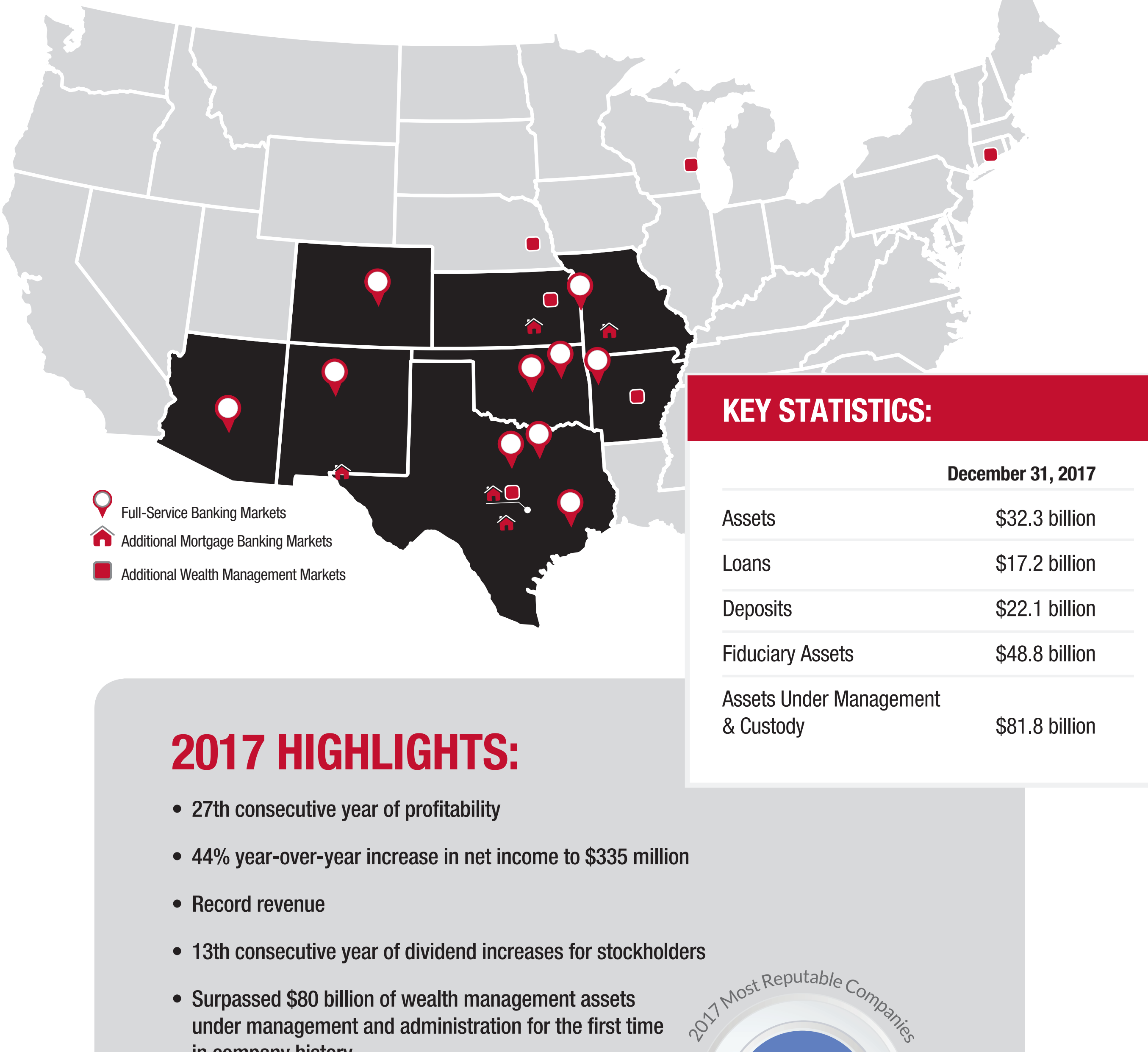
2017 ANNUAL REPORT

BOK FINANCIAL CORPORATION

BOK Financial: A Regional Banking Powerhouse



KEY STATISTICS:

	December 31, 2017
Assets	$32.3 billion
Loans	$17.2 billion
Deposits	$22.1 billion
Fiduciary Assets	$48.8 billion
Assets Under Management & Custody	$81.8 billion

2017 HIGHLIGHTS:

- 27th consecutive year of profitability
- 44% year-over-year increase in net income to $335 million
- Record revenue
- 13th consecutive year of dividend increases for stockholders
- Surpassed $80 billion of wealth management assets under management and administration for the first time in company history
- Named one of America's most respected banks by American Banker magazine
- Named Philanthropist of the Year by the Association of Fundraising Professionals

2017 Most Reputable Companies
US BANKS
TOP COMPANIES
RepTrak
Reputation Institute

On The Cover: Our BOK Financial logo shows images of employees volunteering with nonprofit organizations in the communities we serve. Community engagement is a core value of BOK Financial, and reflects the deeply-ingrained philanthropic priorities of our leadership team.

Community Engagement

"Actively advance the communities we serve" is one of our core values, which the company, our employees, and our leaders have demonstrated for more than a century. Through financial contributions and the generosity of our employees giving their time and talent, BOK Financial makes a significant impact in the communities we serve.

We support initiatives that enhance the educational opportunities in our communities, invest in economic development through our local chambers of commerce and teach financial education through our Learn for Life program. Additionally, we provide volunteer and financial support to a variety of organizations that work tirelessly to serve the most vulnerable citizens in our community by meeting their basic needs and addressing issues such as poverty, hunger, healthcare and safety.

FOUR PILLARS OF GIVING

Basic Needs

Economic Development

Education

United Way

OUR PHILANTHROPY BY THE NUMBERS

$5.1 MILLION
Total contributions

692
Nonprofits received funding

711
Nonprofit leadership positions filled by 384 employees

5,263
Children taught by our financial literacy program, Learn for Life

$2.2 MILLION
Employee contributions to United Way

$940,000
Corporate contributions to United Way

"The underpinning of BOK Financial has always been one of the commitment to our communities, our customers, and each other. Our employees learn early in their careers that community involvement is core to the DNA of our company, and that the leaders in our company have embraced this commitment."

Steven G. Bradshaw
President and CEO, BOK Financial

Dear Shareholders,

2017 was a terrific year for BOK Financial, its employees, and its shareholders. Total revenue was a record $1.66 billion[1]; net income attributable to BOK Financial shareholders was $334.6 million, up 44 percent compared to 2016; and we reported diluted earnings per share of $5.11, the second-highest level in our company's history.

This strong performance was the result of several factors, not the least of which was the hard work and sacrifice of every single one of our employees. They really rose to the occasion in an intensely-competitive environment, helping to differentiate BOK Financial with its customers, prospects, and communities. More on this later in my letter.

In 2017, we generated very strong growth in net interest income, which was up 12.6 percent compared to 2016. We have always positioned the bank to be relatively neutral to movements in interest rates, with the overarching strategic view that the way to build shareholder value is to make good loans, build fee businesses, and carefully manage costs; and that trying to time rate movements is a difficult, and potentially costly proposition. This strategy was borne out over the last several years as we remained fully invested, generating substantial net interest income for our shareholders. That said, thus far in the cycle our balance sheet has behaved more asset sensitive than we would have otherwise modeled as deposit pricing across the banking industry has remained disciplined.

Going forward, holding deposit costs at competitive levels while still growing balances will be a challenging objective for all of us in the banking industry, including BOK Financial. But this will be essential as we continue to work back to pre-Great Recession margin levels as an industry. Additional Federal Reserve rate hikes that are anticipated in 2018 will be helpful in this regard.

Another major driver of our strong 2017 financial performance was expense discipline. One of our core goals every year is to drive earnings leverage by holding expense growth to no more than half of revenue growth. We were successful in this regard in 2017, as expenses were increased only modestly from the prior year despite the significant increase in revenue. Our future success will demand that we continue this discipline.

The credit environment remains stable, and accordingly, we reversed $7 million of loan loss reserves in 2017. At year end, we believe we were appropriately reserved for potential losses in the portfolio, and barring an unforeseen negative turn in credit quality we will likely see additional reversals of loan loss provision, at least through early 2018.

Our strong credit quality is attributable to the fact that we are disciplined credit underwriters. This is core to our strategy of building our bank to outperform peers across the full economic cycle, and is largely manifested in our modest concentration in commercial real estate relative to peers. Although we are active nationally in commercial real estate, we are very selective in terms of our clients and we do not chase growth. Our lower CRE concentration relative to peers is balanced with our higher concentration in energy lending, and again, this is strategic: while these are both cyclical businesses that go through downturns from time to time, the low loss severity in energy during industry troughs is evidenced by the modest losses we experienced during the energy downturn of 2014–2016. At the same time, energy customers tend to be some of our most complete relationships as they are heavy users of ancillary services such as treasury management, private banking and wealth management, 401(k) services, acquisition and divestiture advisory services, and agented credit facilities, among others.

Our differentiated wealth management business was another major contributor to the strong 2017 financial results. Wealth management grew revenue 11.4 percent and earnings 46.1 percent during the year. In addition, loans were up 16.0 percent, deposits were up 13.3 percent, and assets under management and administration topped $80 billion for the first time in company history.

This is a business we have been steadily growing and building. We have the scale, product depth, and professional team to capitalize on one of the most significant demographic trends that will impact our industry in the coming decades: the transition of over $3 trillion of wealth from Baby Boomers to their heirs.

Wealth management continues to find innovative ways to fuel growth. In 2016 we strategically hired a team of advisors from a New England-based brokerage firm that specialized in providing services to investors in mortgage backed securities. Through this team, we were able to introduce new products that led to deeper relationships with our customers in the

[1] *Defined as interest revenue plus total fees and commissions*

mortgage industry and the contribution of $9 million of incremental wealth management revenue in 2017.

Loan growth was muted this year, and we know we need to re-energize growth here to meet our financial objectives. We believe the 2018 economic environment will be more conducive to loan growth. First, economic growth and employment seemed to be accelerating in the second half of 2017. In addition, we believe many of our commercial and industrial clients put projects on hold in 2017 as they waited for clarity on tax reform and what it might mean for capital spending. Now that tax reform has passed, this headwind should subside. Finally, the potential for healthcare reform stalled growth in our senior housing business early in the year, and this too is behind us now.

Fee and commission revenue was down slightly as higher interest rates caused refinancing volume and gain-on-sale margins to decrease materially in our mortgage business. However, our fee businesses are diverse, and this decrease was mostly offset by the aforementioned strength in wealth management and continued growth in transaction processing. We believe we can accelerate fee income growth in 2018 as wealth management continues its momentum, and transaction processing continues to benefit from continued growth in electronic transaction volume.

Looking Forward

We are enthusiastic about the potential for Dodd-Frank reform, specifically the proposal to move the threshold for the so-called "SIFI Limit" (Systemically Important Financial Institutions) to $250 billion from its current $50 billion. The SIFI limit has significantly impacted how we think about growth strategies. In fact last year, when it appeared that legislative discussion about moving the SIFI limit had stalled, we conducted a detailed analysis to determine the cost of crossing the $50 billion threshold. We viewed that cost as prohibitive and it impacted our desire to pursue growth through larger scale acquisitions.

If the limit is moved higher as proposed, we have the opportunity to pursue larger in-footprint acquisition targets so that we can add much needed scale to spread risk management and technology infrastructure spend over a larger base.

As we noted in our investor communications throughout 2017, we expect to increase spending on information technology projects in 2018. New leadership in information technology has helped our team identify areas of investment that will pay significant dividends in our business as we look to surpass our competition in several important areas.

One area where we intend to invest in 2018 is data analytics, as better leveraging of our digital assets can lead to significant benefits in how we run the business. For example, in credit risk management we have decades of data on how various loan types perform across the economic cycle. Viewed through the lens of data analytics, this information can help supplement the intellectual property already housed in the minds of our credit analysis team. This in turn will help us identify the types of borrowers, loan structures, and industries where we can grow without unacceptably increasing risk to the bank.

In business resiliency, the natural disaster events of 2017 provided a great collective learning experience for the company. Although we recovered from the August 2017 tornado that hit our operations center within hours, and Hurricane Harvey ultimately proved to be largely a non-event for our company, both events identified areas of improvement. We expect to look more closely at cloud-based solutions in 2018 for that reason, which is a change from our historic preference to have all key systems housed within our own data center.

Changing consumer preferences that impact several business units also will require ongoing IT investment. We are ramping up our capabilities in the growing self-service or DIY channels, which reduce traditional cost of delivery over time, and exploring automation and robotics for transaction execution.

We also continue to scour the company to eliminate unnecessary cost with the goal of improving our efficiency ratio. An internal program conducted across the company identified more than $1.4 million in run-rate expense reductions in 2017, and we expect to identify another $2 million or more in 2018. This will complement the granular expense review process we now have in place as we strive to reduce our efficiency ratio to 60 percent in the next three years.

The Spirit and Character of Our Employees

Although 2017 was a great year financially for the company, two non-financial accomplishments highlight what I am most proud of this year.

Hurricane Harvey had a dramatic impact on our nearly 300 employees in Houston. Many of them were personally impacted and displaced from homes; some even had to be evacuated by boat. As the disaster unfolded on the news, I got the same question over and over from employees across the footprint: How can I help?

We quickly reacted and worked with a local non-profit to form an employee relief fund to assist impacted employees in the rebuilding effort.

All employees were able to contribute, with total contributions matched by the company. The outpouring was overwhelming: 597 employees contributed nearly $90,000, enabling us to provide meaningful assistance to those in need.

The weekend following the storm, I learned that BOK Financial teammates were showing up at the homes of their fellow employees to help with the even harder part of the rebuilding effort: tearing out and disposing of damaged drywall and carpet, mopping out flooded rooms, and hauling refuse to the dump.

The collective effort of all employees in this regard was without question my proudest moment as CEO. It shows the true spirit and character of our team.

And it's this spirit and character that is reflected in BOK Financial being named one of America's most respected banks in a June 2017 survey of customers and prospects by American Banker Magazine. In that survey, we scored highest in all of the areas that a CEO or shareholder would want his or her company to demonstrate, including corporate citizenship, governance, workplace, ethical behavior and fairness in the way it conducts business.

It's no accident that we outperformed in this regard. The underpinning of BOK Financial has always been one of commitment to our communities, our customers, and each other. This is reflective of the philanthropic priorities of our chairman, George Kaiser, who was one of the original signers of The Giving Pledge, a commitment by the world's wealthiest individuals and families to dedicate the majority of their wealth to giving back[2]. Our employees learn early in their careers that community involvement is core to the DNA of our company, and that the leaders in our company have embraced this commitment.

And they respond wholeheartedly. In 2017, BOK Financial employees volunteered more than 20,000 hours to local non-profit entities, and 384 of them serve on 551 leadership boards and set tone, direction, and strategy for these organizations. Employees donated more than $2.2 million to our various United Way campaigns in 2017. Their charitable spirit is matched by the company, which granted more than $5.1 million to charitable causes through the BOKF Foundation.

Accordingly, BOK Financial was recognized by the Association of Fundraising Professionals, a national umbrella organization for philanthropy, as a 2017 Outstanding Philanthropist.

I'm proud of each and every one of my BOK Financial teammates. They are outstanding ambassadors for BOK Financial, whether they are meeting the needs of customers with the highest ethical standards; giving their time, talent, and resources to our communities; or donning hip waders and slogging through flood water to help a fellow employee rebuild their home in the wake of a hurricane. It's the spirit and character of BOK Financial's employees that made our strong 2017 financial results possible; this gives us much as to build on in 2018.

Best regards,

Steven G. Bradshaw
President and Chief Executive Officer

[2] *For more information see www.givingpledge.org.*
Photo courtesy of TulsaPeople Magazine.

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

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the quarterly period ended December 31, 2017

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	73-1373454
(State or other jurisdiction of Incorporation or Organization)	**(IRS Employer Identification No.)**
Bank of Oklahoma Tower	
Boston Avenue at Second Street	
Tulsa, Oklahoma	74172
(Address of Principal Executive Offices)	**(Zip Code)**

(918) 588-6000
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12 (b) of the Act: None
Securities registered pursuant to Section 12 (g) of the Act:
Common stock, $0.00006 par value

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15 (d) of the Act. Yes ☐ No ☒

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 Website, 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 if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or a smaller reporting company. See definitions of "larger accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):
Large accelerated filer ☒ Accelerated filer ☐ Non-accelerated filer ☐ Smaller reporting company ☐ Emerging growth company ☐
If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐
Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

The aggregate market value of the registrant's common stock ("Common Stock") held by non-affiliates is approximately $2.1 billion (based on the June 30, 2017 closing price of Common Stock of $84.13 per share). As of January 31, 2018, there were 65,550,406 shares of Common Stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Part III incorporates certain information by reference from the Registrant's Proxy Statement for the 2018 Annual Meeting of Shareholders.

