gross basis whenever we have primary responsibility and risk in providing the services or products to our customers and have discretion in establishing the price for the services or products. Revenue is recognized on a net basis whenever we act as an agent for products or services of others.

Brokerage and trading revenue includes revenues from trading, customer hedging, retail brokerage and investment banking. Trading revenue includes net realized and unrealized gains primarily related to sales of securities to institutional customers and related derivative contracts. Customer hedging revenue includes realized and unrealized changes in the fair value of derivative contracts held for customer risk management programs including credit valuation adjustments, as necessary. We offer commodity, interest rate, foreign exchange and equity derivatives to our customers. These customer contracts are offset with contracts with selected counterparties and exchanges to minimize changes in market risk from changes in commodity prices, interest rates or foreign exchange rates. Retail brokerage revenue represents fees and commissions earned on sales of fixed income securities, annuities, mutual funds and other financial instruments to retail customers. Investment banking revenue includes fees earned upon completion of underwriting and financial advisory services. Investment banking revenue also includes fees earned in conjunction with loan syndications. Insurance brokerage revenues represents fees and commissions earned on placement of insurance products with carriers for property and casualty and health coverage.

Transaction card revenue includes merchant discount fees and electronic funds transfer network fees, net of interchange fees paid to card issuers and assessments paid to card networks. Merchant discount fees represent fees paid by customers for account management and electronic processing of card transactions. Merchant discount fees are recognized at the time the customer's transactions are processed or other services are performed. The Company also maintains the TransFund electronic funds transfer network for the benefit of its members, which includes the Bank. Electronic funds transfer fees are recognized as electronic transactions processed on behalf of its members.

Fiduciary and asset management revenue includes fees from asset management, custody, recordkeeping, investment advisory and administration services. Revenue is recognized on an accrual basis at the time the services are performed and may be based on either the fair value of the account or the service provided.

Deposit service charges and fees include commercial account service charges, overdraft fees, check card fee revenue and automated service charge and other deposit service fees. Fees are recognized at least quarterly in accordance with published deposit account agreements and disclosure statements for retail accounts or contractual agreements for commercial accounts. Item charges for overdraft or non-sufficient funds items are recognized as items are presented for payment. Account balance charges and activity fees are accrued monthly and collected in arrears. Commercial account activity fees may be offset by an earnings credit based on account balances. Check card fees represent interchange fees paid by a merchant bank for transactions processed from cards issued by the Company. Check card fees are recognized when transactions are processed.

Mortgage banking revenue includes revenues recognized in conjunction with the origination, marketing and servicing of conventional and government-sponsored residential mortgage loans. Mortgage production revenue includes net realized gains (losses) on sales of residential mortgage loans in the secondary market and the net change in unrealized gains (losses) on residential mortgage loans held for sale. Mortgage production revenue also includes changes in the fair value of derivative contracts not designated as hedging instruments related to residential mortgage loan commitments and forward sales contracts. Mortgage servicing revenue includes servicing fee income and late charges on loans serviced for others.

Fees and commissions revenue by reportable segment and primary service line is as follows for the three months ended March 31, 2019.

	Commercial	Consumer	Wealth Management	Funds Management & Other ³	Consolidated	Out of Scope ¹	In Scope ²
Trading revenue	\$ —	\$ —	\$ 12,920	\$ —	\$ 12,920	\$ 12,920	\$ —
Customer hedging revenue	1,575	—	5,728	(626)	6,677	6,677	—
Retail brokerage revenue	—	—	4,074	(52)	4,022	—	4,022
Insurance brokerage revenue	—	—	379	3,729	4,108	—	4,108
Investment banking revenue	1,389	—	2,501	—	3,890	1,229	2,661
Brokerage and trading revenue	2,964	—	25,602	3,051	31,617	20,826	10,791
TransFund EFT network revenue	17,654	958	(17)	1	18,596	—	18,596
Merchant services revenue	1,925	14	—	123	2,062	—	2,062
Corporate card revenue	80	—	—	—	80	—	80
Transaction card revenue	19,659	972	(17)	124	20,738	—	20,738
Personal trust revenue	—	—	19,574	—	19,574	—	19,574
Corporate trust revenue	—	—	6,201	—	6,201	—	6,201
Institutional trust & retirement plan services revenue	—	—	11,107	—	11,107	—	11,107
Investment management services and other	—	—	4,801	1,675	6,476	—	6,476
Fiduciary and asset management revenue	—	—	41,683	1,675	43,358	—	43,358
Commercial account service charge revenue	10,062	387	527	1,807	12,783	—	12,783
Overdraft fee revenue	74	8,395	27	(236)	8,260	—	8,260
Check card revenue	—	4,992	—	164	5,156	—	5,156
Automated service charge and other deposit fee revenue	158	1,665	177	44	2,044	—	2,044
Deposit service charges and fees	10,294	15,439	731	1,779	28,243	—	28,243
Mortgage production revenue	—	7,868	—	—	7,868	7,868	—
Mortgage servicing revenue	—	16,445	—	(479)	15,966	15,966	—
Mortgage banking revenue	—	24,313	—	(479)	23,834	23,834	—
Other revenue	5,129	2,097	5,257	279	12,762	8,720	4,042
Total fees and commissions revenue	\$ 38,046	\$ 42,821	\$ 73,256	\$ 6,429	\$ 160,552	\$ 53,380	\$ 107,172

¹ Out of scope revenue generally relates to financial instruments or contractual rights and obligations within the scope of other applicable accounting guidance.

² In scope revenue represents revenue subject to FASB ASC Topic 606, *Revenue from Contracts with Customers*.

³ CoBiz operations are included in Funds Management and Other for the first quarter of 2019.

Fees and commissions revenue by reportable segment and primary service line is as follows for the three months ended March 31, 2018.