BOK Financial Corporation
Form 10-K
Year Ended December 31, 2017

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PART I

ITEM 1. BUSINESS

General

Developments relating to individual aspects of the business of BOK Financial Corporation ("BOK Financial" or "the Company") are described below. Additional discussion of the Company's activities during the current year appears within Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations."

Description of Business

BOK Financial is a financial holding company incorporated in the state of Oklahoma in 1990 whose activities are governed by the Bank Holding Company Act of 1956 ("BHCA"), as amended by the Financial Services Modernization Act or Gramm-Leach-Bliley Act and the Dodd-Frank Wall Street Reform and Consumer Protection Act (the "Dodd-Frank Act"). BOK Financial offers full service banking in Oklahoma, Texas, New Mexico, Northwest Arkansas, Colorado, Arizona, and Kansas/Missouri. At December 31, 2017, the Company reported total consolidated assets of $32 billion and ranked as the 56th largest bank holding company based on asset size.

BOKF, NA ("the Bank") is a wholly owned subsidiary bank of BOK Financial. The Bank operates TransFund, Cavanal Hill Investment Management, BOK Financial Asset Management, Inc. and seven banking divisions: Bank of Albuquerque, Bank of Arizona, Bank of Arkansas, Mobank, Bank of Oklahoma, Bank of Texas and Colorado State Bank and Trust. Other wholly owned subsidiaries of BOK Financial include BOK Financial Securities, Inc., a broker/dealer that primarily engages in retail and institutional securities sales and municipal bond underwriting and The Milestone Group, Inc., an investment adviser to high net worth clients. Other non-bank subsidiary operations do not have a significant effect on the Company's financial statements.

Our overall strategic objective is to emphasize growth in long-term value by building on our leadership position in Oklahoma through expansion into other high-growth markets in contiguous states. We operate primarily in the metropolitan areas of Tulsa and Oklahoma City, Oklahoma; Dallas, Fort Worth and Houston, Texas; Albuquerque, New Mexico; Denver, Colorado; Phoenix, Arizona, and Kansas City, Kansas/Missouri. Our acquisition strategy targets fairly priced quality organizations with demonstrated solid growth that would supplement our principal lines of business. We provide additional growth opportunities by hiring talent to enhance competitiveness, adding locations and broadening product offerings. Our operating philosophy embraces local decision-making in each of our geographic markets while adhering to common Company standards.

Our primary focus is to provide a comprehensive range of nationally competitive financial products and services in a personalized and responsive manner. Products and services include loans and deposits, cash management services, fiduciary services, mortgage banking and brokerage and trading services to middle-market businesses, financial institutions and consumers. Commercial banking represents a significant part of our business. Our credit culture emphasizes building relationships by making high quality loans and providing a full range of financial products and services to our customers. We offer derivative products that enable mortgage banking customers to manage their production risks and our energy financing expertise enables us to offer commodity derivatives for customers to use in their risk management. Our diversified base of revenue sources is designed to generate returns in a range of economic situations. Historically, fees and commissions provide 45% to 48% of our total revenue. Approximately 45% of our revenue came from fees and commissions in 2017.

BOK Financial's corporate headquarters is located at Bank of Oklahoma Tower, Boston Avenue at Second Street, Tulsa, Oklahoma 74172.

The Company's Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports are available on the Company's website at www.bokf.com as soon as reasonably practicable after the Company electronically files such material with or furnishes it to the Securities and Exchange Commission.

Operating Segments

BOK Financial operates 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 electronic funds network. Consumer Banking includes retail lending and deposit services, lending and deposit services to small business customers served through the retail branch network and all mortgage banking activities. Wealth Management provides fiduciary services, private bank services and investment advisory services in all markets. Wealth Management also underwrites state and municipal securities and engages in brokerage and trading activities. Discussion of these principal lines of business appears within the Lines of Business section of "Management's Discussion and Analysis of Financial Condition and Results of Operations".

Competition

BOK Financial and its operating segments face competition from other banks, thrifts, credit unions and other non-bank financial institutions, such as investment banking firms, investment advisory firms, brokerage firms, investment companies, financial technology firms, government agencies, mortgage brokers and insurance companies. The Company competes largely on the basis of customer services, interest rates on loans and deposits, lending limits and customer convenience. Some operating segments face competition from institutions that are not as closely regulated as banks, and therefore are not limited by the same capital requirements and other restrictions. All market share information presented below is based upon share of deposits in specified areas according to Federal Deposit Insurance Corporation ("FDIC") as of June 30, 2017.

We are the largest financial institution in the state of Oklahoma with 14% of the state's total deposits. Bank of Oklahoma has 30% and 12% of the market share in the Tulsa and Oklahoma City areas, respectively. We compete with two banks that have operations nationwide and have greater access to funds at lower costs, higher lending limits, and greater access to technology resources. We also compete with regional and locally-owned banks in both the Tulsa and Oklahoma City areas, as well as in every other community in which we do business throughout the state.

Bank of Texas competes against numerous financial institutions, including some of the largest in the United States, and has a market share of approximately 2% in the Dallas, Fort Worth area and less than 1% in the Houston area. Bank of Albuquerque has a 10% market share in the Albuquerque area and competes with four large national banks, some regional banks and several locally-owned smaller community banks. Colorado State Bank and Trust has a market share of approximately 2% in the Denver area. Bank of Arkansas serves Benton and Washington counties in Arkansas with a market share of approximately 2%. Mobank has a market share of approximately 2% in the Kansas City, Missouri/Kansas area. Bank of Arizona operates as a community bank with locations in Phoenix, Mesa and Scottsdale with less than 1% market share. The Company's ability to expand into additional states remains subject to various federal and state laws.

Employees

As of December 31, 2017, BOK Financial and its subsidiaries employed 4,930 full-time equivalent employees. None of the Company's employees are represented by collective bargaining agreements. Management considers its employee relations to be good.

Supervision and Regulation

BOK Financial and its subsidiaries are subject to extensive regulations under federal and state laws. Both the scope of the laws and regulations and the intensity of the supervision to which our business is subject have increased in recent years. Regulatory enforcement and fines have also increased across the banking and financial services sector. Many of these changes have occurred as a result of the Dodd-Frank Act and its implementing regulations, most of which are now in place. These regulations and others are designed to promote safety and soundness, protect consumers and ensure the stability of the banking system as a whole. The purpose of these regulations is not necessarily to protect shareholders and creditors. As detailed below, these regulations require the Company and its subsidiaries to maintain certain capital balances and require the Company to provide financial support to its subsidiaries. These regulations may restrict the Company's ability to diversify, to acquire other institutions and to pay dividends on its capital stock. These regulations also include requirements on certain programs and services offered to our customers, including restrictions on fees charged for certain services. President Trump has issued an executive order that sets forth principles for reform of the federal financial regulatory framework, and the Republican majority in Congress has also suggested an agenda for financial regulatory change. It is too early to assess whether there will be any major changes in the regulatory environment or merely a rebalancing of the post financial crisis framework. The Company expects that its business will remain subject to extensive regulation and supervision.

The following information summarizes certain existing laws and regulations that affect the Company’s operations. It does not summarize all provisions of these laws and regulations and does not include all laws and regulations that affect the Company presently or in the future.

General

As a financial holding company, BOK Financial is regulated under the BHCA and is subject to regular inspection, examination and supervision by the Board of Governors of the Federal Reserve System (the "Federal Reserve Board"). Under the BHCA, BOK Financial files quarterly reports and other information with the Federal Reserve Board.

BOKF, NA is organized as a national banking association under the National Banking Act, and is subject to regulation, supervision and examination by the Office of the Comptroller of the Currency (the "OCC"), the FDIC, the Federal Reserve Board, the Consumer Financial Protection Bureau ("CFPB") and other federal and state regulatory agencies. The OCC has primary supervisory responsibility for national banks and must approve certain corporate or structural changes, including changes in capitalization, payment of dividends, change of place of business, and establishment of a branch or operating subsidiary. The OCC performs examinations concerning safety and soundness, the quality of management and directors, information technology and compliance with applicable regulations. The National Banking Act authorizes the OCC to examine every national bank as often as necessary.

A financial holding company, and the companies under its control, are permitted to engage in activities considered "financial in nature" as defined by the BHCA, Gramm-Leach-Bliley Act and Federal Reserve Board interpretations. Activities that are "financial in nature" include securities underwriting and dealing, insurance underwriting, merchant banking, operating a mortgage company, performing certain data processing operations, servicing loans and other extensions of credit, providing investment and financial advice, owning and operating savings and loan associations, and leasing personal property on a full pay-out, non-operating basis. A financial holding company is required to notify the Federal Reserve Board within thirty days of engaging in new activities determined to be "financial in nature." BOK Financial is engaged in some of these activities and has notified the Federal Reserve Board.

In order for a financial holding company to commence any new activity permitted by the BHCA, each insured depository institution subsidiary of the financial holding company must be "well capitalized" and "well managed" and have received a rating of at least "satisfactory" in its most recent examination under the Community Reinvestment Act. A financial holding company and its depository institution subsidiaries are considered to be "well capitalized" if they meet the requirements discussed in the section captioned "Capital Adequacy and Prompt Corrective Action" which follows. A financial holding company and its depository institution subsidiaries are considered to be "well managed" if they receive a composite rating and management rating of at least "satisfactory" in their most recent examinations. If a financial holding company fails to meet these requirements, the Federal Reserve Board may impose limitations or conditions on the conduct of its activities and the company may not commence any new financial activities without prior approval.

The BHCA requires the Federal Reserve Board’s prior approval for the direct or indirect acquisition of more than five percent of any class of voting stock of any non-affiliated bank. Under the Federal Bank Merger Act, the prior approval of the OCC is required for a national bank to merge with another bank or purchase the assets or assume the deposits of another bank. In reviewing applications seeking approval of merger and acquisition transactions, the bank regulatory authorities consider, among other things, the competitive effect and public benefits of the transactions, the capital position of the combined organization, the applicant’s performance record under the Community Reinvestment Act and fair housing laws and the effectiveness of the subject organizations in combating money laundering activities.

A financial holding company and its subsidiaries are prohibited under the BHCA from engaging in certain tie-in arrangements in connection with the provision of any credit, property or services. Thus, a subsidiary of a financial holding company may not extend credit, lease or sell property, furnish any services or fix or vary the consideration for these activities on the condition that (1) the customer obtain or provide additional credit, property or services from or to the financial holding company or any subsidiary thereof, or (2) the customer may not obtain some other credit, property or services from a competitor, except to the extent reasonable conditions are imposed to insure the soundness of credit extended.

The Bank and other non-bank subsidiaries are also subject to other federal and state laws and regulations. For example, BOK Financial Securities, Inc. is regulated by the Securities and Exchange Commission ("SEC"), the Financial Industry Regulatory Authority ("FINRA"), the Federal Reserve Board, and state securities regulators. Such regulations generally include licensing of certain personnel, customer interactions, and trading operations.

Interchange Fees

The Durbin Amendment to the Dodd-Frank Act required that interchange fees on electronic debit transactions paid by merchants must be "reasonable and proportional to the cost incurred by the issuer" and prohibited card network rules that have limited price competition among networks. Federal Reserve rules applicable to financial institutions that have assets of $10 billion or more provide that the maximum permissible interchange fee for an electronic debit transaction is the sum of 21 cents per transaction and 5 basis points multiplied by the value of the transaction. An upward adjustment of no more than 1 cent to an issuer's debit card interchange fee is allowed if the card issuer develops and implements policies and procedures reasonably designed to achieve certain fraud prevention standards. The Durbin Amendment also required all banks to comply with the prohibition on network exclusivity and routing requirements. Debit card issuers are required to make at least two unaffiliated networks available to merchants.

Volcker and Swap Rules

Title VI of the Dodd-Frank Act, commonly known as the Volcker Rule, prohibits the Company from (1) engaging in short-term proprietary trading for our own account, and (2) having certain ownership interests in or relationships with private equity or hedge funds. The fundamental prohibitions of the Volcker Rule apply to banking entities of any size, including the Company and its bank subsidiary. The final Volcker Rule regulations contain exemptions to the statutory prohibitions for market-making, hedging, underwriting, trading in U.S. government and agency obligations and also permit certain ownership interests in certain types of funds to be retained. They also permit the offering and sponsoring of funds under certain conditions. The final Volcker Rule regulations impose compliance and reporting obligations on banking entities and their covered activities. The Company has implemented a compliance program required by the Volcker Rule and has either divested or received an extension for holdings in certain legacy “illiquid funds.” The Company’s trading activity remains largely unaffected by the Volcker Rule as most of our trading activity is exempted or excluded from the proprietary trading prohibitions.

Title VII of the Dodd-Frank Act, commonly known as the Swap Rule, subjects nearly all derivative transactions to the regulations of the Commodity Futures Trading Commission ("CFTC") or SEC. This includes registration, recordkeeping, reporting, capital, margin and business conduct requirements on swap dealers and major swap participants. The CFTC and SEC both approved interim final rules on the definition "swap" and "swap dealer" which were effective October 2012. Under CFTC and SEC rules, entities transacting in less than $8 billion in notional value of swaps over any 12 month period during the phase-in period are exempt from the definition of and registration as a "swap dealer." In October 2017, the CFTC extended the phase-in period termination date by one year from December 31, 2018 to December 31, 2019. Barring any further action by the CFTC, the $8 billion threshold will be reduced to $3 billion at the end of 2019 when the phase-in period terminates. The Company currently estimates that the nature and volume of its swaps activity will not require it to register as a swap dealer any time prior to the phase-in period termination date.

Enhanced Prudential Standards

The Dodd-Frank Act directed the Federal Reserve Board to monitor emerging risks to financial institutions and enacted enhanced supervision and prudential standards applicable to bank holding companies with consolidated assets of $50 billion or more and non-bank covered companies designated as systematically important to the Financial Stability Oversight Council (often referred to as systemically important financial institutions). The Dodd-Frank Act mandates that certain regulatory requirements applicable to systemically important financial institutions be more stringent than those applicable to other financial institutions.

In February 2014, the Federal Reserve Board adopted rules to implement certain of these enhanced prudential standards. Beginning in 2015, the rules required publicly traded bank holding companies with $10 billion or more in total consolidated assets to establish risk committees and required bank holding companies with $50 billion or more in total consolidated assets to comply with enhanced liquidity and overall risk management standards. The Company has had a separate Risk Committee since 2013 and is in compliance with applicable requirements.

We monitor developments with respect to the enhanced prudential standards because of application to our Company if our total consolidated assets reach $50 billion or more.

Consumer Financial Protection

We are subject to a number of federal and state consumer protection laws that extensively govern our relationship with our customers. These laws include the Equal Credit Opportunity Act, the Fair Credit Reporting Act, the Truth in Lending Act, the Truth in Savings Act, the Electronic Fund Transfer Act, the Expedited Funds Availability Act, the Home Mortgage Disclosure Act, the Fair Housing Act, the Real Estate Settlement Procedures Act, the Fair Debt Collection Practices Act, the Service Members Civil Relief Act and these laws' respective state-law counterparts, as well as state usury laws and laws regarding unfair and deceptive acts and practices. These and other federal laws, among other things, require disclosures of the cost of credit and terms of deposit accounts, provide substantive consumer rights, prohibit discrimination in credit transactions, regulate the use of credit report information, provide financial privacy protections, prohibit unfair, deceptive and abusive practices, restrict our ability to raise interest rates and subject us to substantial regulatory oversight. Violations of applicable consumer protection laws can result in significant potential liability from litigation brought by customers, including actual damages, restitution and attorneys' fees. Federal bank regulators, state attorneys general and state and local consumer protection agencies may also seek to enforce consumer protection requirements and obtain these and other remedies, including regulatory sanctions, customer rescission rights, action by the state and local attorneys general in each jurisdiction in which we operate and civil money penalties. Failure to comply with consumer protection requirements may also damage our reputation and result in our failure to obtain any required bank regulatory approval for merger or acquisition transactions we may wish to pursue or our prohibition from engaging in such transactions even if approval is not required.

The CFPB has broad rulemaking authority for a wide range of consumer financial laws that apply to all banks, including, among other things, the authority to prohibit "unfair, deceptive or abusive" acts and practices. Abusive acts or practices are defined as those that materially interfere with a consumer's ability to understand a term or condition of a consumer financial product or service or take unreasonable advantage of a consumer's (i) lack of financial savvy, (ii) inability to protect himself in the selection or use of consumer financial products or services, or (iii) reasonable reliance on a covered entity to act in the consumer's interests. The CFPB can issue cease-and-desist orders against banks and other entities that violate consumer financial laws. The CFPB may also institute a civil action against an entity in violation of federal consumer financial law in order to impose a civil penalty or injunction.

Community Reinvestment Act

The Community Reinvestment Act of 1977 ("CRA") requires depository institutions to assist in meeting the credit needs of their market areas consistent with safe and sound banking practice. Under the CRA, each depository institution is required to help meet the credit needs of its market areas by, among other things, providing credit to low- and moderate-income individuals and communities. Depository institutions are periodically examined for compliance with the CRA and are assigned ratings. In order for a financial holding company to commence any new activity permitted by the BHC Act, or to acquire any company engaged in any new activity permitted by the BHC Act, each insured depository institution subsidiary of the financial holding company must have received a rating of at least "satisfactory" in its most recent examination under the CRA. Furthermore, banking regulators take into account CRA ratings when considering a request for an approval of a proposed transaction. The Bank received a rating of "outstanding" in its most recent CRA examination, which is above "satisfactory."

Financial Privacy

The federal banking regulators adopted rules that limit the ability of banks and other financial institutions to disclose non-public information about consumers to non-affiliated third parties. These limitations require disclosure of privacy policies to consumers and, in some circumstances, allow consumers to prevent disclosure of certain personal information to a non-affiliated third party. These regulations affect how consumer information is transmitted through diversified financial companies and is conveyed to outside parties.

Capital Adequacy and Prompt Corrective Action

The Federal Reserve Board, the OCC and the FDIC have issued substantially similar risk-based and leverage capital guidelines applicable to United States banking organizations to ensure capital adequacy based upon the risk levels of assets and off-balance sheet financial instruments. In addition, these regulatory agencies may from time to time require that a banking organization maintain capital above the minimum levels, whether because of its financial condition or actual or anticipated growth. Capital adequacy guidelines and prompt corrective action regulations involve quantitative measures of assets, liabilities, and certain off-balance sheet items calculated under regulatory accounting practices. Capital amounts and classifications are also subject to qualitative judgments by regulators regarding components, risk weighting and other factors.

Federal Reserve Board risk-based guidelines define a four-tier capital framework based on three categories of regulatory capital. Common equity Tier 1 capital ("CET1") includes common shareholders' equity, less goodwill, most intangible assets and other adjustments. Tier 1 capital consists of CET1 capital plus certain additional capital instruments and related surplus. Supplementary capital ("Tier 2") consists of preferred stock not qualifying as Tier 1 capital, qualifying mandatory convertible debt securities, limited amounts of subordinated debt, other qualifying term debt and allowances for credit losses, subject to limitations. Assets and off-balance sheet exposures are assigned to categories of risk-weights, based primarily upon relative credit risk. Risk-based capital ratios are calculated by dividing CET1, Tier 1 and total capital by risk-weighted assets.

New capital rules were effective for banks and bank holding companies, including BOK Financial on January 1, 2015 as part of a package of regulatory reforms developed by the Basel Committee on Banking Supervision ("BCBS") to strengthen the regulation, supervision and risk management of the banking sector, commonly referred to as the Basel III framework. Components of these rules will phase in through January 1, 2019, with certain exceptions. The new capital rules established a 7% threshold for the common equity Tier 1 ratio consisting of a minimum level plus a capital conservation buffer. The rules also changed both the Tier 1 risk based capital requirements and the total risk based requirements to a minimum of 6% and 8%, respectively, plus a capital conservation buffer of 2.5% totaling 8.5% and 10.5%, respectively. The Company elected to exclude unrealized gains and losses from available for sale securities from its calculation of Tier 1 capital, consistent with the treatment under previous capital rules.

The leverage ratio is determined by dividing Tier 1 capital by adjusted average total assets. Banking organizations are required to maintain a ratio of at least 4%. 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 Federal Deposit Insurance Corporation Improvement Act of 1991 (the "FDICIA"), among other things, identifies five capital categories for insured depository institutions from well capitalized to critically under-capitalized and requires the respective federal regulatory agencies to implement systems for prompt corrective action for institutions failing to meet minimum capital requirements within such categories. FDICIA imposes progressively more restrictive covenants on operations, management and capital distributions, depending upon the category in which an institution is classified. The various regulatory agencies have adopted substantially similar regulations that define the five capital categories identified by FDICIA, using the total risk-based capital, Tier 1 risk-based capital and leverage capital ratios as the relevant capital measures. Such regulations establish various degrees of corrective action to be taken when an institution is considered under-capitalized.

Liquidity Requirements

The Basel III framework also requires bank holding companies and banks to measure their liquidity against specific liquidity tests. One test, referred to as the liquidity coverage ratio, is designed to ensure that the banking entity maintains a prescribed minimum level of unencumbered high-quality liquid assets equal to expected net cash outflows as defined. The other test, referred to as the net stable funding ratio, is designed to promote greater reliance on medium and long term funding sources.

On September 3, 2014, U.S. federal banking agencies published the final rule covering Liquidity Risk Management Standards that would standardize minimum liquidity requirements for internationally active banking organizations as defined (generally those with total consolidated assets in excess of $250 billion) as well as modified liquidity requirements for other banking organizations with total consolidated assets in excess of $50 billion that are not internationally active. Although the final rule does not apply to banking organizations with total assets less than $50 billion, including the Company, if growth in the balance sheet of the Company were to approach the $50 billion threshold, the costs of such liquidity regulations would begin to be realized.

Stress Testing

As required by the Dodd-Frank Act, the Federal Reserve published regulations that require bank holding companies with $10 billion to $50 billion in assets to perform annual capital stress tests. The requirements for annual capital stress testing became effective for the Company in the fourth quarter of 2013. The Dodd-Frank Act Stress Test ("DFAST") is a forward-looking exercise under which the Company and its banking subsidiary estimate the impact of a hypothetical severely adverse macroeconomic scenario provided by the Federal Reserve and the Office of the Comptroller of the Currency on its financial condition and regulatory capital ratios over a nine-quarter time horizon. Under the scenario provided by the regulatory agencies for the Company's most recently completed stress test, all capital ratio measures remain above the minimum regulatory thresholds. Additional information concerning the annual stress test may be found on the Company's Investor Relations page at www.bokf.com under the "Presentations" tab. The results of future capital stress tests may place constraints on capital distributions or increases in required regulatory capital under certain circumstances.

Further discussion of regulatory capital, including regulatory capital amounts and ratios, is set forth under the heading "Liquidity and Capital" within "Management's Discussion and Analysis of Financial Condition and Results of Operations" and in Note 15 of the Company's Notes to Consolidated Financial Statements, both of which appear elsewhere herein.

Executive and Incentive Compensation

Guidelines adopted by federal banking agencies prohibit excessive compensation as an unsafe and unsound practice and describe compensation as excessive when the amounts paid are unreasonable or disproportionate to the services performed by an executive officer, employee, director or principal shareholder. The Federal Reserve Board has issued comprehensive guidance on incentive compensation intended to ensure that the incentive compensation policies do not undermine safety and soundness by encouraging excessive risk taking. This guidance covers all employees that have the ability to materially affect the risk profile of an organization, either individually or as part of a group, based on key principles that (i) incentives do not encourage risk-taking beyond the organization's ability to identify and manage risk, (ii) compensation arrangements are compatible with effective internal controls and risk management, and (iii) compensation arrangements are supported by strong corporate governance, including active and effective board oversight. Deficiencies in compensation practices may affect supervisory ratings and enforcement actions may be taken if incentive compensation arrangements pose a risk to safety and soundness.

Deposit Insurance

Substantially all of the deposits held by the Bank are insured up to applicable limits by the Deposit Insurance Fund ("DIF") of the FDIC and are subject to deposit insurance assessments to maintain the DIF. In 2011, the FDIC released a final rule to implement provisions of the Dodd-Frank Act that affect deposit insurance assessments. Among other things, the Dodd-Frank Act raised the minimum designated reserve ratio from 1.15% to 1.35% of estimated insured deposits, removed the upper limit of the designated reserve ratio, required that the designated reserve ratio reach 1.35% by September 30, 2020, and required that the FDIC offset the effect of increasing the minimum designated reserve ratio on depository institutions with total assets of less than $10 billion. The Dodd-Frank Act provided the FDIC flexibility in implementation of the increase in the designated reserve ratio, but it will ultimately result in increased deposit insurance costs to the Company. The Dodd-Frank Act also required that the FDIC redefine the assessment base to average consolidated assets minus average tangible equity.

On June 30, 2016, the DIF rose above the 1.15%, resulting in a reduction of the initial assessment rate for all banks and implementing a 4.5% surcharge on insured depository institutions with total consolidated assets of $10 billion or more. The assessment base for the surcharge will be the regular assessment base reduced by $10 billion. If the DIF reserve ratio does not reach 1.35% by December 31, 2018, the FDIC will impose a shortfall assessment on banks with total consolidated assets of $10 billion or more in the first quarter of 2019.

Dividends

A key source of liquidity for BOK Financial is dividends from BOKF, NA, which is limited by various banking regulations to net profits, as defined, for the year plus retained profits for the preceding two years. Dividends are further restricted by minimum capital requirements and the Company's internal capital policy. BOKF, NA's dividend limitations are discussed under the heading "Liquidity and Capital" within "Management's Discussion and Analysis of Financial Condition and Results of Operations."

Source of Strength Doctrine

According to Federal Reserve Board policy, a bank holding company is expected to act as a source of financial strength to each subsidiary bank and to commit resources to support each such subsidiary. This support may be required at times when a bank holding company may not be able to provide such support.

Transactions with Affiliates

The Federal Reserve Board regulates transactions between the Company and its subsidiaries. Generally, the Federal Reserve Act and Regulation W, as amended by the Dodd-Frank Act, limit the Company’s banking subsidiary and its subsidiaries, to lending and other "covered transactions" with affiliates. The aggregate amount of covered transactions a banking subsidiary or its subsidiaries may enter into with an affiliate may not exceed 10% of the capital stock and surplus of the banking subsidiary. The aggregate amount of covered transactions with all affiliates may not exceed 20% of the capital stock and surplus of the banking subsidiary.

Covered transactions with affiliates are also subject to collateral requirements and must be conducted on arm's length terms. Covered transactions include (a) a loan or extension of credit by the banking subsidiary, including derivative contracts, (b) a purchase of securities issued to a banking subsidiary, (c) a purchase of assets by the banking subsidiary unless otherwise exempted by the Federal Reserve, (d) acceptance of securities issued by an affiliate to the banking subsidiary as collateral for a loan, and (e) the issuance of a guarantee, acceptance or letter of credit by the banking subsidiary on behalf of an affiliate.

Bank Secrecy Act and USA PATRIOT Act

The Bank Secrecy Act ("BSA") and The USA PATRIOT Act of 2001 ("PATRIOT Act") imposes many requirements on financial institutions in the interest of national security and law enforcement. BSA requires banks to maintain records and file suspicious activity reports that are of use to law enforcement and regulators in combating money laundering and other financial crimes. The PATRIOT Act is intended to deny terrorists and criminals the ability to access the U.S. financial services system and places significantly greater requirements on financial institutions. Financial institutions, such as the Company and its subsidiaries, must have a designated BSA Officer, internal controls, independent testing and training programs commensurate with their size and risk profile. As part of its internal control program, a financial institution is expected to have effective customer due diligence and enhanced due diligence requirements for high-risk customers, as well as processes to prohibit transactions with entities subject to Office of Foreign Asset Control sanctions. Documentation and recordkeeping requirements, as well as system requirements, aimed at identifying and reporting suspicious activity reporting, must increase with the institution's size and complexity. Failure to implement or maintain adequate programs and controls to combat terrorist financing and money laundering may have serious legal, financial, and reputational consequences.

Governmental Policies and Economic Factors

The operations of BOK Financial and its subsidiaries are affected by legislative changes and by the policies of various regulatory authorities and, in particular, the policies of the Federal Reserve Board. The Federal Reserve Board has statutory objectives to maximize employment and maintain price stability. Among the instruments of monetary policy used by the Federal Reserve Board to implement these objectives are: open-market operations in U.S. Government securities, changes in the discount rate and federal funds rate on bank borrowings, and changes in reserve requirements on bank deposits. The effect of future changes in such policies on the business and earnings of BOK Financial and its subsidiaries is uncertain.

In response to the significant recession in business activity which began in 2007, the Federal Reserve took aggressive actions to reduce interest rates and provide liquidity. While many of the crisis-related programs have expired or been closed, government legislation and policies continue to be accommodative, including increases in government spending, reduction of certain taxes and promotion of affordable home programs.

The Federal Reserve completed its bond purchase program designed to reduce longer–term rates in October of 2014 and has continued to maintain an accommodative policy of reinvesting principal payments from its holdings of agency debt and agency mortgage–backed securities and rolling over maturing Treasury securities. The Federal Reserve announced that, beginning in October of 2017, it would initiate a balance sheet normalization program that will gradually reduce the the reinvestment of principal payments from its securities holdings.

As a result of signs of an improving economy, the Federal Reserve increased its target rate by 25 basis points three times during 2017, after an initial 25 basis point increase in December of 2016, the second such increase since the end of 2008. Real gross domestic product is forecasted to increase at a solid pace during 2018, including consideration of the expected impact of tax reform. The inflation rate is expected to be close to the Federal Reserve's target of 2%. We expect a continuation of gradual increases in short term interest rates during 2018 and 2019, as the Federal Reserve has indicated a process of normalization while promoting sustainable expansion and a rise of inflation to about 2%. The short–term effectiveness and long–term impact of these programs on the economy in general and on BOK Financial in particular are uncertain.

The Tax Cuts and Jobs Act ("the Tax Reform Act"), signed into law on December 22, 2017, will have a broad impact on the Company and our customers. We believe that the overall impact of lower income tax rates and other provisions of the Tax Reform Act will be beneficial to future economic growth.

Foreign Operations

BOK Financial does not engage in operations in foreign countries, nor does it lend to foreign governments.

ITEM 1A. RISK FACTORS

BOK Financial Corporation and its subsidiaries could be adversely affected by risks and uncertainties that could have a material impact on its financial condition and results of operations, as well as on its common stock and other financial instruments. Risk factors which are significant to the Company include, but are not limited to:

General and Regulatory Risk Factors

Adverse factors could impact BOK Financial's ability to implement its operating strategy.

Although BOK Financial has developed an operating strategy, which it expects to result in continuing improved financial performance, BOK Financial cannot ensure that it will be successful in fulfilling this strategy or that this operating strategy will be successful. Achieving success is dependent upon a number of factors, many of which are beyond BOK Financial's direct control. Factors that may adversely affect BOK Financial's ability to implement its operating strategy include:

- deterioration of BOK Financial's asset quality;
- deterioration in general economic conditions, especially in BOK Financial's core markets;
- inability to control BOK Financial's non-interest expenses;
- inability to increase non-interest income;
- inability to access capital;
- decreases in net interest margins;
- increases in competition;
- adverse regulatory developments.

Substantial competition could adversely affect BOK Financial.

Banking is a competitive business. BOK Financial competes actively for loan, deposit and other financial services business in the southwest region of the United States. BOK Financial's competitors include a large number of small and large local and national banks, savings and loan associations, credit unions, trust companies, broker-dealers and underwriters, as well as many financial and non-financial firms that offer services similar to those of BOK Financial. Large national financial institutions have substantial capital, technology and marketing resources. Such large financial institutions may have greater access to capital at a lower cost than BOK Financial does, which may adversely affect BOK Financial's ability to compete effectively.

BOK Financial has expanded into markets outside of Oklahoma, where it competes with a large number of financial institutions that have an established customer base and greater market share than BOK Financial. With respect to some of its services, BOK Financial competes with non-bank companies that are not subject to regulation. The absence of regulatory requirements may give non-banks a competitive advantage.

The increasingly competitive environment is in part a result of changes in regulation, changes in technology and product delivery systems and the accelerating pace of consolidation among financial service providers. Our success depends on our ability to respond to the threats and opportunities of financial technology innovations. Developments in "fintech" and crypto-currencies have the potential to disrupt the financial industry and change the way banks do business. Investment in new technology to stay competitive could result in significant costs and increased cybersecurity risk. Our success depends on our ability to adapt to the pace of the rapidly changing technological environment which is important to retention and acquisitions of customers.

Government regulations could adversely affect BOK Financial.

BOK Financial and BOKF, NA are subject to banking laws and regulations that limit the type of acquisitions and investments that we may make. In addition, certain permitted acquisitions and investments are subject to prior review and approval by banking regulators, including the Federal Reserve, OCC and FDIC. Banking regulators have broad discretion on whether to approve proposed acquisitions and investments. In deciding whether to approve a proposed acquisition, federal banking regulators will consider, among other things, the effect of the acquisition on competition; the convenience and needs of the communities to be served, including our record of compliance under the Community Reinvestment Act; and our effectiveness in combating money laundering. They will also consider our financial condition and our future prospects, including projected capital ratios and levels; the competence, experience, and integrity of our management; and our record of compliance with laws and regulations.