	Commercial	Consumer	Wealth Management	Funds Management & Other	Consolidated	Out of Scope¹	In Scope²
Trading revenue	\$ —	\$ —	\$ 10,394	\$ —	\$ 10,394	\$ 10,394	\$ —
Customer hedging revenue	2,022	—	6,965	1,920	10,907	10,907	—
Retail brokerage revenue	—	—	4,697	(98)	4,599	—	4,599
Insurance brokerage revenue	—	—	155	—	155	—	155
Investment banking revenue	1,061	—	3,532	—	4,593	1,061	3,532
Brokerage and trading revenue	3,083	—	25,743	1,822	30,648	22,362	8,286
TransFund EFT network revenue	18,202	987	(19)	1	19,171	—	19,171
Merchant services revenue	1,804	15	—	—	1,819	—	1,819
Corporate card revenue	—	—	—	—	—	—	—
Transaction card revenue	20,006	1,002	(19)	1	20,990	—	20,990
Personal trust revenue	—	—	20,100	—	20,100	—	20,100
Corporate trust revenue	—	—	5,641	—	5,641	—	5,641
Institutional trust & retirement plan services revenue	—	—	11,450	—	11,450	—	11,450
Investment management services and other	—	—	4,689	(48)	4,641	—	4,641
Fiduciary and asset management revenue	—	—	41,880	(48)	41,832	—	41,832
Commercial account service charge revenue	10,944	359	605	—	11,908	—	11,908
Overdraft fee revenue	90	8,484	34	4	8,612	—	8,612
Check card revenue	—	4,918	—	—	4,918	—	4,918
Automated service charge and other deposit fee revenue	37	1,659	26	1	1,723	—	1,723
Deposit service charges and fees	11,071	15,420	665	5	27,161	—	27,161
Mortgage production revenue	—	9,452	—	—	9,452	9,452	—
Mortgage servicing revenue	—	17,027	—	(454)	16,573	16,573	—
Mortgage banking revenue	—	26,479	—	(454)	26,025	26,025	—
Other revenue	5,857	2,062	6,538	(1,499)	12,958	8,984	3,974
Total fees and commissions revenue	\$ 40,017	\$ 44,963	\$ 74,807	\$ (173)	\$ 159,614	\$ 57,371	\$ 102,243

¹ Out of scope revenue generally relates to financial instruments or contractual rights and obligations within the scope of other applicable accounting guidance.

² In scope revenue represents revenue subject to FASB ASC Topic 606, *Revenue from Contracts with Customers*.

(12) Federal and State Income Taxes

The Tax Cuts and Jobs Act (the "Tax Reform Act") enacted on December 22, 2017, reduced the federal corporate income tax rate from 35% to 21% beginning January 1, 2018. We completed our accounting during 2018 for uncertainties that resulted from the Tax Reform Act. Adjustments to provisional amounts related to the Tax Reform Act were recognized during 2018.

The reconciliation of income attributable to continuing operations at the U.S. federal statutory tax rate to income tax expense are as follows (in thousands):

	Three Months Ended March 31,	
	2019	2018
Amount:		
Federal statutory tax	\$ 29,445	\$ 28,622
Tax exempt revenue	(2,757)	(1,812)
Effect of state income taxes, net of federal benefit	3,851	3,657
Utilization of tax credits, net of proportional amortization of low-income housing limited partnership investments	(1,608)	(1,458)
Share-based compensation	(529)	(1,620)
Implementation of Tax Reform Act	—	1,895
Other, net	1,548	1,664
Total income tax expense	\$ 29,950	\$ 30,948

	Three Months Ended March 31,	
	2019	2018
Percent of pretax income:		
Federal statutory tax	21.0 %	21.0 %
Tax exempt revenue	(2.0)	(1.3)
Effect of state income taxes, net of federal benefit	2.7	2.7
Utilization of tax credits, net of proportional amortization of low-income housing limited partnership investments	(1.1)	(1.1)
Share-based compensation	(0.4)	(1.2)
Implementation of Tax Reform Act	—	1.4
Other, net	1.2	1.2
Total	21.4 %	22.7 %

(13) Fair Value Measurements

Fair value is defined by applicable accounting guidance as the price to sell an asset or transfer a liability in an orderly transaction between market participants in the principal market for the given asset or liability at the measurement date based on market conditions at that date. An orderly transaction assumes exposure to the market for a customary period for marketing activities prior to the measurement date and not a forced liquidation or distressed sale. Certain assets and liabilities are recorded in the Company's financial statements at fair value. Some are recorded on a recurring basis and some on a non-recurring basis.

For some assets and liabilities, observable market transactions and market information might be available. For other assets and liabilities, observable market transactions and market information might not be available. A hierarchy for fair value has been established which categorizes into three levels the inputs to valuation techniques used to measure fair value. The three levels are as follows:

Quoted Prices in Active Markets for Identical Assets or Liabilities (Level 1) - Fair value is based on unadjusted quoted prices in active markets for identical assets or liabilities.

Significant Other Observable Inputs (Level 2) - Fair value is based on significant other observable inputs which are generally determined based on a single price for each financial instrument provided to us by an applicable third-party pricing service and is based on one or more of the following:

- Quoted prices for similar, but not identical, assets or liabilities in active markets;
- Quoted prices for identical or similar assets or liabilities in inactive markets;
- Inputs other than quoted prices that are observable, such as interest rate and yield curves, volatilities, prepayment speeds, loss severities, credit risks and default rates;
- Other inputs derived from or corroborated by observable market inputs.

Significant Unobservable Inputs (Level 3) - Fair value is based upon model-based valuation techniques for which at least one significant assumption is not observable in the market.

Transfers between levels are recognized as of the end of the reporting period. There were no transfers in or out of quoted prices in active markets for identical instruments to significant other observable inputs or significant unobservable inputs during the three months ended March 31, 2019 and 2018, respectively. Transfers between significant other observable inputs and significant unobservable inputs during the three months ended March 31, 2019 and 2018 are included in the summary of changes in recurring fair values measured using unobservable inputs.

The underlying methods used by the third-party pricing services are considered in determining the primary inputs used to determine fair values. Management has evaluated the methodologies employed by the third-party pricing services by comparing the price provided by the pricing service with other sources, including brokers' quotes, sales or purchases of similar instruments and discounted cash flows to establish a basis for reliance on the pricing service values. Significant differences between the pricing service provided value and other sources are discussed with the pricing service to understand the basis for their values. Based on all observable inputs, management may adjust prices obtained from third-party pricing services to more appropriately reflect the prices that would be received to sell assets or paid to transfer liabilities in orderly transactions in the current market. No significant adjustments were made to prices provided by third-party pricing services at March 31, 2019 or December 31, 2018.