The last several years have seen an increase in regulatory costs borne by the banking industry. Laws, regulations or policies currently affecting BOK Financial and its subsidiaries may change. The implementation of the Dodd-Frank Act has and will continue to affect BOK Financial's businesses, including interchange revenue, mortgage banking, derivative and trading activities on behalf of customers, consumer products and funds management.

Regulatory authorities may change their interpretation of these statutes and regulations, including the OCC, our primary regulator, and the CFPB, our regulator for certain designated consumer laws and regulations. Violations of laws and regulations could limit the growth potential of BOK Financial's businesses. We have made extensive investments in human and technological resources to address enhanced regulatory expectations, including investments in the areas of risk management, compliance, and capital planning. Political developments, including the change in administration in the United States, have added additional uncertainty to the implementation, scope and timing of changes in the regulatory environment for the banking industry and for the broader economy.

The Tax Reform Act was signed into law on December 22, 2017. Key provisions that will impact domestic banks include lowering of the corporate tax rate to 21%, full expensing of qualified assets purchased and placed in service after September 27, 2017, elimination of net operating loss carry-backs, and limitations on the deductibility of FDIC insurance and compensation expense for certain executive officers. Many provisions of the Tax Reform Act may also impact our customers, including limitations on deductions by businesses for net interest expense and by individuals for interest on mortgage loans in excess of $750,000 and elimination of deduction of interest on certain home equity loans. BOKF believes that the overall impact of the Tax Reform Act should benefit our customers. However, certain provisions could have an adverse impact on our customers and BOKF's products, services and revenue.

Political environment could negatively impact BOK Financial's business.

As a result of the financial crisis and related government intervention to stabilize the banking system, there have been a series of laws and related regulations proposed or enacted in an attempt to ensure the crisis is not repeated. Many of the new regulations have been far-reaching. The intervention by the government also impacted populist sentiment with a negative view of financial institutions. High profile mistakes by the very largest banks in the country have continued to fuel negative sentiment towards the banking industry. This sentiment may increase litigation risk to the Company or have an adverse impact on BOK Financial's future operations. Recent legislative proposals could slow the rate of future increases in regulatory burden for BOK Financial. However, legislative outcomes and their durability are inherently uncertain.

Credit Risk Factors

Adverse regional economic developments could negatively affect BOK Financial's business.

At December 31, 2017, loans to businesses and individuals with collateral primarily located in Texas represented approximately 34% of the total loan portfolio and loans to businesses and individuals with collateral primarily located in Oklahoma represented approximately 19% of our total loan portfolio. These geographic concentrations subject the loan portfolio to the general economic conditions within these areas. Poor economic conditions in Oklahoma, Texas or other markets in the southwest region may cause BOK Financial to incur losses associated with higher default rates and decreased collateral values in BOK Financial's loan portfolio. A regional economic downturn could also adversely affect revenue from brokerage and trading activities, mortgage loan originations and other sources of fee-based revenue.

Extended oil and gas commodity price downturns could negatively affect BOK Financial customers.

At December 31, 2017, 17% of BOK Financial's total loan portfolio is comprised of loans to borrowers in the energy industry. The energy industry is historically cyclical and prolonged periods of low oil and gas commodity prices could negatively impact borrowers' ability to pay. In addition, the Company does business in several major oil and natural gas producing states including Oklahoma, Texas and Colorado. The economies of these states could be negatively impacted by prolonged periods of low oil and gas commodity prices resulting in increased credit migration to classified and nonaccruing categories, higher loan loss provisions and risk of credit losses from both energy borrowers and businesses and individuals in those regional economies.

Other adverse economic factors affecting particular industries could have a negative effect on BOK Financial customers and their ability to make payments to BOK Financial.

Certain industry-specific economic factors also affect BOK Financial. For example, BOK Financial's loan portfolio includes commercial real estate loans. A downturn in the real estate industry in general or in certain segments of the commercial real estate industry in the southwest region could also have an adverse effect on BOK Financial's operations. Regulatory changes in healthcare may negatively affect our customers, which to date primarily has been focused in senior housing. A U.S. House proposal that provides states more flexibility in using Medicare/Medicaid funds may reduce healthcare reimbursement rates.

Adverse global economic factors could have a negative effect on BOK Financial customers and counterparties.

Economic conditions globally, including those of the European Union and China, could impact BOK Financial’s customers and counterparties with which we do business. We have no direct exposure to European sovereign debt and our aggregate gross exposure to European financial institutions totaled $2.9 million at December 31, 2017. Our exposure to Chinese financial institutions is limited. In addition, we have an aggregate gross exposure to internationally active domestic financial institutions of approximately $226 million at December 31, 2017 composed of $217 million of cash and securities positions and $9.8 million of gross derivative positions. The financial condition of these institutions is monitored on an on-going basis. We have not identified any significant customer exposures to European sovereign debt, European financial institutions or Chinese financial institutions.

Liquidity and Interest Rate Risk Factors

Fluctuations in interest rates could adversely affect BOK Financial's business.

BOK Financial's business is highly sensitive to:

- the monetary policies implemented by the Federal Reserve Board, including the discount rate on bank borrowings and changes in reserve requirements, which affect BOK Financial's ability to make loans and the interest rates we may charge;
- changes in prevailing interest rates, due to the dependency of the the Bank on interest income;
- open market operations in U.S. Government securities.

A significant increase in market interest rates, or the perception that an increase may occur, could adversely affect both BOK Financial's ability to originate new loans and BOK Financial's ability to grow. Conversely, a decrease in interest rates could result in acceleration in the payment of loans, including loans underlying BOK Financial's holdings of residential mortgage-backed securities and termination of BOK Financial's mortgage servicing rights. In addition, changes in market interest rates, changes in the relationships between short-term and long-term market interest rates or changes in the relationships between different interest rate indices, could affect the interest rates charged on interest-earning assets differently than the interest rates paid on interest-bearing liabilities. This difference could result in an increase in interest expense relative to interest income, which would reduce the Company’s net interest revenue. In a rising interest rate environment, the composition of the deposit portfolio could shift resulting in a mix that is more sensitive to changes in interest rates than is the current mix. An increase in market interest rates also could adversely affect the ability of BOK Financial's floating-rate borrowers to meet their higher payment obligations. If this occurred, it could cause an increase in nonperforming assets and net charge-offs, which could adversely affect BOK Financial's business.

We have a significant number of loans, derivative contracts, borrowings and other financial instruments with attributes that are either directly or indirectly dependent on LIBOR. In 2017, the U.K. Financial Conduct Authority announced that LIBOR is to be transitioned to alternative rates during the next four years. U.S. regulatory authorities have voiced similar support for phasing out LIBOR. The impact of alternatives to LIBOR on the valuations, pricing and operation of our financial instruments is not yet known.

Changes in mortgage interest rates could adversely affect mortgage banking operations as well as BOK Financial's substantial holdings of residential mortgage-backed securities and mortgage servicing rights, and brokerage and trading revenue.

Our available for sale residential mortgage-backed security portfolio represents investment interests in pools of residential mortgages, composing $5.4 billion or 17% of total assets of the Company at December 31, 2017. The fair value of residential mortgage-backed securities is highly sensitive to changes in interest rates. BOK Financial mitigates this risk somewhat by investing principally in shorter duration mortgage products, which are less sensitive to changes in interest rates. A significant decrease in interest rates may lead mortgage holders to refinance the mortgages constituting the pool backing the securities, subjecting BOK Financial to a risk of prepayment and decreased return on investment due to subsequent reinvestment at lower interest rates. A significant decrease in interest rates may also accelerate premium amortization. Conversely, a significant increase in interest rates may cause mortgage holders to extend the term over which they repay their loans, which delays the Company's opportunity to reinvest funds at higher rates.

Residential mortgage-backed securities are also subject to credit risk from delinquency or default of the underlying loans. BOK Financial mitigates this risk somewhat by investing in securities issued by U.S. government agencies. Principal and interest payments on the loans underlying these securities are guaranteed by these agencies.

BOK Financial derives a substantial amount of revenue from mortgage loan activities, including $38 million from the production and sale of mortgage loans, $66 million from the servicing of mortgage loans, $12 million from the trading of U.S. agency residential mortgage backed securities and related financial instruments and $35 million from sales of financial instruments to other mortgage lenders in 2017.

In addition, as part of BOK Financial's mortgage banking business, BOK Financial has substantial holdings of mortgage servicing rights, totaling $253 million or 0.78% of total assets at December 31, 2017. The fair value of these rights is also very sensitive to changes in interest rates. Falling interest rates tend to increase loan prepayments, which may lead to a decrease in the value of related servicing rights. BOK Financial attempts to manage this risk by maintaining an active hedging program for its mortgage servicing rights. The Company's hedging program focuses on partially hedging the risk of changes in fair value, primarily related to changes mortgage interest rates. Other factors, such as short-term interest rates, which also impact the value of mortgage servicing rights, may not be hedged. The value of mortgage servicing rights may also decrease due to rising delinquency or default of the loans serviced, which are not hedged. This risk is mitigated somewhat by adherence to underwriting standards on loans originated for sale.

Fees and commissions revenue, as well our substantial holdings of residential mortgage backed securities and mortgage servicing rights may be adversely affected by changes in government policies and programs.

Market disruptions could impact BOK Financial's funding sources.

BOK Financial's subsidiary bank may rely on other financial institutions and the Federal Home Loan Bank of Topeka as a significant source of funds. Our ability to fund loans, manage our interest rate risk and meet other obligations depends on funds borrowed from these sources. The inability to borrow funds at market interest rates could have a material adverse effect on our operations.

Operating Risk Factors

Dependence on technology increases cybersecurity risk.

As a financial institution, we process a significant number of customer transactions and possess a significant amount of sensitive customer information. As technology advances, the ability to initiate transactions and access data has become more widely distributed among mobile phones, personal computers, automated teller machines, remote deposit capture sites and similar access points. These technological advances increase cybersecurity risk. While the Company maintains programs intended to prevent or limit the effects of cybersecurity risk, there is no assurance that unauthorized transactions or unauthorized access to customer information will not occur. The financial, reputational and regulatory impact of unauthorized transactions or unauthorized access to customer information could be significant.

We depend on third parties for critical components of our infrastructure.

We outsource a significant portion of our information systems, communications, data management and transaction processing to third parties. These third parties are sources of risk associated with operational errors, system interruptions or breaches, unauthorized disclosure of confidential information and misuse of intellectual property. If the service providers encounter any of these issues, we could be exposed to disruption of service, reputation damages, and litigation risk that could be material to our business.

Risks Related to an Investment in Our Stock

Although publicly traded, BOK Financial's common stock has substantially less liquidity than the average trading market for a stock quoted on the NASDAQ National Market System.

A relatively small fraction of BOK Financial's outstanding common stock is actively traded. The risks of low liquidity include increased volatility of the price of BOK Financial's common stock. Low liquidity may also limit holders of BOK Financial's common stock in their ability to sell or transfer BOK Financial's shares at the price, time and quantity desired.

BOK Financial's principal shareholder controls a majority of BOK Financial's common stock.

Mr. George B. Kaiser owns approximately 60% of the outstanding shares of BOK Financial's common stock at December 31, 2017. Mr. Kaiser is able to elect all of BOK Financial's directors and effectively control the vote on all matters submitted to a vote of BOK Financial's common shareholders. Mr. Kaiser's ability to prevent an unsolicited bid for BOK Financial or any other change in control could have an adverse effect on the market price for BOK Financial's common stock. A substantial majority of BOK Financial's directors are not officers or employees of BOK Financial or any of its affiliates. However, because of Mr. Kaiser's control over the election of BOK Financial's directors, he could change the composition of BOK Financial's Board of Directors so that it would not have a majority of outside directors.

Possible future sales of shares by BOK Financial's principal shareholder could adversely affect the market price of BOK Financial's common stock.

Mr. Kaiser has the right to sell shares of BOK Financial's common stock in compliance with the federal securities laws at any time, or from time to time. The federal securities laws will be the only restrictions on Mr. Kaiser's ability to sell. Because of his current control of BOK Financial, Mr. Kaiser could sell large amounts of his shares of BOK Financial's common stock by causing BOK Financial to file a registration statement that would allow him to sell shares more easily. In addition, Mr. Kaiser could sell his shares of BOK Financial's common stock without registration under Rule 144 of the Securities Act. Although BOK Financial can make no predictions as to the effect, if any, that such sales would have on the market price of BOK Financial's common stock, sales of substantial amounts of BOK Financial's common stock, or the perception that such sales could occur, could adversely affect market prices. If Mr. Kaiser sells or transfers his shares of BOK Financial's common stock as a block, another person or entity could become BOK Financial's controlling shareholder.

Statutory restrictions on subsidiary dividends and other distributions and debts of BOK Financial's subsidiaries could limit amounts BOK Financial's subsidiaries may pay to BOK Financial.

A substantial portion of BOK Financial's cash flow typically comes from dividends paid by BOKF, NA. Statutory provisions and regulations restrict the amount of dividends BOKF, NA may pay to BOK Financial without regulatory approval. Management also developed, and the BOK Financial board of directors approved, an internal capital policy that is more restrictive than the regulatory capital standards. In the event of liquidation, creditors of the Bank and other non-bank subsidiaries of BOK Financial are entitled to receive distributions from the assets of that subsidiary before BOK Financial, as holder of an equity interest in the subsidiaries, is entitled to receive any distributions.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

BOK Financial and its subsidiaries own and lease improved real estate that is carried at $184 million, net of depreciation and amortization. The Company's principal offices are located in leased premises in the Bank of Oklahoma Tower in Tulsa, Oklahoma. Banking offices are primarily located in Tulsa and Oklahoma City, Oklahoma; Dallas, Fort Worth and Houston, Texas; Albuquerque, New Mexico; Denver, Colorado; Phoenix, Arizona; and Kansas City, Kansas/Missouri. Primary operations facilities are located in Tulsa and Oklahoma City, Oklahoma; Dallas, Texas and Albuquerque, New Mexico. The Company's facilities are suitable for their respective uses and present needs.

The information set forth in Notes 5 and 14 of the Company's Notes to Consolidated Financial Statements, which appear elsewhere herein, provides further discussion related to properties.

ITEM 3. LEGAL PROCEEDINGS

The information set forth in Note 14 of the Company's Notes to Consolidated Financial Statements, which appear elsewhere herein, provides discussion related to legal proceedings.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

BOK Financial's $0.00006 par value common stock is traded on the NASDAQ Stock Market under the symbol BOKF. As of January 31, 2018, common shareholders of record numbered 699 with 65,550,406 shares outstanding.

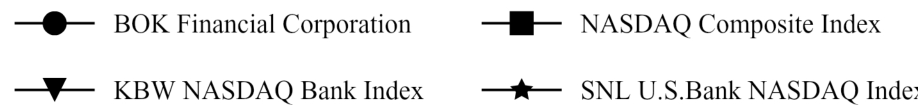
The highest and lowest quarterly closing bid price for shares and cash dividends declared per share of BOK Financial common stock follows:

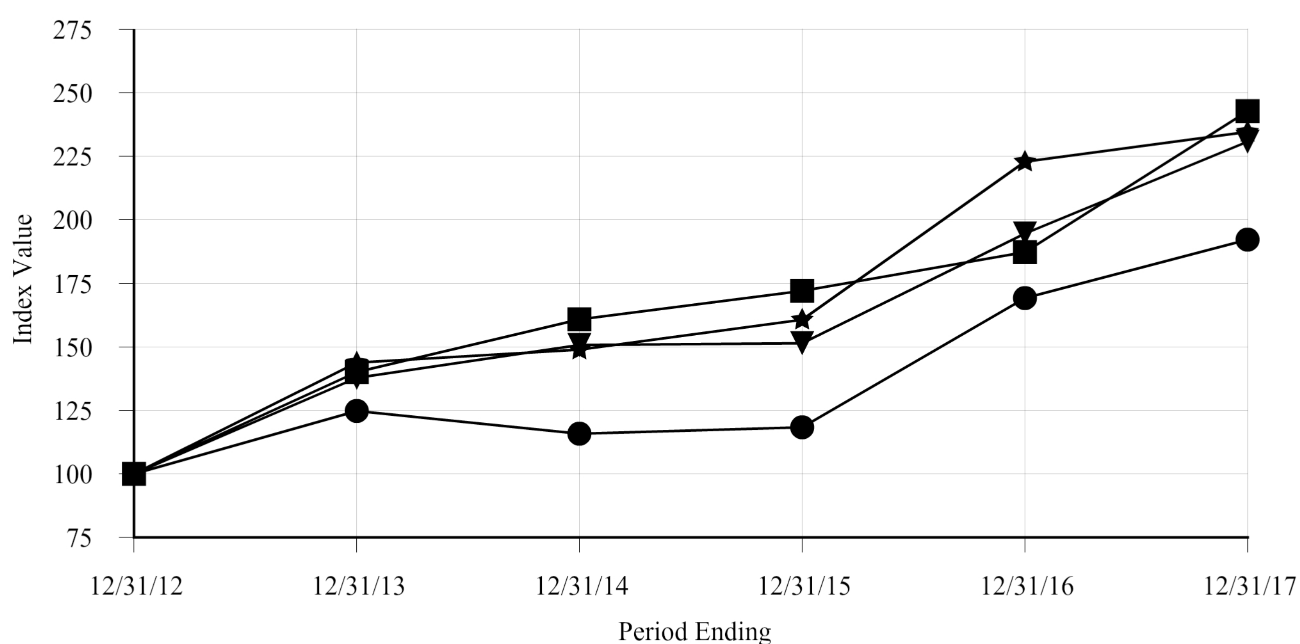
	First	Second	Third	Fourth
2017:				
Low	**$ 75.15**	**$ 74.34**	**$ 77.30**	**$ 82.30**
High	**84.81**	**85.83**	**89.08**	**93.50**
Cash dividends declared	**0.44**	**0.44**	**0.44**	**0.45**
2016:				
Low	$ 44.72	$ 51.36	$ 58.49	$ 67.72
High	58.60	64.61	69.31	84.13
Cash dividends declared	0.43	0.43	0.43	0.44

Shareholder Return Performance Graph

Set forth below is a line graph comparing the change in cumulative shareholder return of the NASDAQ Composite Index, the KBW NASDAQ Bank Index and the SNL U.S. Bank NASDAQ Index for the period commencing December 31, 2012 and ending December 31, 2017.*

Total Return Performance





Index			*Period Ending December 31,*			
	2012	**2013**	**2014**	**2015**	**2016**	**2017**
BOK Financial Corporation	100.00	124.80	115.80	118.37	169.16	192.20
NASDAQ Composite	100.00	140.12	160.78	171.97	187.22	242.71
SNL U.S. Bank NASDAQ	100.00	143.73	148.86	160.70	222.81	234.58
KBW NASDAQ Bank Index	100.00	137.75	150.65	151.39	194.56	230.73

* Graph assumes value of an investment in the Company's Common Stock for each index was $100 on December 31, 2012. Cash dividends on Common Stock are assumed to have been reinvested in BOK Financial Common Stock.

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 December 31, 2017.

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
October 1, 2017 to October 31, 2017	—	$ —	—	2,120,757
November 1, 2017 to November 30, 2017	—	$ —	—	2,120,757
December 1, 2017 to December 31, 2017	80,000	$ 92.54	80,000	2,040,757
Total	80,000		80,000	

[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 December 31, 2017, the Company had repurchased 2,959,243 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 may repurchase shares from employees to cover the exercise price and taxes in connection with employee shared-based compensation.

ITEM 6. SELECTED FINANCIAL DATA

The selected financial data is set forth within Table 1 of Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations."

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

Table 1 -- Consolidated Selected Financial Data

(Dollars in thousands, except per share data)

	December 31,				
	2017	**2016**	**2015**	**2014**	**2013**
Selected Financial Data					
For the year:					
Interest revenue	**$ 972,751**	$ 829,117	$ 766,828	$ 732,239	$ 745,371
Interest expense	**131,050**	81,889	63,474	67,045	70,894
Net interest revenue	**841,701**	747,228	703,354	665,194	674,477
Provision for credit losses	**(7,000)**	65,000	34,000	—	(27,900)
Fees and commissions revenue	**683,444**	686,748	650,646	621,319	603,844
Net income attributable to BOK Financial Corporation shareholders	**334,644**	232,668	288,565	292,435	316,609
Period-end:					
Loans	**17,153,424**	16,989,660	15,941,154	14,208,037	12,792,264
Assets	**32,272,160**	32,772,281	31,476,128	29,089,698	27,015,432
Deposits	**22,061,305**	22,748,095	21,088,158	21,140,859	20,269,327
Shareholders' equity	**3,495,367**	3,274,854	3,230,556	3,302,179	3,020,049
Nonperforming assets[1]	**290,305**	356,641	251,908	256,617	247,743
Profitability Statistics					
Earnings per share (based on average equivalent shares):					
Basic	**$ 5.11**	$ 3.53	$ 4.22	$ 4.23	$ 4.61
Diluted	**5.11**	3.53	4.21	4.22	4.59
Percentages (based on daily averages):					
Return on average assets	**1.02%**	0.72%	0.94%	1.04%	1.16%
Return on average shareholders' equity	**9.82%**	7.02%	8.65%	9.21%	10.64%
Average total equity to average assets	**10.43%**	10.38%	11.03%	11.47%	11.00%
Common Stock Performance					
Per Share:					
Book value per common share	**$ 53.45**	$ 50.12	$ 49.03	$ 47.78	$ 43.88
Market price: December 31 close	**92.32**	83.04	59.79	60.04	66.32
Market range – High close bid price	**93.50**	84.13	72.44	70.18	69.36
Market range – Low close bid price	**74.34**	44.72	53.37	57.87	55.05
Cash dividends declared	**1.77**	1.73	1.69	1.62	1.54
Dividend payout ratio	**34.45%**	48.81%	40.03%	38.35%	33.43%

Table 1 -- Consolidated Selected Financial Data

(Dollars in thousands, except per share data)

	December 31,				
	2017	**2016**	**2015**	**2014**	**2013**
Selected Balance Sheet Statistics					
Period-end:					
Common equity Tier 1 ratio[2]	**12.05%**	11.21%	12.13%	N/A	N/A
Tier 1 capital ratio[2]	**12.05%**	11.21%	12.13%	13.33%	13.77%
Total capital ratio[2]	**13.54%**	12.81%	13.30%	14.66%	15.56%
Leverage ratio[2]	**9.31%**	8.72%	9.25%	9.96%	10.05%
Allowance for loan losses to nonaccruing loans[4]	**129.09%**	112.33%	180.09%	245.34%	184.71%
Allowance for loan losses to loans	**1.34%**	1.45%	1.41%	1.33%	1.45%
Combined allowances for credit losses to loans [3]	**1.37%**	1.52%	1.43%	1.34%	1.47%
Miscellaneous (at December 31)					
Number of employees (full-time equivalent)	**4,930**	4,884	4,789	4,743	4,632
Number of TransFund locations	**2,223**	2,021	1,972	2,080	1,998
Fiduciary assets	**$ 48,761,477**	$42,378,053	$38,333,638	$35,997,877	$ 30,137,092
Mortgage loans serviced for others	**22,046,632**	21,997,568	19,678,226	16,162,887	13,718,942

[1] Includes nonaccruing loans, renegotiated loans and assets acquired in satisfaction of loans. Excludes loans past due 90 days or more and still accruing.

[2] Risk-based capital ratios for 2017, 2016 and 2015 calculated under revised regulatory capital rules issued July 2013 and effective for the Company on January 1, 2015. Previous risk-based ratios presented are calculated in accordance with then current regulatory capital rules.

[3] Includes allowance for loan losses and accrual for off-balance sheet credit risk.

[4] Excludes residential mortgage loans guaranteed by agencies of the U.S. government.

Management's Assessment of Operations and Financial Condition

Overview

The following discussion is management's analysis to assist in the understanding and evaluation of the financial condition and results of operations of BOK Financial Corporation ("BOK Financial" or "the Company"). This discussion should be read in conjunction with the Consolidated Financial Statements and footnotes and selected financial data presented elsewhere in this report.

For 2017, the U.S. economy continued to grow, supported by declining unemployment, continued payroll growth and modest inflation. The national unemployment rate fell to a 17-year low at 4.1% in December of 2017. Inflation also remained below 2% for 2017. The minutes of the Federal Open Market Committee ("FOMC") of the Federal Reserve for December indicated continued strengthening of labor market conditions, real gross domestic product rising at a solid pace in the second half of 2017 and unchanged longer-run inflation expectations. Investment returns remained strong for 2017, with the S&P 500 index up 19% for the year. This represents the 9th year in a row of positive returns for the S&P 500 index.

The Federal Reserve increased the target range for the federal funds rate by 25 basis points three different times during 2017. The 10-year U.S. Treasury note finished the year yielding 2.40%. We expect rates to continue to rise during 2018. Global quantitative easing and lack of inflation, combined with continued gradual federal funds rate increases by the Federal Reserve are contributing to a flattening of the yield curve. Higher long-term interest rates are likely in 2018.

On December 22, 2017, the Tax Reform Act was signed into law, lowering tax rates on corporations, pass-through entities, individuals and estates. We believe that the passage of tax reform will be beneficial to economic growth across our footprint by providing certainty for our customers to base their investment and borrowing decisions.

Performance Summary

Net income for the year ended December 31, 2017 totaled $334.6 million or $5.11 per diluted share compared with net income of $232.7 million or $3.53 per diluted share for the year ended December 31, 2016.

The Tax Reform Act resulted in an $11.7 million or $0.18 per share reduction of net income in the fourth quarter of 2017. A decrease in the federal corporate tax rate from 35% to 21% required us to revalue our deferred tax assets and liabilities. Provisions of the Tax Reform Act also limit the deductibility of certain other expenses.

Highlights of 2017 included:

- Net interest revenue totaled $841.7 million for 2017, up from $747.2 million for 2016. The increase in net interest revenue was driven by both widening spreads and growth in average assets. Net interest margin was 2.92% for 2017 compared to 2.66% for 2016. Average earning assets were $29.6 billion for 2017, up $646 million over 2016.

- Fees and commissions revenue was $683.4 million for 2017, largely unchanged compared to 2016. Fiduciary and asset management revenue grew by $27.4 million driven by growth in assets under management, improved pricing discipline and decreased fee waivers. Mortgage banking revenue decreased $29.2 million. Production volumes decreased primarily due to higher mortgage interest rates and the Company's strategic decision to exit the correspondent lending channel. This impact was partially offset by improved gain on sale margins. Brokerage and trading revenue decreased $6.8 million, primarily due to decreases in customer hedging revenue related to our mortgage banking customers and retail brokerage revenue.

- The change in the fair value of mortgage servicing rights, net of economic hedges, decreased other operating revenue by $1.9 million in 2017, compared to a $28.4 million decrease in other operating revenue in 2016. In 2016, an unexpected 85 basis point increase in the 10-year U.S. Treasury interest rate and related interest rates due to the market's reaction to the outcome of the U.S. presidential election increased the fair value of our servicing rights $39.8 million. The fair value of our economic hedges decreased $56.8 million.

- Other operating expense totaled $1.0 billion, largely unchanged compared to the prior year. Personnel expense increased $20.3 million, primarily due to increased share-based compensation expense. Non-personnel expense decreased $12.4 million compared to the prior year, primarily due to lower deposit insurance expenses, litigation and settlement costs and mortgage banking expense, partially offset by increased data processing and communications expense.

- The Company recorded a $7.0 million negative provision for credit losses in 2017, compared to a $65.0 million provision for credit losses in 2016. Nonaccruing loans not guaranteed by U.S. government agencies decreased $40 million compared to December 31, 2016. Potential problem loans decreased $158 million and other loans especially mentioned decreased $111 million. Net charge-offs declined to $16.0 million or 0.09% of average loans for 2017, compared to net charge-offs of $34.8 million or 0.21% of average loans for 2016. The combined allowance for credit losses totaled $234 million or 1.37% of outstanding loans at December 31, 2017.

- Period-end outstanding loan balances were $17.2 billion at December 31, 2017, a $164 million or 1% increase over the prior year. Commercial loan balances grew by $343 million or 3%, partially offset by a $329 million or 9% decrease in commercial real estate loans. Residential mortgage loans increased $24 million and personal loans grew by $126 million.

- Period-end deposits totaled $22.1 billion at December 31, 2017, a $687 million or 3% decrease compared to December 31, 2016. Interest-bearing transaction deposits decreased $615 million and time deposit balances decreased $123 million. Savings account balances increased $44 million and demand deposit balances were largely unchanged compared to the prior year.

- The Company's common equity Tier 1 capital ratio was 12.05% at December 31, 2017. In addition, the Tier 1 capital ratio was 12.05%, total capital ratio was 13.54% and leverage ratio was 9.31% at December 31, 2017. At December 31, 2016, the Tier 1 capital ratio was 11.21%, the total capital ratio was 12.81% and the leverage ratio was 8.72%.

- The Company repurchased 80,000 shares at an average price of $92.54 per share during 2017. The Company repurchased 1,005,169 shares at an average price of $66.45 during 2016.

- The Company paid cash dividends of $1.77 per common share during 2017 and $1.73 per common share in 2016.

Net income for the fourth quarter of 2017 totaled $72.5 million or $1.11 per diluted share, up from $50.0 million or $0.76 per diluted share for the fourth quarter of 2016.

Highlights of the fourth quarter of 2017 included:

- Net interest revenue totaled $216.9 million for the fourth quarter of 2017, up $22.7 million over the fourth quarter of 2016. Net interest margin was 2.97% for the fourth quarter of 2017, up from 2.69% for the fourth quarter of 2016. Net interest revenue increased primarily due to three 25 basis point increases in the federal funds rate by the Federal Reserve during 2017 and growth in average loan balances.

- Fees and commissions revenue totaled $168.2 million, up $6.1 million over the fourth quarter of 2016. Fiduciary and asset management revenue grew by $7.2 million, primarily due to growth in assets under management. Brokerage and trading revenue increased $4.5 million, primarily due to a $5.0 million decrease in the fair value of trading securities in the fourth quarter of 2016. Mortgage banking revenue decreased $4.1 million compared to the fourth quarter of 2016. Production volumes decreased primarily due to higher mortgage interest rates. Gain on sale margins were lower as higher-margin refinance activity also declined.

- The loss in the fair value of mortgage servicing rights, net of economic hedges, was $1.4 million in the fourth quarter of 2017 compared to $17.0 million in the fourth quarter of 2016. The fourth quarter of 2016 included $17.0 million of the previously noted decrease in the fair value of mortgage servicing rights, net of economic hedges due to an unexpected increase in the 10-year U.S. Treasury interest rate and related interest rates.

- Operating expenses in the fourth quarter totaled $264.0 million, a $1.6 million decrease compared to the prior year. The fourth quarter of 2016 included $5.0 million of severance and other expenses related to workforce reductions and $4.7 million of integration costs related to the Mobank acquisition.

Critical Accounting Policies & Estimates

The Consolidated Financial Statements and accompanying notes are prepared in accordance with generally accepted accounting principles in the United States of America ("GAAP"). The Company's accounting policies are more fully described in Note 1 of the Consolidated Financial Statements. Management makes significant assumptions and estimates in the preparation of the Consolidated Financial Statements and accompanying notes in conformity with GAAP that may be highly subjective, complex and subject to variability. Actual results could differ significantly from these assumptions and estimates. The following discussion addresses the most critical areas where these assumptions and estimates could affect the financial condition, results of operations and cash flows of the Company. These critical accounting policies and estimates have been discussed with the appropriate committees of the Board of Directors.

Allowance for Loan Losses and Accrual for Off-Balance Sheet Credit Risk

The appropriateness of the allowance for loan losses and accrual for off-balance sheet credit risk is assessed quarterly by management based on an ongoing evaluation of the probable estimated losses inherent in the loan portfolio and probable estimated losses on unused commitments to provide financing. A consistent, well-documented methodology has been developed and is applied by an independent Credit Administration department to ensure consistency across the Company. The allowance for loan losses consists of specific allowances attributed to certain impaired loans that have not yet been charged down to amounts we expect to recover, general allowances for unimpaired loans that are based on estimated loss rates by loan class and nonspecific allowances for risks beyond factors specific to a particular portfolio segment or loan class. There have been no material changes in the approach or techniques utilized in developing the allowance for loan losses and accrual for off-balance sheet credit risk during 2017.

Loans are considered impaired when it is probable that we will not collect all amounts due according to the contractual terms of the loan agreements, including loans modified in a troubled debt restructuring. Internally risk graded loans are evaluated individually for impairment. Substantially all commercial and commercial real estate loans and certain residential mortgage and personal loans are risk graded through a quarterly evaluation of the borrower's ability to repay.