Assets and Liabilities Measured at Fair Value on a Recurring Basis

The fair value of financial assets and liabilities measured on a recurring basis was as follows as of March 31, 2019 (in thousands):

	Total	Quoted Prices in Active Markets for Identical Instruments (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Trading securities:				
U.S. government agency debentures	\$ 51,576	\$ —	\$ 51,576	\$ —
U.S. government agency residential mortgage-backed securities	1,952,742	—	1,952,742	—
Municipal and other tax-exempt securities	50,637	—	50,637	—
Asset-backed securities	40,890	—	40,890	—
Other trading securities	44,481	—	44,481	—
Total trading securities	2,140,326	—	2,140,326	—
Available for sale securities:				
U.S. Treasury	1,878	1,878	—	—
Municipal and other tax-exempt securities	2,447	—	2,447	—
Residential agency mortgage-backed securities	6,040,086	—	6,040,086	—
Residential non-agency mortgage-backed securities	47,958	—	47,958	—
Commercial agency mortgage-backed securities	2,932,357	—	2,932,357	—
Other debt securities	472	—	—	472
Total available for sale securities	9,025,198	1,878	9,022,848	472
Fair value option securities – U.S. government agency residential mortgage-backed securities	707,994	—	707,994	—
Residential mortgage loans held for sale	160,157	—	144,381	15,776
Mortgage servicing rights ¹	238,193	—	—	238,193
Derivative contracts, net of cash collateral ²	359,223	4,720	354,503	—

Liabilities:

Derivative contracts, net of cash collateral ²	299,698	—	299,698	—
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¹ A reconciliation of the beginning and ending fair value of mortgage servicing rights and disclosures of significant assumptions used to determine fair value are presented in Note 6, Mortgage Banking Activities.

² See Note 3 for detail of fair value of derivative contracts by contract type. Derivative contracts in asset positions that were valued based on quoted prices in active markets for identical instruments (Level 1) are primarily exchange-traded interest rate and agricultural derivative contracts, net of cash margin. Derivative contracts in liability positions that were valued using quoted prices in active markets for identical instruments are exchange-traded interest rate and energy derivative contracts, fully offset by cash margin.

The fair value of financial assets and liabilities measured on a recurring basis was as follows as of December 31, 2018 (in thousands):

	Total	Quoted Prices in Active Markets for Identical Instruments (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Trading securities:				
U.S. government agency debentures	\$ 63,765	\$ —	\$ 63,765	\$ —
U.S. government agency residential mortgage-backed securities	1,791,584	—	1,791,584	—
Municipal and other tax-exempt securities	34,507	—	34,507	—
Asset-backed securities	42,656	—	42,656	—
Other trading securities	24,411	—	24,411	—
Total trading securities	1,956,923	—	1,956,923	—
Available for sale securities:				
U.S. Treasury	493	493	—	—
Municipal and other tax-exempt securities	2,864	—	2,864	—
Residential agency mortgage-backed securities	5,804,708	—	5,804,708	—
Residential non-agency mortgage-backed securities	59,736	—	59,736	—
Commercial agency mortgage-backed securities	2,953,889	—	2,953,889	—
Other debt securities	35,430	—	34,958	472
Total available for sale securities	8,857,120	493	8,856,155	472
Fair value option securities – U.S. government agency residential mortgage-backed securities	283,235	—	283,235	—
Residential mortgage loans held for sale	149,221	—	134,014	15,207
Mortgage servicing rights ¹	259,254	—	—	259,254
Derivative contracts, net of cash collateral ²	320,929	44,074	276,855	—
Liabilities:				
Derivative contracts, net of cash collateral ²	362,306	—	362,306	—

¹ A reconciliation of the beginning and ending fair value of mortgage servicing rights and disclosures of significant assumptions used to determine fair value are presented in Note 6, Mortgage Banking Activities.

² See Note 3 for detail of fair value of derivative contracts by contract type. Derivative contracts based on quoted prices in active markets for identical instruments (Level 1) are exchange-traded interest rate, energy and agricultural derivative contracts, net of cash margin. Derivative contracts in liability positions that were valued using quoted prices in active markets for identical instruments (Level 1) are exchange-traded interest rate contracts, fully offset by cash margin.

Following is a description of the Company's valuation methodologies used for assets and liabilities measured on a recurring basis:

Securities

The fair values of trading, available for sale and fair value option securities are based on quoted prices for identical instruments in active markets, when available. If quoted prices for identical instruments are not available, fair values are based on significant other observable inputs such as quoted prices of comparable instruments or interest rates and credit spreads, yield curves, volatilities, prepayment speeds and loss severities.

The fair value of certain available for sale municipal and other debt securities may be based on significant unobservable inputs. These significant unobservable inputs include limited observed trades, projected cash flows, current credit rating of the issuers and, when applicable, the insurers of the debt and observed trades of similar debt. Discount rates are primarily based on references to interest rate spreads on comparable securities of similar duration and credit rating as determined by the nationally-recognized rating agencies adjusted for a lack of trading volume. Significant unobservable inputs are developed by investment securities professionals involved in the active trading of similar securities. A summary of significant inputs used to value these securities follows. A management committee composed of senior members from the Company's Capital Markets, Risk Management and Finance departments assesses the appropriateness of these inputs quarterly.

Derivatives

All derivative instruments are carried on the balance sheet at fair value. Fair values for exchange-traded contracts are based on quoted prices. Fair values for over-the-counter interest rate, commodity and foreign exchange contracts are based on valuations provided either by third-party dealers in the contracts, quotes provided by independent pricing services, or a third-party provided pricing model that uses significant other observable market inputs.

Credit risk is considered in determining the fair value of derivative instruments. Management determines fair value adjustments based on various risk factors including but not limited to current fair value, probability of default and loss given default.

We also consider our own credit risk in determining the fair value of derivative contracts. Changes in our credit rating would affect the fair value of our derivative liabilities. In the event of a credit downgrade, the fair value of our derivative liabilities would increase.

Residential Mortgage Loans Held for Sale

Residential mortgage loans held for sale are carried on the balance sheet at fair value. The fair values of residential mortgage loans held for sale are based upon quoted market prices of such loans sold in securitization transactions, including related unfunded loan commitments and forward sales contracts. The fair value of mortgage loans that were unable to be sold to U.S. government agencies were determined using quoted prices of loans that are sold in securitization transactions with a liquidity discount applied.

The following represents the changes for the three months ended March 31, 2019 related to assets measured at fair value on a recurring basis using significant unobservable inputs (in thousands):

	<u>Available for Sale Securities</u>		
	<u>Municipal and other tax-exempt securities</u>	<u>Other debt securities</u>	<u>Residential mortgage loans held for sale</u>
Balance, December 31, 2018	\$ —	\$ 472	\$ 15,207
Transfer to Level 3 from Level 2 ¹	—	—	982
Purchases	—	—	—
Proceeds from sales	—	—	(381)
Redemptions and distributions	—	—	—
Gain (loss) recognized in earnings:			
Mortgage banking revenue	—	—	(32)
Other comprehensive income (loss):			
Net change in unrealized gain (loss)	—	—	—
Balance, March 31, 2019	\$ —	\$ 472	\$ 15,776

¹ Recurring transfers to Level 3 from Level 2 consist of residential mortgage loans intended for sale to U.S. government agencies that fail to meet conforming standards.

The following represents the changes for the three months ended March 31, 2018 related to assets measured at fair value on a recurring basis using significant unobservable inputs (in thousands):

	<u>Available for Sale Securities</u>		
	<u>Municipal and other tax-exempt securities</u>	<u>Other debt securities</u>	<u>Residential mortgage loans held for sale</u>
Balance, December 31, 2017	\$ 4,802	\$ 472	\$ 12,299
Transfer to Level 3 from Level 2 ¹	—	—	2,156
Purchases	—	—	—
Proceeds from sales	—	—	(324)
Redemptions and distributions	(3,045)	—	—
Gain (loss) recognized in earnings:			
Mortgage banking revenue	—	—	(260)
Other comprehensive income (loss):			
Net change in unrealized gain (loss)	134	—	—
Balance, March 31, 2018	\$ 1,891	\$ 472	\$ 13,871

¹ Recurring transfers to Level 3 from Level 2 consist of residential mortgage loans intended for sale to U.S. government agencies that fail to meet conforming standards.

A summary of quantitative information about assets measured at fair value on a recurring basis using Significant Unobservable Inputs (Level 3) as of March 31, 2019 follows (in thousands):

	Fair Value	Valuation Technique(s)	Unobservable Input	Range (Weighted Average)
Available for sale securities – Other debt securities	472	Discounted cash flows ¹	Interest rate spread	6.83%-6.83% (6.83%) ³ 94.39%-94.39% (94.39%) ²
Residential mortgage loans held for sale	15,766	Quoted prices of loans sold in securitization transactions, with a liquidity discount applied	Liquidity discount applied to the market value of mortgage loans qualifying for sale to U.S. government agencies.	92.40%

¹ Discounted cash flows developed using discount rates primarily based on reference to interest rate spreads for comparable securities of similar duration and credit rating as determined by the nationally-recognized rating agencies, adjusted for lack of trading volume.

² Represents fair value as a percentage of par value.

³ Interest rate yields used to value investment grade taxable securities based on comparable short-term taxable securities which are generally yielding less than 3 percent.

A summary of quantitative information about assets measured at fair value on a recurring basis using Significant Unobservable Inputs (Level 3) as of December 31, 2018 follows (in thousands):

	Fair Value	Valuation Technique(s)	Unobservable Input	Range (Weighted Average)
Available for sale securities – Other debt securities	472	Discounted cash flows ¹	Interest rate spread	7.88%-7.88% (7.88%) ³ 94.44%-94.44% (94.44%) ²
Residential mortgage loans held for sale	15,207	Quoted prices of loans sold in securitization transactions, with a liquidity discount applied	Liquidity discount applied to the market value of mortgage loans qualifying for sale to U.S. government agencies.	92.38%

¹ Discounted cash flows developed using discount rates primarily based on reference to interest rate spreads for comparable securities of similar duration and credit rating as determined by the nationally-recognized rating agencies, adjusted for lack of trading volume

² Represents fair value as a percentage of par value.

³ Interest rate yields used to value investment grade taxable securities based on comparable short-term taxable securities which are generally yielding less than 3 percent.

Fair Value of Assets and Liabilities Measured on a Non-Recurring Basis

Assets measured at fair value on a non-recurring basis include collateral for certain impaired loans and real property and other assets acquired to satisfy loans, which are based primarily on comparisons to completed sales of similar assets.

The following represents the carrying value of assets measured at fair value on a non-recurring basis (and related losses) during the period. The carrying value represents only those assets with a balance at March 31, 2019 for which the fair value was adjusted during the three months ended March 31, 2019:

	Carrying Value at March 31, 2019			Fair Value Adjustments for the Three Months Ended March 31, 2019 Recognized in:	
	Quoted Prices in Active Markets for Identical Instruments	Significant Other Observable Inputs	Significant Unobservable Inputs	Gross charge-offs against allowance for loan losses	Net losses and expenses of repossessed assets, net
	Impaired loans	\$ —	\$ —	\$ 9,712	\$ 9,581
Real estate and other repossessed assets	—	2,688	144	—	434

The following represents the carrying value of assets measured at fair value on a non-recurring basis (and related losses) during the period. The carrying value represents only those assets with a balance at March 31, 2018 for which the fair value was adjusted during the three months ended March 31, 2018:

	Carrying Value at March 31, 2018			Fair Value Adjustments for the Three Months Ended March 31, 2018 Recognized in:	
	Quoted Prices in Active Markets for Identical Instruments	Significant Other Observable Inputs	Significant Unobservable Inputs	Gross charge-offs against allowance for loan losses	Net losses and expenses of repossessed assets, net
	Impaired loans	\$ —	\$ 32	\$ 410	\$ 497
Real estate and other repossessed assets	—	863	7,094	—	5,192