Specific allowances for impaired loans that have not yet been charged down to amounts we expect to recover are measured by an evaluation of estimated future cash flows discounted at the loan's 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 generally are not adjusted by the Company. Updated appraisals are obtained at least annually or more frequently if market conditions indicate collateral values may have declined. Collateral value of mineral rights is determined by our internal staff of engineers based on projected cash flows under current market conditions. The value of other collateral is generally determined by our special assets staff based on liquidation 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 near 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 appropriate historical gross loss rate for each loan class is determined by the greater of the current loss rate based on the most recent twelve months or a ten-year average gross loss rate. Recoveries are not directly considered in the estimation of historical 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 proceedings. For risk graded loans, historical loss rates are adjusted for changes in risk rating. For each loan class, the weighted average current risk grade is compared to the weighted average long-term risk grade. This comparison determines whether the risk in each loan class is increasing or decreasing. Historical loss rates are adjusted upward or downward in proportion to changes in weighted average risk grading. General allowances for unimpaired loans also consider inherent risks identified for a given loan class. Inherent risks include consideration of the loss rates that most appropriately represent the current credit cycle and other factors attributable to a specific loan class which have not yet been represented in the historical gross loss rates or risk grading. Examples of 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 product types.

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.

Fair Value Measurement

Certain assets and liabilities are recorded at fair value in the Consolidated Financial Statements. 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 markets 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.

A hierarchy for fair value has been established that prioritizes the inputs of valuation techniques used to measure fair value into three broad categories: unadjusted quoted prices in active markets for identical assets or liabilities (Level 1), other observable inputs that can be observed either directly or indirectly (Level 2) and unobservable inputs for assets or liabilities (Level 3). Fair value may be recorded for certain assets and liabilities every reporting period on a recurring basis or under certain circumstances on a non-recurring basis.

The following represents significant fair value measurements included in the Consolidated Financial Statements based on estimates. See Note 18 of the Consolidated Financial Statements for additional discussion of fair value measurement and disclosure included in the Consolidated Financial Statements.

Mortgage Servicing Rights

We have a significant investment in mortgage servicing rights. Our mortgage servicing rights are primarily retained from sales in the secondary market of residential mortgage loans we have originated or purchased from correspondent lenders. Occasionally, mortgage servicing rights may be purchased from other lenders. Both originated and purchased mortgage servicing rights are initially recognized at fair value. We carry all mortgage servicing rights at fair value. Changes in fair value are recognized in earnings as they occur.

Mortgage servicing rights are not traded in active markets. The fair value of mortgage servicing rights is determined by discounting the projected cash flows. Certain significant assumptions and estimates used in valuing mortgage servicing rights are based on current market sources including projected prepayment speeds, assumed servicing costs, earnings on escrow deposits, ancillary income and discount rates. Assumptions used to value our mortgage servicing rights are considered significant unobservable inputs and represent our best estimate of assumptions that market participants would use to value this asset. 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 our servicing portfolio. The discount rate is based on benchmark rates for mortgage loans plus a market spread expected by investors in servicing rights. Significant assumptions used to determine the fair value of our mortgage servicing rights are presented in Note 7 to the Consolidated Financial Statements. At least annually, we request estimates of fair value from outside sources to corroborate the results of the valuation model.

The assumptions used in this model are primarily based on mortgage interest rates. Evaluation of the effect of a change in one assumption without considering the effect of that change on other assumptions is not meaningful. Considering all related assumptions, we expect a 50 basis point increase in primary mortgage interest rates to increase the fair value of our servicing rights by $26 million. We expect a $33 million decrease in the fair value of our mortgage servicing rights from a 50 basis point decrease in primary mortgage interest rates.

Valuation of Derivative Instruments

We use interest rate derivative instruments to manage our interest rate risk. We also offer interest rate, commodity, foreign exchange and equity derivative contracts to our customers. All derivative instruments are carried on the balance sheet at fair value. Fair values for exchange-traded contracts are based on quoted prices in an active market for identical instruments. Fair values for over-the-counter interest rate contracts used to manage our interest rate risk are generated internally using third-party valuation models. Inputs used in third-party valuation models to determine fair values are considered significant other observable inputs. Fair values for interest rate, commodity, foreign exchange and equity contracts used in our customer hedging programs are based on valuations generated internally by third-party provided pricing models. These models use significant other observable market inputs to estimate fair values. Changes in assumptions used in these pricing models could significantly affect the reported fair values of derivative assets and liabilities, though the net effect of these changes should not significantly affect earnings.

Credit risk is considered in determining the fair value of derivative instruments. Deterioration in the credit rating of customers or dealers reduces the fair value of asset contracts. The reduction in fair value is recognized in earnings during the current period. Fair value adjustments are based on various risk factors including but not limited to counterparty credit rating or equivalent loan grading, derivative contract notional size, price volatility of the underlying commodity, duration of the derivative contracts and expected loss severity. Expected loss severity is based on historical losses for similarly risk-graded commercial loan customers. Deterioration in our credit rating below investment grade would affect the fair value of our derivative liabilities. In the event of a credit down-grade, the fair value of our derivative liabilities would decrease. The reduction in fair value would be recognized in earnings in the current period. The impact of credit valuation adjustments on the total valuation of derivative contracts was not significant.

Valuation of Securities

The fair value of our securities portfolio is generally based on a single price for each financial instrument provided to us by a third-party pricing service determined by 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.

The underlying methods used by the third-party pricing services are considered in determining the primary inputs used to determine fair values. We evaluate 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 December 31, 2017 or December 31, 2016.

Valuation of Impaired Loans and Real Estate and Other Repossessed Assets

The fair value of collateral for certain impaired loans and real estate and other repossessed assets is measured on a non-recurring basis. The fair value of real estate is generally based on unadjusted third-party appraisals derived principally from or corroborated by observable market data. Fair value measurements based on these appraisals are considered to be based on Level 2 inputs. Fair value measurements based on appraisals that are not based on observable inputs or that require significant adjustments by us or fair value measurements that are not based on third-party appraisals are considered to be based on Level 3 inputs. Significant unobservable inputs include listing prices for comparable assets, uncorroborated expert opinions or management's knowledge of the collateral or industry.

The fair value of mineral rights is generally determined by our internal staff of engineers based on projected cash flows from proven oil and gas reserves under existing economic and operating conditions. Proven oil and gas reserves are estimated quantities that geological and engineering data demonstrate, with reasonable certainty, to be recoverable in future years from known reservoirs using existing prices and costs. Projected cash flows incorporate assumptions related to a number of factors including production, sales prices, operating expenses, severance, ad valorem taxes, capital costs and appropriate discount rate. Fair values determined through this process are considered to be based on Level 3 inputs.

Income Taxes

Determination of income tax expense and related assets and liabilities is complex and requires estimates and judgments when applying tax laws, rules, regulations and interpretations. It also requires judgments as to future earnings and the timing of future events. Accrued income taxes represent an estimate of net amounts due to or from taxing jurisdictions based upon these estimates, interpretations and judgments.

Management evaluates the Company's current tax expense or benefit based upon estimates of taxable income, tax credits and statutory tax rates. Annually, we file tax returns with each jurisdiction where we conduct business and adjust recognized income tax expense or benefit to filed tax returns.

We recognize deferred tax assets and liabilities based upon the differences between the values of assets and liabilities as recognized in the financial statements and their related tax basis using enacted tax rates in effect for the year in which the differences are expected to be recovered or settled. A valuation allowance is provided when it is more likely than not that some portion of the entire deferred tax asset may not be realized.

We also recognize the benefit of uncertain income tax positions when based upon all relevant evidence, it is more-likely-than-not that our position would prevail upon examination, including resolution of related appeals or litigation, based upon the technical merits of the position. Unrecognized tax benefits, including estimated interest and penalties, are part of our current accrued income tax liability. Estimated penalties and interest are recognized in income tax expense. Income tax expense in future periods may decrease if an uncertain tax position is favorably resolved, generally upon completion of an examination by the taxing authorities, expiration of a statute of limitations, or changes in facts and circumstances.

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 $858.9 million for 2017, up from $764.8 million for 2016. Net interest margin was 2.92% for 2017 and 2.66% for 2016. Tax-equivalent net interest revenue increased $94.1 million over the prior year. Net interest revenue increased $61.2 million due to rates and $32.9 million from growth in earning assets. The benefit of an increase in short-term interest rates on floating-rate earning assets was partially offset by higher borrowing costs. Table 2 shows the effects on net interest revenue due to changes in average balances and interest rates for the various types of earning assets and interest-bearing liabilities. In addition, see the Annual and Quarterly Financial Summary of consolidated daily average balances, yields and rates following the Consolidated Financial Statements.

The tax-equivalent yield on earning assets was 3.36% for 2017 up from 2.95% in 2016, primarily due to increases in short-term interest rates resulting from three 25 basis point increases in the federal funds rate by the Federal Reserve during the year. Loan yields increased 50 basis points to 4.13% . The yield on interest-bearing cash and cash equivalents increased 57 basis points to 1.10%. The available for sale securities portfolio yield increased 10 basis points to 2.13%. The yield on fair value option securities held as an economic hedge of our mortgage servicing rights increased 88 basis points to 2.81% primarily related to a change in the mix of securities and an increase in average rates. Funding costs increased 25 basis points over 2016. The cost of interest-bearing deposits was limited to a 9 basis point increase due to a lack of market pricing pressure. The cost of other borrowed funds increased 55 basis points. The cost of subordinated debentures increased 280 basis points due to the full year impact of higher fixed rate debt issued in the second quarter of 2016 to replace lower variable rate debt paid off in the third quarter of 2016. The benefit to net interest margin from earning assets funded by non-interest bearing liabilities was 23 basis points for 2017, up from 13 basis points for 2016.

Average earning assets for 2017 increased $646 million or 2% over 2016. Average loans, net of allowance for loan losses, increased $812 million. Growth in average commercial, residential and personal loans was partially offset by a decrease in average commercial real estate loan balances. Average loan balances were up $439 million related to the full year's impact of loans from the Mobank acquisition in the fourth quarter of 2016. The average balance of the fair value option securities portfolio held as an economic hedge of our mortgage servicing rights increased $270 million. Average trading securities balances increased $204 million primarily related to expanded U.S. mortgage-backed securities trading activity. The average balance of available for sale securities, which consists largely of residential and commercial mortgage-backed securities guaranteed by U.S. government agencies, decreased $414 million. We purchase securities to supplement earnings and to manage interest rate risk. We have reduced the size of our bond portfolio during the past three years through normal monthly runoff to better position the balance sheet for an environment of rising longer-term rates. Our outlook for earning assets in 2018 is for mid single-digit growth in loan balances and flat to slightly decreasing securities portfolio balances. We expect stable to rising net interest margin and increasing net interest revenue. The average balance of residential mortgage loans held for sale decreased by $125 million.

Growth in average assets was funded by growth in demand and interest-bearing deposits, partially offset by decreased repurchase agreements and borrowings from the Federal Home Loan Banks. Total average deposits grew by $1.3 billion over the prior year, including $491 million related to the full-year impact of the Mobank acquisition. Average demand deposit balances were up $839 million over the prior year and average interest-bearing transaction account balances increased $475 million. This growth was partially offset by a $66 million decrease in average time deposits. Average borrowed funds decreased $273 million over the prior year. Borrowings from the Federal Home Loan Banks decreased $103 million and average repurchase agreement balances were down $155 million compared to the prior year. Subordinated debenture and funds purchased balances also declined compared to the prior year.

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. As shown in Table 21, approximately 81% of our commercial and commercial real estate loan portfolios are either variable rate loans or fixed rate loans that will re-price within one year. These loans are funded primarily by deposit accounts that are either non-interest bearing, or that re-price more slowly than the loans. The result is a balance sheet that would be asset sensitive, which means that assets generally re-price more quickly than liabilities. Among the strategies that we use to manage toward a relatively rate-neutral position, we 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 2 and in the interest rate sensitivity projections as shown in the Market Risk section of this report.

Fourth Quarter 2017 Net Interest Revenue

Tax-equivalent net interest revenue totaled $221.0 million for the fourth quarter of 2017, an increase of $22.4 million over the fourth quarter of 2016. Net interest margin was 2.97% for the fourth quarter of 2017 compared to 2.69% for the fourth quarter of 2016. Net interest revenue increased $19.1 million primarily due to three 25 basis point increases in the federal funds rate by the Federal Reserve during 2017 and $3.3 million primarily due to the growth in average loan balances.

The tax-equivalent yield on earning assets was 3.49% for the fourth quarter of 2017, up 51 basis points over the fourth quarter of 2016. Loan yields increased 62 basis points to 4.29%. The available for sale securities portfolio yield increased 21 basis points to 2.21%. The yield on interest-bearing cash and cash equivalents increased 72 basis points to 1.27%. Yield on fair value option securities held as an economic hedge of our mortgage servicing rights was up 191 basis points to 2.90% due to a change in the mix of securities and increased interest rates. Funding costs were up 35 basis points over the fourth quarter of 2016. The cost of interest-bearing deposits was limited to a 16 basis point increase over the fourth quarter of 2016 by a lack of market pricing pressure. The cost of other borrowed funds increased 72 basis points. The benefit to net interest margin from earning assets funded by non-interest bearing liabilities was 27 basis points in the fourth quarter of 2017, up from 15 basis points in the fourth quarter of 2016.

Average earning assets for the fourth quarter of 2017 increased $573 million over the fourth quarter of 2016, including $274 million related to the full-quarter's impact of the acquisition of Mobank on December 1, 2016. Average loans, net of allowance for loan losses, increased $458 million due primarily to growth in commercial, residential mortgage and personal loans, partially offset by decreased commercial real estate loan balances. The increase in average loans also included $292 million related to the full-quarter's impact of the Mobank acquisition. Fair value option securities held as an economic hedge of mortgage servicing rights were up $582 million over the fourth quarter of 2016, partially offset by a $331 million decrease in the available for sale securities portfolio.

Average deposits increased $458 million over the fourth quarter of 2016, including $312 million related to the full-quarter's impact of the Mobank acquisition. Average demand deposit balances increased $293 million and average interest-bearing transaction accounts increased $163 million. Average time deposits decreased $43 million. Average borrowed funds were largely unchanged compared to the fourth quarter of 2016. Increased Federal Home Loan Bank borrowings were offset by lower repurchase agreement balances.

2016 Net Interest Revenue

Tax-equivalent net interest revenue for 2016 was $764.8 million, up from $715.8 million for 2015. Net interest margin was 2.66% for 2016 compared to 2.60% for 2015. The $49.0 million increase in tax equivalent net interest revenue was due primarily to growth in earning assets. The benefit of an increase in short-term interest rates during 2016 on the loan portfolio and interest-bearing cash and cash equivalents yields was offset by higher borrowing costs.

The tax-equivalent yield on average earning assets increased 11 basis points over 2015. Loan yields increased 5 basis points primarily due growth in variable rate loans and an increase in short-term interest rates. The yield on trading securities increased 94 basis points due to a change in mix toward more higher-yielding U.S. agency residential mortgage-backed securities. The yield on interest-bearing cash and cash equivalents increased 26 basis points. The available for sale securities portfolio yield increased 4 basis points. The benefit from improved yields on investment securities was offset by lower yields on restricted equity and fair value option securities. The cost of interest-bearing liabilities increased 7 basis points. The cost of interest-bearing deposits decreased 1 basis point while the cost of other borrowed funds increased 25 basis points, primarily due to increases in federal funds rates by the Federal Reserve in the fourth quarters of 2016 and 2015. The cost of subordinated debentures increased 98 basis points as lower variable rate debt outstanding during 2015 was replaced by higher fixed rate debt. The Company issued $150 million of 40 year, 5.375% fixed rate subordinated debt during the second quarter of 2016 that replaced $227 million of floating rate subordinated debt based on three-month LIBOR plus 0.69%. The benefit to net interest margin from earning assets funded by non-interest bearing liabilities was 13 basis points for 2016, compared to 11 basis points for 2015.

Average earning assets increased $1.2 billion or 4% during 2016. Average loans, net of allowance for loan losses, increased $1.3 billion. Average trading securities balances increased $168 million primarily related to the addition of a new group trading in U.S. mortgage-backed securities during 2016. The average balance of available for sale securities, which consists largely of residential and commercial mortgage-backed securities guaranteed by U.S. government agencies, decreased $152 million. We reduced the size of our bond portfolio during 2014, 2015 and 2016 through normal monthly runoff to better position the balance sheet for an environment of rising longer-term rates. Growth in average assets was funded by increased borrowings from the Federal Home Loan Banks and demand deposits growth, partially offset by lower interest-bearing deposits and subordinated debt balances. Total average deposits were largely unchanged compared to 2015. Average demand deposit account balances grew by $426 million. This growth was offset by a $328 million decrease in average time deposit balances and a $175 million decrease in average interest-bearing transaction account balances. Average borrowed funds balances increased $1.6 billion over 2015. Borrowings from the Federal Home Loan Banks increased $1.1 billion, partially offset by decreased funds purchased, repurchase agreements and subordinated debt balances.