The fair value of collateral-dependent impaired loans secured by real estate and real estate and other repossessed assets and the related fair value adjustments are generally based on unadjusted third-party appraisals. Our appraisal review policies require appraised values to be supported by observed inputs derived principally from or corroborated by observable market data. Appraisals that are not based on observable inputs or that require significant adjustments or fair value measurements that are not based on third-party appraisals are considered to be based on significant unobservable inputs. Non-recurring fair value measurements of collateral-dependent impaired loans and real estate and other repossessed assets based on significant unobservable inputs are generally due to estimates of current fair values between appraisal dates. Significant unobservable inputs include listing prices for the same or comparable assets, uncorroborated expert opinions or management's knowledge of the collateral or industry. Non-recurring fair value measurements of collateral dependent loans secured by mineral rights are generally determined by our internal staff of engineers on projected cash flows under current market conditions and are based on significant unobservable inputs. Projected cash flows are discounted according to risk characteristics of the underlying oil and gas properties. Assets are evaluated to demonstrate with reasonable certainty that crude oil, natural gas and natural gas liquids can be recovered from known oil and gas reservoirs under existing economic and operating conditions at current prices with existing conventional equipment, operating methods and costs. Significant unobservable inputs are developed by asset management and workout professionals and approved by senior Credit Administration executives.

A summary of quantitative information about Non-recurring Fair Value Measurements based on Significant Unobservable Inputs (Level 3) as of March 31, 2019 follows (in thousands):

	Fair Value	Valuation Technique (s)	Unobservable Input	Range (Weighted Average)
Impaired loans	\$ 9,712	Discounted cash flows	Management knowledge of industry and non-real estate collateral including but not limited to recoverable oil and gas reserves, forward-looking commodity prices, estimated operating costs	14% - 74% (31%) ¹
Real estate and other repossessed assets	144	Appraised value, as adjusted	Marketability adjustments off appraised value ²	75% - 85% (79%)

¹ Represents fair value as a percentage of the unpaid principal balance.

² Marketability adjustments include consideration of estimated costs to sell which is approximately 10% of the fair value.

A summary of quantitative information about Non-recurring Fair Value Measurements based on Significant Unobservable Inputs (Level 3) as of December 31, 2018 follows (in thousands):

	Fair Value	Valuation Technique (s)	Unobservable Input	Range (Weighted Average)
Impaired loans	\$ 17,401	Discounted cash flows	Management knowledge of industry and non-real estate collateral including but not limited to recoverable oil and gas reserves, forward-looking commodity prices, estimated operating costs	35% - 80% (50%) ¹
Real estate and other repossessed assets	6,366	Discounted cash flows	Recoverable oil and gas reserves, forward-looking commodity prices, estimated operating costs	N/A

¹ Represents fair value as a percentage of the unpaid principal balance.

Fair Value of Financial Instruments

The following table presents the carrying values and estimated fair values of all financial instruments, including those financial assets and liabilities that are not measured and reported at fair value on a recurring basis or non-recurring basis as of March 31, 2019 (dollars in thousands):

	Carrying Value	Estimated Fair Value	Quoted Prices in Active Markets for Identical Instruments (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Cash and due from banks	\$ 718,297	\$ 718,297	\$ 718,297	\$ —	\$ —
Interest-bearing cash and cash equivalents	564,404	564,404	564,404	—	—
Trading securities:					
U.S. government agency debentures	51,576	51,576	—	51,576	—
U.S. government agency residential mortgage-backed securities	1,952,742	1,952,742	—	1,952,742	—
Municipal and other tax-exempt securities	50,637	50,637	—	50,637	—
Asset-backed securities	40,890	40,890	—	40,890	—
Other trading securities	44,481	44,481	—	44,481	—
Total trading securities	2,140,326	2,140,326	—	2,140,326	—
Investment securities:					
Municipal and other tax-exempt securities	126,544	129,072	—	129,072	—
U.S. government agency residential mortgage-backed securities	12,106	12,388	—	12,388	—
Other debt securities	192,816	207,028	—	8,209	198,819
Total investment securities	331,466	348,488	—	149,669	198,819
Available for sale securities:					
U.S. Treasury	1,878	1,878	1,878	—	—
Municipal and other tax-exempt securities	2,447	2,447	—	2,447	—
Residential agency mortgage-backed securities	6,040,086	6,040,086	—	6,040,086	—
Residential non-agency mortgage-backed securities	47,958	47,958	—	47,958	—
Commercial agency mortgage-backed securities	2,932,357	2,932,357	—	2,932,357	—
Other debt securities	472	472	—	—	472
Total available for sale securities	9,025,198	9,025,198	1,878	9,022,848	472
Fair value option securities – U.S. government agency residential mortgage-backed securities	707,994	707,994	—	707,994	—
Residential mortgage loans held for sale	160,157	160,157	—	144,381	15,776
Loans:					
Commercial	13,961,975	13,886,769	—	—	13,886,769
Commercial real estate	4,600,651	4,589,189	—	—	4,589,189
Residential mortgage	2,192,620	2,196,914	—	—	2,196,914
Personal	1,003,734	1,001,193	—	—	1,001,193
Total loans	21,758,980	21,674,065	—	—	21,674,065
Allowance for loan losses	(205,340)	—	—	—	—
Loans, net of allowance	21,553,640	21,674,065	—	—	21,674,065
Mortgage servicing rights	238,193	238,193	—	—	238,193
Derivative instruments with positive fair value, net of cash collateral	359,223	359,223	4,720	354,503	—
Deposits with no stated maturity	23,133,413	23,133,413	—	—	23,133,413
Time deposits	2,198,389	2,181,872	—	—	2,181,872
Other borrowed funds	8,780,766	8,750,845	—	—	8,750,845
Subordinated debentures	275,880	273,656	—	273,656	—
Derivative instruments with negative fair value, net of cash collateral	299,698	299,698	—	299,698	—

The following table presents the carrying values and estimated fair values of all financial instruments, including those financial assets and liabilities that are not measured and reported at fair value on a recurring basis or non-recurring basis as of December 31, 2018 (dollars in thousands):