Table 2 – Volume/Rate Analysis
(In thousands)

	Year Ended December 31, 2017 / 2016			Year Ended December 31, 2016 / 2015		
		Change Due To[1]			Change Due To[1]	
	Change	Volume	Yield / Rate	Change	Volume	Yield / Rate
Tax-equivalent interest revenue:						
Interest-bearing cash and cash equivalents	$ 11,402	$ (252)	$ 11,654	$ 5,146	$ (58)	$ 5,204
Trading securities	8,424	8,122	302	6,158	4,318	1,840
Investment securities:						
Taxable securities	(353)	(196)	(157)	(664)	(528)	(136)
Tax-exempt securities	(690)	(1,567)	877	1,596	(961)	2,557
Total investment securities	(1,043)	(1,763)	720	932	(1,489)	2,421
Available for sale securities:						
Taxable securities	2,232	(6,901)	9,133	690	(2,617)	3,307
Tax-exempt securities	(789)	(994)	205	12	(655)	667
Total available for sale securities	1,443	(7,895)	9,338	702	(3,272)	3,974
Fair value option securities	10,032	5,886	4,146	(2,541)	(1,290)	(1,251)
Restricted equity securities	1,252	(257)	1,509	3,706	5,490	(1,784)
Residential mortgage loans held for sale	(3,952)	(4,389)	437	(944)	(416)	(528)
Loans	115,678	29,407	86,271	54,274	46,549	7,725
Total tax-equivalent interest revenue	143,236	28,859	114,377	67,433	49,832	17,601
Interest expense:						
Transaction deposits	14,721	851	13,870	5,085	(16)	5,101
Savings deposits	(27)	27	(54)	3	39	(36)
Time deposits	(1,385)	(728)	(657)	(8,764)	(4,139)	(4,625)
Funds purchased	235	(99)	334	121	13	108
Repurchase agreements	187	(114)	301	(34)	(52)	18
Other borrowings	33,366	(946)	34,312	21,045	8,239	12,806
Subordinated debentures	2,064	(3,023)	5,087	959	(1,445)	2,404
Total interest expense	49,161	(4,032)	53,193	18,415	2,639	15,776
Tax-equivalent net interest revenue	94,075	32,891	61,184	49,018	47,193	1,825
Change in tax-equivalent adjustment	(398)			5,144		
Net interest revenue	$ 94,473			$ 43,874		

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

Table 2 – Volume/Rate Analysis (continued)
(In thousands)

	Three Months Ended December 31, 2017 / 2016		
		Change Due To[1]	
	Change	Volume	Yield / Rate
Tax-equivalent interest revenue:			
Interest-bearing cash and cash equivalents	$ 3,511	$ (128)	$ 3,639
Trading securities	75	746	(671)
Investment securities:			
Taxable securities	5	52	(47)
Tax-exempt securities	(277)	(527)	250
Total investment securities	(272)	(475)	203
Available for sale securities:			
Taxable securities	2,596	(1,872)	4,468
Tax-exempt securities	(203)	(221)	18
Total available for sale securities	2,393	(2,093)	4,486
Fair value option securities	5,229	2,804	2,425
Restricted equity securities	402	44	358
Residential mortgage loans held for sale	(446)	(757)	311
Loans	28,880	3,488	25,392
Total tax-equivalent interest revenue	39,772	3,629	36,143
Interest expense:			
Transaction deposits	5,002	144	4,858
Savings deposits	(4)	14	(18)
Time deposits	156	(119)	275
Funds purchased	101	3	98
Repurchase agreements	161	(36)	197
Other borrowings	11,927	330	11,597
Subordinated debentures	22	4	18
Total interest expense	17,365	340	17,025
Tax-equivalent net interest revenue	22,407	3,289	19,118
Change in tax-equivalent adjustment	(258)		
Net interest revenue	$ 22,665		

[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 $695.1 million for 2017, up $21.1 million or 3% over 2016. The change in the fair value of mortgage servicing rights, net of economic hedges, decreased other operating revenue by $1.9 million in 2017 and $28.4 million in 2016.

Table 3 – Other Operating Revenue
(In thousands)

	Year Ended December 31,				
	2017	**2016**	**2015**	**2014**	**2013**
Brokerage and trading revenue	**$ 131,601**	$ 138,377	$ 129,556	$ 134,437	$ 125,478
Transaction card revenue[1]	**119,988**	116,452	109,579	104,940	98,533
Fiduciary and asset management revenue	**162,893**	135,477	126,153	115,652	96,082
Deposit service charges and fees[1]	**112,075**	111,499	109,473	109,660	113,400
Mortgage banking revenue	**104,719**	133,914	126,002	109,093	121,934
Other revenue	**52,168**	51,029	49,883	47,537	48,417
Total fees and commissions revenue	**683,444**	686,748	650,646	621,319	603,844
Other gains, net	**9,004**	4,030	5,702	2,953	4,875
Gain (loss) on derivatives, net	**779**	(15,685)	430	2,776	(4,367)
Gain (loss) on fair value option securities, net	**(2,733)**	(10,555)	(3,684)	10,189	(15,212)
Change in fair value of mortgage servicing rights	**172**	(2,193)	(4,853)	(16,445)	22,720
Gain on available for sale securities, net	**4,428**	11,675	12,058	1,539	10,720
Total other-than-temporary impairment	**—**	—	(2,443)	(373)	(2,574)
Portion of loss recognized in (reclassified from) other comprehensive income	**—**	—	624	—	266
Net impairment losses recognized in earnings	**—**	—	(1,819)	(373)	(2,308)
Total other operating revenue	**$ 695,094**	$ 674,020	$ 658,480	$ 621,958	$ 620,272

[1] Check card revenue was reclassified from transaction card revenue to deposit service charges and fees for all periods presented.

Fees and commissions revenue

Diversified sources of fees and commissions revenue are a significant part of our business strategy and represented 45% of total revenue for 2017, excluding provision for credit losses and gains and losses on asset sales, 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 banking 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, which includes revenues from trading, customer hedging, retail broker and investment banking, decreased $6.8 million or 5% compared to the prior year. Excluding a $5.0 million decrease in the value of trading securities due to the unexpected increase in interest rates in 2016, brokerage and trading revenue decreased $11.8 million or 9%. The revenue decrease generally resulted from customer reaction to rising interest rates along with changes in regulations.

Trading revenue includes net realized and unrealized gains primarily related to sales of U.S. government securities, residential mortgage-backed securities guaranteed by U.S. government agencies and municipal securities to institutional customers and related derivative instruments. Trading revenue was $43.6 million for 2017, a decrease of $4.4 million from 2016.

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. Derivative contracts executed with customers are offset with contracts between selected counterparties and exchanges to minimize market risk from changes in commodity prices, interest rates or foreign exchange rates. Customer hedging revenue totaled $44.1 million for 2017, a decrease of $3.0 million or 6% compared to 2016. The volume of derivative contracts sold to our mortgage banking customers used to hedge their pipelines of mortgage loan originations decreased as average mortgage rates rose during 2017.

Revenue earned from retail brokerage transactions totaled $22.9 million for 2017, a decrease of $3.1 million or 12% compared the the prior year. Retail brokerage revenue is primarily based on fees and commissions earned on sales of fixed income securities, annuities, mutual funds and other financial instruments to retail customers. Revenue is primarily based on the volume of customer transactions and applicable commission rate for each type of product. The implementation of the new Department of Labor ("DOL") fiduciary rule in the second quarter of 2017 has negatively impacted retail brokerage revenue. New regulation issued by the DOL amended the definition of investment advice under the Employee Retirement Income Security Act ("ERISA"). The new rule is designed to provide better protection to plans, participants, beneficiaries and individual retirement account ("IRA") owners against conflicts of interest, imprudence and disloyalty.

Investment banking, which includes fees earned upon completion of underwriting, financial advisory services and loan syndication fees totaled $20.9 million for 2017, a decrease of $1.2 million or 6% compared 2016, related to the timing and volume of completed transactions.

Transaction card revenue depends largely on the volume and amount of transactions processed, the number of TransFund automated teller machine (“ATM”) locations and the number of merchants served. Transaction card revenue totaled $120 million for 2017, a $3.5 million or 3% increase over 2016. Revenues from the processing of transactions on behalf of the members of our TransFund electronic funds transfer ("EFT") network totaled $73.5 million, up $2.9 million or 4% over 2016, due primarily to a $2.1 million customer early termination penalty received in the third quarter of 2017. The number of TransFund ATM locations totaled 2,223 at December 31, 2017 compared to 2,021 at December 31, 2016. Merchant services fees paid by customers for account management and electronic processing of card transactions totaled $46.5 million, an increase of $608 thousand or 1% over the prior year.

Fiduciary and asset management revenue is earned through managing or holding of assets for customers and executing transactions or providing related services. Approximately 80% of fiduciary and asset management revenue is primarily based on the fair value of assets. Rates applied to those asset values vary based on the nature of the relationship. Fiduciary and managed asset relationships generally have a higher fee rate than non-fiduciary and/or managed relationships.

Fiduciary and asset management revenue grew $27.4 million or 20% over 2016, primarily due to growth in assets under management, improved pricing discipline and decreased fee waivers.

We earn fees as administrator to and investment adviser for the Cavanal Hill Funds, a diversified, open-ended investment company established as a business trust under the Investment Company Act of 1940. BOKF, NA is custodian and Cavanal Hill Distributors, Inc. is distributor for the Cavanal Hill Funds. Products of the Cavanal Hill Funds are offered to customers, employee benefit plans, trusts and the general public in the ordinary course of business. In recent years, we voluntarily waived administration fees on the Cavanal Hill money market funds in order to maintain positive yields on these funds during the low short-term interest rate environment. During 2017, we have phased out those fee waivers. Waived fees totaled $445 thousand for 2017, compared to $6.8 million for 2016. The decrease in fee waivers was primarily related to increased interest rates as a result of four Federal Reserve federal funds rate increases beginning in the fourth quarter of 2016.

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

Table 4 -- Assets Under Management or Administration

	Year Ended December 31,					
	2017			2016		
	Balance	Revenue[1]	Margin[2]	Balance	Revenue[1]	Margin[2]
Managed fiduciary assets:						
Personal	**$ 7,801,968**	**$ 85,328**	**1.09%**	$ 7,040,121	$ 75,290	1.07%
Institutional	**13,192,969**	**21,630**	**0.16%**	11,646,153	18,018	0.15%
Total managed fiduciary assets	**20,994,937**	**106,958**	**0.51%**	18,686,274	93,308	0.50%
Non-managed assets:						
Fiduciary	**27,766,540**	**53,515**	**0.19%**	23,691,780	40,014	0.17%
Non-fiduciary	**16,969,222**	**2,420**	**0.01%**	17,636,113	2,155	0.01%
Safekeeping and brokerage assets under administration	**16,097,098**	**—**	**—%**	15,393,696	—	—%
Total non-managed assets	**60,832,860**	**55,935**	**0.09%**	56,721,589	42,169	0.07%
Total assets under management or administration	**$81,827,797**	**$ 162,893**	**0.20%**	$75,407,863	$ 135,477	0.18%

[1] Fiduciary and asset management revenue includes asset-based and other fees associated with the assets.
[2] Revenue divided by period-end balance.

A summary of changes in assets under management or administration for the year ended December 31, 2017 and 2016 follows:

Table 5 -- Changes in Assets Under Management or Administration

	Year Ended December 31,	
	2017	2016
Beginning balance	**$ 75,407,863**	$ 71,047,773
Net inflows (outflows)	**(406,469)**	1,716,596
Change in assets from acquisitions	**—**	296,627
Net change in fair value	**6,826,403**	2,346,867
Ending balance	**$ 81,827,797**	$ 75,407,863

Deposit service charges and fees increased $576 thousand or 1% over 2016. Commercial account service charge revenue totaled $46.8 million, an increase of $1.8 million or 4% over the prior year. Overdraft fees totaled $38.5 million for 2017, a decrease of $2.0 million or 5% compared to last year. Service charges on deposit accounts with a standard monthly fee were $6.9 million, an increase of $196 thousand or 3% over the prior year. Revenue from interchange fees paid by merchants for transactions processed from debit cards issued to the Company's depositors totaled $19.8 million, an increase of $519 thousand or 3% over 2016 due to increased transaction volume.

Mortgage banking revenue totaled $104.7 million for 2017, a $29.2 million or 22% decrease compared to 2016.

Mortgage production revenue totaled $38.5 million, a $31.1 million or 45% decrease compared to 2016. Mortgage loan production volume decreased $2.6 billion, including a $1.8 billion decrease related to the Company's strategic decision to exit the correspondent lending channel during 2016. Production volumes in the retail channel decreased compared to the prior year as average primary interest rates were up 34 basis points compared to 2016. Mortgage servicing revenue was $66.2 million, a $1.9 million or 3% increase over the prior year. The outstanding principal balance of mortgage loans serviced for others totaled $22.0 billion at December 31, 2017, a $49.1 million increase over December 31, 2016.

Table 6 – Mortgage Banking Revenue
(In thousands)

	Year Ended December 31,				
	2017	2016	2015	2014	2013
Mortgage production revenue	**$ 38,498**	$ 69,628	$ 69,587	$ 61,061	$ 79,545
Mortgage loans funded for sale	**$ 3,286,873**	$ 6,117,417	$ 6,372,956	$ 4,484,394	$ 4,081,390
Add: Current year end outstanding commitments	**222,919**	318,359	601,147	627,505	258,873
Less: Prior year end outstanding commitments	**318,359**	601,147	627,505	258,873	356,634
Total mortgage production volume	**3,191,433**	5,834,629	6,346,598	4,853,026	3,983,629
Gain on sale margin	**1.21%**	1.19%	1.10%	1.26%	2.00%
Mortgage loan refinances to mortgage loans funded for sale	**40%**	51%	42%	30%	43%
Primary mortgage interest rates:					
Average	**3.99%**	3.65%	3.85%	4.17%	3.98%
Period end	**3.99%**	4.32%	3.96%	3.83%	4.48%
Mortgage servicing revenue	**$ 66,221**	$ 64,286	$ 56,415	$ 48,032	$ 42,389
Average outstanding principal balance of mortgage loans serviced for others	**22,055,002**	20,837,897	17,920,557	14,940,915	12,850,283
Average mortgage servicing fee rates	**0.30%**	0.31%	0.31%	0.32%	0.33%

Primary rates disclosed in Table 6 above represent rates generally available to borrowers on 30 year conforming mortgage loans.

Net gains on securities, derivatives and other assets

We recognized $4.4 million of net gains from sales of $1.3 billion of available for sale securities in 2017. We recognized $11.7 million of net gains from sales of $899 million of available for sale securities in 2016. Securities were sold either because they had reached their expected maximum potential or to move into securities that are expected to perform better in the current rate environment.

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.

The net economic benefit of the changes in fair value of mortgage servicing rights and related economic hedges was $6.6 million in the 2017, including a $172 thousand increase in the fair value of mortgage servicing rights, offset by a $2.1 million decrease in the fair value of securities and derivative contracts held as an economic hedge and $8.4 million of related net interest revenue.

The net economic cost of changes in the fair value of mortgage servicing rights and related economic hedges was $24.1 million for 2016. The fair value of mortgage servicing rights decreased $2.2 million.The fair value of securities and interest rate derivative contracts held as an economic hedge decreased $26.3 million. Our economic hedges were generally designed to be effective over a + / - 50 basis point rate change. An 85 basis point increase in the 10-year U.S. Treasury rate in the fourth quarter of 2016 led to a $39.8 million increase in the fair value of MSRs and a $56.8 million decrease in the fair value of economic hedges. Net interest earned on securities held as an economic hedge was $4.4 million.

Table 7 — Gain (Loss) on Mortgage Servicing Rights, Net of Economic Hedge
(In thousands)

	Year Ended December 31,				
	2017	**2016**	**2015**	**2014**	**2013**
Gain (loss) on mortgage hedge derivative contracts, net	**$ 681**	$ (15,696)	$ 634	$ 2,776	$ (5,080)
Gain (loss) on fair value option securities, net	**(2,733)**	(10,555)	(3,684)	10,003	(15,436)
Gain (loss) on economic hedge of mortgage servicing rights	**(2,052)**	(26,251)	(3,050)	12,779	(20,516)
Gain (loss) on change in fair value of mortgage servicing rights	**172**	(2,193)	(4,853)	(16,445)	22,720
Gain (loss) on changes in fair value of mortgage servicing rights, net of economic hedges included in other operating revenue	**(1,880)**	(28,444)	(7,903)	(3,666)	2,204
Net interest revenue on fair value option securities[1]	**8,435**	4,356	8,001	3,253	3,290
Total economic benefit (cost) of changes in the fair value of mortgage servicing rights, net of economic hedges	**$ 6,555**	$ (24,088)	$ 98	$ (413)	$ 5,494

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

Other gains, net totaled $9.0 million for 2017, mainly due to the sale of certain merchant banking investments during the year. Other gains, net totaled $4.0 million for 2016.