	Carrying Value	Estimated Fair Value	Quoted Prices in Active Markets for Identical Instruments (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Cash and due from banks	\$ 741,749	\$ 741,749	\$ 741,749	\$ —	\$ —
Interest-bearing cash and cash equivalents	401,675	401,675	401,675	—	—
Trading securities:					
U.S. government agency debentures	63,765	63,765	—	63,765	—
U.S. government agency residential mortgage-backed securities	1,791,584	1,791,584	—	1,791,584	—
Municipal and other tax-exempt securities	34,507	34,507	—	34,507	—
Asset-backed securities	42,656	42,656	—	42,656	—
Other trading securities	24,411	24,411	—	24,411	—
Total trading securities	1,956,923	1,956,923	—	1,956,923	—
Investment securities:					
Municipal and other tax-exempt securities	137,296	138,562	—	138,562	—
U.S. government agency residential mortgage-backed securities	12,612	12,770	—	12,770	—
Other debt securities	205,279	215,966	—	7,905	208,061
Total investment securities	355,187	367,298	—	159,237	208,061
Available for sale securities:					
U.S. Treasury	493	493	493	—	—
Municipal and other tax-exempt securities	2,864	2,864	—	2,864	—
Residential agency mortgage-backed securities	5,804,708	5,804,708	—	5,804,708	—
Residential non-agency mortgage-backed securities	59,736	59,736	—	59,736	—
Commercial agency mortgage-backed securities	2,953,889	2,953,889	—	2,953,889	—
Other debt securities	35,430	35,430	—	34,958	472
Total available for sale securities	8,857,120	8,857,120	493	8,856,155	472
Fair value option securities – U.S. government agency residential mortgage-backed securities	283,235	283,235	—	283,235	—
Residential mortgage loans held for sale	149,221	149,221	—	134,014	15,207
Loans:					
Commercial	13,636,078	13,526,162	—	—	13,526,162
Commercial real estate	4,764,813	4,713,747	—	—	4,713,747
Residential mortgage	2,230,033	2,213,951	—	—	2,213,951
Personal	1,025,806	1,024,368	—	—	1,024,368
Total loans	21,656,730	21,478,228	—	—	21,478,228
Allowance for loan losses	(207,457)	—	—	—	—
Loans, net of allowance	21,449,273	21,478,228	—	—	21,478,228
Mortgage servicing rights	259,254	259,254	—	—	259,254
Derivative instruments with positive fair value, net of cash collateral	320,929	320,929	44,074	276,855	—
Deposits with no stated maturity	23,150,383	23,150,383	—	—	23,150,383
Time deposits	2,113,380	2,073,538	—	—	2,073,538
Other borrowed funds	7,142,801	7,071,953	—	—	7,071,953
Subordinated debentures	275,913	261,977	—	261,977	—
Derivative instruments with negative fair value, net of cash collateral	362,306	362,306	—	362,306	—

Because no market exists for certain of these financial instruments and management does not intend to sell these financial instruments, the fair values shown in the tables above may not represent values at which the respective financial instruments could be sold individually or in the aggregate at the given reporting date.

Fair Value Election

The Company has elected to carry all residential mortgage-backed securities guaranteed by U.S. government agencies held as economic hedges against changes in the fair value of mortgage servicing rights and all residential mortgage loans originated for sale at fair value. Changes in the fair value of these financial instruments are recognized in earnings.

(14) Subsequent Events

The Company evaluated events from the date of the consolidated financial statements on March 31, 2019 through the issuance of those consolidated financial statements included in this Quarterly Report on Form 10-Q. No events were identified requiring recognition in and/or disclosure in the consolidated financial statements.

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Quarterly Financial Summary – Unaudited
Consolidated Daily Average Balances, Average Yields and Rates

(In Thousands, Except Per Share Data)

	Three Months Ended					
	March 31, 2019			December 31, 2018		
	Average Balance	Revenue/ Expense	Yield/ Rate	Average Balance	Revenue/ Expense	Yield/ Rate
Assets						
Interest-bearing cash and cash equivalents	\$ 537,903	\$ 3,397	2.56%	\$ 563,132	\$ 3,170	2.23%
Trading securities	1,968,399	18,790	3.88%	1,929,601	19,636	4.10%
Investment securities	343,282	4,481	5.22%	364,737	3,887	4.26%
Available for sale securities	8,883,054	56,881	2.57%	8,704,963	55,085	2.51%
Fair value option securities	594,349	5,237	3.62%	277,575	2,578	3.56%
Restricted equity securities	395,432	6,345	6.42%	362,729	5,798	6.39%
Residential mortgage loans held for sale	145,040	1,663	4.58%	179,553	1,795	4.00%
Loans	21,766,065	282,428	5.26%	21,579,331	276,711	5.09%
Allowance for loan losses	(206,092)			(209,613)		
Loans, net of allowance	21,559,973	282,428	5.31%	21,369,718	276,711	5.14%
Total earning assets	34,427,432	379,222	4.46%	33,752,008	368,660	4.33%
Receivable on unsettled securities sales	1,224,700			799,548		
Cash and other assets	4,020,549			3,834,187		
Total assets	\$ 39,672,681			\$ 38,385,743		
Liabilities and equity						
Interest-bearing deposits:						
Transaction	\$ 11,931,539	\$ 27,704	0.94%	\$ 11,773,651	\$ 23,343	0.79%
Savings	541,575	160	0.12%	526,275	148	0.11%
Time	2,153,277	9,553	1.80%	2,146,786	8,309	1.54%
Total interest-bearing deposits	14,626,391	37,417	1.04%	14,446,712	31,800	0.87%
Funds purchased and repurchase agreements	2,033,036	10,356	2.07%	1,205,568	4,135	1.36%
Other borrowings	7,040,279	46,454	2.68%	6,361,141	40,220	2.51%
Subordinated debentures	275,882	3,745	5.51%	276,378	3,752	5.38%
Total interest-bearing liabilities	23,975,588	97,972	1.66%	22,289,799	79,907	1.42%
Non-interest bearing demand deposits	9,988,088			10,648,683		
Due on unsettled securities purchases	453,937			493,887		
Other liabilities	775,574			610,286		
Total equity	4,479,494			4,343,088		
Total liabilities and equity	\$ 39,672,681			\$ 38,385,743		
Tax-equivalent Net Interest Revenue		\$ 281,250	2.80%		\$ 288,753	2.91%
Tax-equivalent Net Interest Revenue to Earning Assets			3.30%			3.40%
Less tax-equivalent adjustment		3,148			3,067	
Net Interest Revenue		278,102			285,686	
Provision for credit losses		8,000			9,000	
Other operating revenue		157,270			136,455	
Other operating expense		287,157			284,643	
Income before taxes		140,215			128,498	
Federal and state income taxes		29,950			20,121	
Net income		110,265			108,377	
Net income (loss) attributable to non-controlling interests		(347)			(79)	
Net income attributable to BOK Financial Corp. shareholders		\$ 110,612			\$ 108,456	
Earnings Per Average Common Share Equivalent:						
Basic		\$ 1.54			\$ 1.50	
Diluted		\$ 1.54			\$ 1.50	

Yield calculations are shown on a tax equivalent at the statutory federal and state rates for the periods presented. The yield calculations exclude security trades that have been recorded on trade date with no corresponding interest income and the unrealized gains and losses. The yield calculation also includes average loan balances for which the accrual of interest has been discontinued and are net of unearned income. Yield / rate calculations are generally based on the conventions that determine how interest income and expense is accrued.

Three Months Ended

September 30, 2018			June 30, 2018			March 31, 2018		
Average Balance	Revenue /Expense	Yield / Rate	Average Balance	Revenue / Expense	Yield / Rate	Average Balance	Revenue / Expense	Yield / Rate
\$ 688,872	\$ 3,441	1.98%	\$ 1,673,387	\$ 7,740	1.86%	\$ 2,059,517	\$ 7,982	1.57%
1,762,794	17,419	3.98%	1,482,302	13,084	3.63%	933,404	7,809	3.40%
379,566	3,856	4.06%	399,088	3,941	3.95%	441,207	4,164	3.78%
8,129,214	48,916	2.37%	8,163,142	47,463	2.30%	8,236,938	46,008	2.23%
469,398	3,881	3.25%	487,192	3,927	3.16%	626,251	4,819	2.95%
328,842	5,232	6.36%	348,546	5,408	6.21%	349,176	5,117	5.86%
207,488	2,151	4.27%	218,600	2,333	4.28%	199,380	1,844	3.71%
18,203,785	220,245	4.80%	17,751,242	212,266	4.80%	17,261,481	189,674	4.45%
(214,160)			(222,856)			(228,996)		
17,989,625	220,245	4.86%	17,528,386	212,266	4.86%	17,032,485	189,674	4.51%
29,955,799	305,141	4.04%	30,301,191	296,162	3.91%	29,878,358	267,417	3.61%
768,785			618,240			998,803		
2,971,233			2,986,604			2,847,791		
\$ 33,695,817			\$ 33,906,035			\$ 33,724,952		
\$ 10,010,031	\$ 17,029	0.67%	\$ 10,189,354	\$ 13,993	0.55%	\$ 10,344,469	\$ 11,494	0.45%
503,821	108	0.09%	503,671	95	0.08%	480,110	88	0.07%
2,097,441	7,398	1.40%	2,138,880	6,875	1.29%	2,151,044	6,637	1.25%
12,611,293	24,535	0.77%	12,831,905	20,963	0.66%	12,975,623	18,219	0.57%
1,193,583	3,768	1.25%	593,250	782	0.53%	532,412	522	0.40%
5,765,440	32,036	2.20%	6,497,020	31,825	1.96%	6,326,967	24,927	1.60%
144,702	2,025	5.55%	144,692	2,047	5.67%	144,682	2,003	5.61%
19,715,018	62,364	1.25%	20,066,867	55,617	1.11%	19,979,684	45,671	0.93%
9,325,002			9,223,327			9,151,272		
544,263			527,804			558,898		
496,634			575,865			556,524		
3,614,900			3,512,172			3,478,574		
\$ 33,695,817			\$ 33,906,035			\$ 33,724,952		
	\$ 242,777	2.79%		\$ 240,545	2.80%		\$ 221,746	2.68%
		3.21%			3.17%			2.99%
	1,894			1,983			2,010	
	240,883			238,562			219,736	
	4,000			—			(5,000)	
	167,941			156,399			155,989	
	252,617			246,476			244,430	
	152,207			148,485			136,295	
	34,662			33,330			30,948	
	117,545			115,155			105,347	
	289			783			(215)	
	\$ 117,256			\$ 114,372			\$ 105,562	
	\$ 1.79			\$ 1.75			\$ 1.61	
	\$ 1.79			\$ 1.75			\$ 1.61	

Quarterly Earnings Trends – Unaudited
(In thousands, except share and per share data)

	Three Months Ended				
	Mar. 31, 2019	Dec. 31, 2018	Sept. 30, 2018	June 30, 2018	Mar. 31, 2018
Interest revenue	\$ 376,074	\$ 365,592	\$ 303,247	\$ 294,180	\$ 265,407
Interest expense	97,972	79,906	62,364	55,618	45,671
Net interest revenue	278,102	285,686	240,883	238,562	219,736
Provision for credit losses	8,000	9,000	4,000	—	(5,000)
Net interest revenue after provision for credit losses	270,102	276,686	236,883	238,562	224,736
Other operating revenue					
Brokerage and trading revenue	31,617	28,101	23,086	26,488	30,648
Transaction card revenue	20,738	20,664	21,396	20,975	20,990
Fiduciary and asset management revenue	43,358	43,665	57,514	41,692	41,832
Deposit service charges and fees	28,243	29,393	27,765	27,834	27,161
Mortgage banking revenue	23,834	21,880	23,536	26,346	26,025
Other revenue	12,762	16,404	12,900	13,923	12,958
Total fees and commissions	160,552	160,107	166,197	157,258	159,614
Other gains (losses), net	2,976	(8,305)	2,754	4,578	(1,292)
Gain (loss) on derivatives, net	4,667	11,167	(2,847)	(3,057)	(5,685)
Gain (loss) on fair value option securities, net	9,665	(282)	(4,385)	(3,341)	(17,564)
Change in fair value of mortgage servicing rights	(20,666)	(24,233)	5,972	1,723	21,206
Gain (loss) on available for sale securities, net	76	(1,999)	250	(762)	(290)
Total other operating revenue	157,270	136,455	167,941	156,399	155,989
Other operating expense					
Personnel	169,228	160,706	143,531	138,947	139,947
Business promotion	7,874	9,207	7,620	7,686	6,010
Charitable contributions to BOKF Foundation	—	2,846	—	—	—
Professional fees and services	16,139	20,712	13,209	14,978	10,200
Net occupancy and equipment	29,521	27,780	23,394	22,761	24,046
Insurance	4,839	4,248	6,232	6,245	6,593
Data processing and communications	31,449	27,575	31,665	27,739	27,817
Printing, postage and supplies	4,885	5,232	3,837	4,011	4,089
Net losses (gains) and operating expenses of repossessed assets	1,996	2,581	4,044	2,722	7,705
Amortization of intangible assets	5,191	5,331	1,603	1,386	1,300
Mortgage banking costs	9,906	11,518	11,741	12,890	10,149
Other expense	6,129	6,907	5,741	7,111	6,574
Total other operating expense	287,157	284,643	252,617	246,476	244,430
Net income before taxes	140,215	128,498	152,207	148,485	136,295
Federal and state income taxes	29,950	20,121	34,662	33,330	30,948
Net income	110,265	108,377	117,545	115,155	105,347
Net income (loss) attributable to non-controlling interests	(347)	(79)	289	783	(215)
Net income attributable to BOK Financial Corporation shareholders	\$ 110,612	\$ 108,456	\$ 117,256	\$ 114,372	\$ 105,562
Earnings per share:					
Basic	\$1.54	\$1.50	\$1.79	\$1.75	\$1.61
Diluted	\$1.54	\$1.50	\$1.79	\$1.75	\$1.61
Average shares used in computation:					
Basic	71,387,070	71,808,029	64,901,095	64,901,975	64,847,334
Diluted	71,404,388	71,833,334	64,934,351	64,937,226	64,888,033

PART II. Other Information

Item 1. Legal Proceedings

See discussion of legal proceedings at Note 7 to the Consolidated Financial Statements.

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

The following table provides information with respect to purchases made by or on behalf of the Company or any “affiliated purchaser” (as defined in Rule 10b-18(a)(3) under the Securities Exchange Act of 1934), of the Company’s common stock during the three months ended March 31, 2019.

Period	Total Number of Shares Purchased ²	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs ¹	Maximum Number of Shares that May Yet Be Purchased Under the Plans
January 1 to January 31, 2019	18,117	\$ 79.33	—	1,424,917
February 1 to February 28, 2019	555,609	\$ 87.54	555,609	869,308
March 1 to March 31, 2019	150,000	\$ 79.58	150,000	719,308
Total	723,726		705,609	

¹ On October 1, 2015, the Company's board of directors authorized the Company to repurchase up to five million shares of the Company's common stock. As of March 31, 2019, the Company had repurchased 4,280,692 shares under this plan. Future repurchases of the Company's common stock will vary based on market conditions, regulatory limitations and other factors.

² The Company routinely repurchases mature shares from employees to cover the exercise price and taxes in connection with employee equity compensation.

Item 6. Exhibits

- 31.1 [Certification of Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002](#)
- 31.2 [Certification of Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002](#)
- 32 [Certification of Chief Executive Officer and Chief Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002](#)
- 101 Interactive data files pursuant to Rule 405 of Regulation S-T: (i) the Consolidated Balance Sheets, (ii) the Consolidated Statements of Earnings, (iii) the Consolidated Statements of Changes in Equity, (iv) the Consolidated Statement of Cash Flows and (v) the Notes to Consolidated Financial Statements. The XBRL instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.

Items 1A, 3, 4 and 5 are not applicable and have been omitted.

Signatures

Pursuant to the requirements 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.

BOK FINANCIAL CORPORATION

(Registrant)

Date: May 1, 2019

/s/ Steven E. Nell

Steven E. Nell
Executive Vice President and
Chief Financial Officer

/s/ John C. Morrow

John C. Morrow
Senior Vice President and
Chief Accounting Officer

- 98 -

[\(Back To Top\)](#)

Section 2: EX-31.1 (EXHIBIT 31.1)

Exhibit 31.1

**CERTIFICATION PURSUANT TO
SECTION 302
OF THE SARBANES-OXLEY ACT OF 2002
FOR THE CHIEF EXECUTIVE OFFICER**

I, Steven G. Bradshaw, President and Chief Executive Officer of BOK Financial Corporation (“BOK Financial”), certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of BOK Financial;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our

supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

- c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
- a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: May 1, 2019

/s/ Steven G. Bradshaw

Steven G. Bradshaw

President

Chief Executive Officer

BOK Financial Corporation

[\(Back To Top\)](#)

Section 3: EX-31.2 (EXHIBIT 31.2)

Exhibit 31.2

**CERTIFICATION PURSUANT TO
SECTION 302
OF THE SARBANES-OXLEY ACT OF 2002
FOR THE CHIEF FINANCIAL OFFICER**

I, Steven E. Nell, Chief Financial Officer of BOK Financial Corporation ("BOK Financial"), certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of BOK Financial;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the

effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

- d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: May 1, 2019

/s/ Steven E. Nell

Steven E. Nell

Executive Vice President

Chief Financial Officer

BOK Financial Corporation

[\(Back To Top\)](#)

Section 4: EX-32 (EXHIBIT 32)

Exhibit 32

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report of BOK Financial Corporation ("BOK Financial") on Form 10-Q for the fiscal year ending March 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), we, Steven G. Bradshaw and Steven E. Nell, Chief Executive Officer and Chief Financial Officer, respectively, of BOK Financial, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that to our knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of BOK Financial as of, and for, the periods presented.

May 1, 2019

/s/ Steven G. Bradshaw

Steven G. Bradshaw

President

Chief Executive Officer

BOK Financial Corporation

/s/ Steven E. Nell

Steven E. Nell

Executive Vice President

Chief Financial Officer

BOK Financial Corporation

[\(Back To Top\)](#)