Fourth Quarter 2017 Other Operating Revenue

Other operating revenue was $166.8 million for the fourth quarter of 2017, up $1.1 million over the fourth quarter of 2016, excluding the impact of the unexpected change in interest rates in the fourth quarter of 2016. The fourth quarter of 2016 included a $5.0 million decrease in the net fair value of trading portfolio positions and a $17 million decrease in the fair value of mortgage servicing rights, net of economic hedges.

Fiduciary and asset management revenue increased $7.2 million over the fourth quarter of 2016 to $41.8 million primarily due to growth in assets under management and a decrease in waived administrative fees. There were no waived administration fees on the Cavanal Hill money market funds for the fourth quarter of 2017, compared to $1.4 million for the fourth quarter of 2016.

Mortgage banking revenue was $24.4 million for the fourth quarter of 2017, a decrease of $4.1 million compared to the fourth quarter of 2016 due primarily to a decrease in mortgage loan production volume. Mortgage loan production volumes were $729 million for the fourth quarter of 2017, compared to $878 million in the fourth quarter of 2016.

All other revenue categories were relatively unchanged.

2016 Other Operating Revenue

Other operating revenue totaled $674.0 million for 2016, up $15.5 million or 2% over 2015. Fees and commissions revenue increased $36.1 million. The change in the fair value of mortgage servicing rights, net of economic hedges, decreased operating revenue in 2016 by $28.4 million and decreased operating revenue $7.9 million in 2015.

Brokerage and trading revenue for 2016 increased $8.8 million compared to 2015 largely due to customer hedging. Transaction card revenue grew by $6.9 million over 2015 primarily due to growth in transaction volumes. Fiduciary and asset management fees increased $9.3 million primarily due to decreased fee waivers and growth in assets under management. Deposit service charges and fees increased $2.0 million. Increased commercial account service charges were offset by lower overdraft fees and service charges on deposit accounts with a standard monthly fee.

Mortgage banking revenue grew by $7.9 million over 2015 mainly due to the increase in mortgage servicing revenue. An increase in gain on sale margins was mostly offset by a decrease in mortgage loan production volume.

Net gains on other assets totaled $4.0 million for 2016. The Company recognized $2.0 million related to the mutual termination of a rent guarantee between the Company and the City of Tulsa for office space in a building immediately adjacent to the Company's main office rented by third party tenants. The Company also recognized a $2.1 million gain on the sale of a merchant banking investment during the year.

Other Operating Expense

Other operating expense for 2017 totaled $1.0 billion, a $7.9 million or 1% increase over the prior year. Personnel expense increased $20.3 million or 4%. Non-personnel expenses decreased $12.4 million or 3% compared to the prior year.

Table 8 – Other Operating Expense
(In thousands)

	Year Ended December 31,				
	2017	**2016**	**2015**	**2014**	**2013**
Regular compensation	**$ 333,226**	$ 332,740	$ 313,403	$ 298,420	$ 279,493
Incentive compensation:					
Cash-based compensation	**127,964**	128,077	114,305	111,748	110,871
Share-based compensation	**23,602**	10,464	12,358	10,875	8,189
Deferred compensation	**4,091**	1,687	361	(13,692)	32,083
Total incentive compensation	**155,657**	140,228	127,024	108,931	151,143
Employee benefits	**84,525**	80,151	74,871	69,580	74,589
Total personnel expense	**573,408**	553,119	515,298	476,931	505,225
Business promotion	**28,877**	26,582	27,851	26,649	22,598
Charitable contributions to BOKF Foundation	**2,000**	2,000	796	4,267	2,062
Professional fees and services	**51,067**	56,783	40,123	44,440	32,552
Net occupancy and equipment	**86,477**	80,024	76,016	77,232	69,773
Insurance	**19,653**	32,489	20,375	18,578	16,122
Data processing & communications	**146,970**	131,841	122,383	115,225	105,967
Printing, postage and supplies	**15,689**	15,584	13,498	13,518	13,885
Net losses & operating expenses of repossessed assets	**9,687**	3,359	1,446	6,019	5,160
Amortization of intangible assets	**6,779**	6,862	4,359	3,965	3,428
Mortgage banking costs	**52,856**	61,387	38,813	31,705	31,196
Other expense	**32,054**	47,560	35,233	28,993	32,652
Total other operating expense	**$ 1,025,517**	$ 1,017,590	$ 896,191	$ 847,522	$ 840,620
Average number of employees (full-time equivalent)	**4,900**	4,872	4,797	4,679	4,683

Personnel expense

Regular compensation expense, which consists of salaries and wages, overtime pay and temporary personnel costs, increased $486 thousand, largely unchanged compared to 2016. Standard annual merit increases were offset by the impact of $5.0 million in severance costs in 2016 related to a reduction of workforce to better align expenses with expected revenue growth. Standard annual merit increases were effective for the majority of our staff on March 1. The average number of employees remained consistent compared to the prior year.

Incentive compensation increased $15.4 million or 11% over 2016. Cash-based incentive compensation plans are either intended to provide current rewards to employees who generate long-term business opportunities for the Company based on growth in loans, deposits, customer relationships and other measurable metrics or intended to compensate employees with commissions on completed transactions. Total cash-based incentive compensation decreased $113 thousand compared to 2016.

Share-based compensation expense represents expense for equity awards based on the grant-date fair value. Non-vested shares generally cliff vest in 3 years and are subject to a two year holding period after vesting. The number of shares that will ultimately vest is determined by BOKF's change in earnings per share relative to a defined group of peer banks. In addition, compensation costs related to certain shares is variable based on changes in the fair value of BOK Financial common shares. Share-based compensation expense for equity awards increased $13.1 million or 126% over 2016 primarily due to the increase in the vesting probability of certain performance-based share awards and the increase in the fair value of BOK Financial common shares. The BOK Financial market closing price was $92.32 at December 31, 2017 compared to $83.04 at December 31. 2016.

The Company currently offers a deferred compensation plan for certain executive and senior officers. Deferred compensation expense totaled $4.1 million for 2017, a $2.4 million increase over the prior year. Deferred compensation expense is largely offset by changes in the fair value of assets held in rabbi trusts for the benefit of participants, which is included other income in the Consolidated Statements of Earnings.

Employee benefit expense increased $4.4 million or 5% compared to 2016 primarily due to increased employee medical costs. The Company self-insures a portion of its employee health care coverage, up to a stop-loss of $750 thousand per employee, and these costs may be volatile.

Non-personnel operating expense

Non-personnel expense decreased $12.4 million or 3% compared to the prior year.

Insurance expense decreased $12.8 million or 40%. The company received $5.1 million in credits during the second quarter of 2017 related to the revision of certain inputs to the assessment calculation filed for years 2013 through 2016. In conjunction with ongoing cost reduction efforts, management performed a comprehensive review of inputs into the deposit insurance assessment calculation. We were able to support eligibility for the custodial bank adjustment, which allows for the deduction of certain qualifying low-risk assets from the deposit insurance assessment base for depository institutions with greater than $50 billion in trust assets. The remaining decrease was primarily due to the benefit of decreased criticized and classified assets levels related to the stabilization of energy prices, partially offset by the full-year impact of a new surcharge for banks with more than $10 billion in assets that became effective in the third quarter of 2016.

Mortgage banking expense decreased $8.5 million or 14%. Mortgage banking expense decreased $7.2 million due to the effect of actual residential mortgage loan prepayments on the fair value of mortgage servicing rights. As mortgage interest rates rise, actual prepayment speeds slow.

Professional fees and services expense decreased $5.7 million or 10% largely due to Mobank integration costs incurred last year. Data processing and communications expense increased $15.1 million or 11% and net occupancy and equipment expense increased $6.5 million or 8%. These increases were primarily related to continued upgrades of our information technology infrastructure and cybersecurity.

Net losses and operating expenses of repossessed assets increased $6.3 million over the prior year mainly due to a $6.0 million write-down of a set of oil and gas properties.

Other expense decreased $15.5 million compared to the prior year. The prior year included $9.1 million of litigation and settlement expenses.

Fourth Quarter 2017 Operating Expenses

Other operating expense for the fourth quarter of 2017 totaled $264.0 million, a decrease of $1.6 million compared to the fourth quarter of 2016.

Personnel expense increased $4.2 million over the fourth quarter of 2016. Regular compensation expense decreased $4.5 million compared to the fourth quarter of 2016 due primarily to $5.0 million in severance costs in the fourth quarter of 2016. Incentive compensation increased $6.5 million over the fourth quarter of 2016. Cash-based compensation was up $2.3 million and share-based compensation expense increased $3.3 million.

Non-personnel expense decreased $5.8 million compared to the fourth quarter of 2016. Mortgage banking costs decreased $3.0 million primarily due to the effect of actual residential mortgage loan prepayments on the fair value of mortgage servicing rights. Insurance expense decreased $2.2 million primarily due to the effect of certain changes in the assessment calculation. Data processing and communications costs were up $4.7 million, primarily related to information technology infrastructure and cybersecurity project costs.We also made a $2.0 million cash contribution to the BOKF Foundation during the fourth quarter of 2017 consistent with prior year.

2016 Operating Expenses

Other operating expense totaled $1.0 billion for 2016, a $121.4 million or 14% increase over 2015. Other operating expense included $9.1 million of litigation and settlement expenses, $7.5 million of integration costs related to the Mobank acquisition and $5.0 million of severance costs related to the reduction of workforce to better align expenses with expected revenue growth.

Personnel expense increased $37.8 million or 7%. Regular compensation expense totaled $332.7 million, up $19.3 million primarily due to the investment in mortgage, wealth management and technology employees. Incentive compensation expense increased $13.2 million or 10%, mainly due to an increase in cash based incentive compensation led by revenue growth in the Wealth Management segment. Employee benefit expense increased $5.3 million primarily due to employee medical costs.

Non-personnel expense for 2016 was $83.6 million or 22% higher than 2015. Mortgage banking expense increased $22.6 million primarily related to actual mortgage loan prepayments. Insurance expense increased $12.1 million due to higher deposit insurance expense related to increased criticized and classified asset levels, overall growth in bank assets, and a new surcharge for banks with more than $10 billion in assets. Professional fees and services expense increased $16.7 million and data processing and communications expense increased $9.5 million primarily related to the completion of technology projects.

Income Taxes

Income tax expense was $182.6 million or 35.2% of net income before taxes for 2017, $106.4 million or 31.4% of net income before taxes for 2016 and $139.4 million or 32.3% of net income before taxes for 2015. Current year tax expense totaled $156 million in 2017, $118 million in 2016 and $130 million in 2015. Excluding the impact of adjustments for tax reform, income tax expense would have been $170.9 million or 33.0% of net income before taxes for 2017.

The Tax Reform Act signed into law on December 22, 2017 is complex and extensive. Provisional adjustments to net deferred tax assets from a decrease in the combined federal and state income tax rate of 38.9% to 25.5% totaled $9.5 million, including $6.4 million of deferred tax assets related to unrealized losses on available for sale securities. We are not aware of any material areas where we were not able to determine provisional amounts. However, accounting for income tax effects of the Act is still in process and provisional adjustments recognized in 2017 may be adjusted as a result of our ongoing evaluation, including subsequent guidance provided by federal and state taxing authorities and other information as it becomes available.

We have not completed our accounting for the tax effects of the enactment of the Tax Reform Act. Vesting of performance-based equity awards and other incentive compensation that will be paid to certain officers in 2018 is based on growth in our diluted earnings per share relative to a defined group of peer banks. We made a reasonable estimate of the effects on our related deferred tax balances and recognized a provisional amount of $2.2 million as a component of income tax expense to write-off deferred tax assets related to the compensation of certain executive officers that will no longer be deductible. However, information needed to complete this accounting includes actual 2017 financial results of peer banks which is not yet available. In addition, information necessary to make a reasonable estimate of the effect of the Tax Reform Act on the proportional amortization of our investments in low income housing projects was not available.

The statute of limitations expired on uncertain tax positions during 2015, 2016, and 2017. Excluding the statute expiration, income tax expense would have been $184.1 million or 35.5% of net income before taxes for 2017, $108.3 million or 32.0% of net income before taxes for 2016 and $140.9 million or 32.6% of net income before taxes for 2015.

Net deferred tax assets totaled $15 million at December 31, 2017 compared to net deferred tax assets of $29 million at December 31, 2016. We have evaluated the recoverability of our deferred tax assets based on the generation of future taxable income during the periods in which those temporary differences become deductible and determined that no valuation allowance was required in 2017 and 2016.

Unrecognized tax benefits totaled $18.1 million at December 31, 2017 compared to $15.8 million at December 31, 2016. 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.

Income tax expense was $54.3 million or 42.9% of net income before taxes for the fourth quarter of 2017 compared to $22.5 million or 31.1% of net income before taxes for the fourth quarter of 2016. Income tax expense as a percentage of net income before taxes was higher in the fourth quarter of 2017, primarily due to tax reform. Excluding adjustments for the impact of tax reform, income tax expense would have been $42.7 million or 33.7% of net income before taxes for the fourth quarter of 2017.

Table 9 – Selected Quarterly Financial Data (Unaudited)
(In thousands, except per share data)

	2017			
	First	Second	Third	Fourth
Interest revenue	$ 226,390	$ 235,181	$ 255,413	$ 255,767
Interest expense	25,208	29,977	36,961	38,904
Net interest revenue	201,182	205,204	218,452	216,863
Provision for credit losses	—	—	—	(7,000)
Net interest revenue after provision for credit losses	201,182	205,204	218,452	223,863
Fees and commissions revenue	164,354	177,482	173,451	168,157
Gain (loss) on financial instruments and other assets, net	4,086	11,713	2,898	(7,219)
Change in fair value of mortgage servicing rights	1,856	(6,943)	(639)	5,898
Other operating revenue	170,296	182,252	175,710	166,836
Personnel expense	136,425	143,744	147,910	145,329
Other non-personnel expense	108,286	107,141	118,024	118,658
Total other operating expense	244,711	250,885	265,934	263,987
Net income before taxes	126,767	136,571	128,228	126,712
Federal and state income taxes	38,103	47,705	42,438	54,347
Net income	88,664	88,866	85,790	72,365
Net income (loss) attributable to non-controlling interests	308	719	141	(127)
Net income attributable to shareholders of BOK Financial Corp. shareholders	$ 88,356	$ 88,147	$ 85,649	$ 72,492
Earnings per share:				
Basic	$ 1.35	$ 1.35	$ 1.31	$ 1.11
Diluted	$ 1.35	$ 1.35	$ 1.31	$ 1.11
Average shares:				
Basic	64,715,964	64,729,752	64,742,822	64,793,005
Diluted	64,783,737	64,793,134	64,805,172	64,843,179

Table 9 – Selected Quarterly Financial Data (Unaudited) (continued)
(In thousands, except per share data)

	2016			
	First	**Second**	**Third**	**Fourth**
Interest revenue	$ 201,796	$ 202,267	$ 209,317	$ 215,737
Interest expense	19,224	19,655	21,471	21,539
Net interest revenue	182,572	182,612	187,846	194,198
Provision for credit losses	35,000	20,000	10,000	—
Net interest revenue after provision for credit losses	147,572	162,612	177,846	194,198
Fees and commissions revenue	163,297	180,147	181,276	162,028
Gain (loss) on financial instruments and other assets, net	22,105	21,678	3,707	(58,025)
Change in fair value of mortgage servicing rights	(27,988)	(16,283)	2,327	39,751
Other operating revenue	157,414	185,542	187,310	143,754
Personnel expense	133,562	139,213	139,212	141,132
Other non-personnel expense	109,008	112,172	118,876	124,415
Total other operating expense	242,570	251,385	258,088	265,547
Net income before taxes	62,416	96,769	107,068	72,405
Federal and state income taxes	21,428	30,497	31,956	22,496
Net income	$ 40,988	$ 66,272	$ 75,112	$ 49,909
Net income (loss) attributable to non-controlling interests	(1,576)	471	835	(117)
Net income attributable to shareholders of BOK Financial Corp. shareholders	$ 42,564	$ 65,801	74,277	50,026
Earnings per share:				
Basic	$ 0.64	$ 1.00	$ 1.13	$ 0.76
Diluted	$ 0.64	$ 1.00	$ 1.13	$ 0.76
Average shares:				
Basic	65,296,541	65,245,887	65,085,392	64,719,018
Diluted	65,331,425	65,302,926	65,157,841	64,787,728

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 businesses served through our consumer branch network and all mortgage banking activities. Wealth Management provides fiduciary services, private bank 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 Funds Management unit also initially recognizes accruals for loss contingencies when losses become probable. Actual losses are recognized by the lines of business if the accruals are settled.

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 allocations of certain direct 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 interest rate and liquidity risk characteristics. Market rates are generally based on the applicable LIBOR or interest rate swap rates, adjusted for prepayment risk. This method of transfer-pricing funds that support 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 which approximate wholesale market rates for funds with similar duration and re-pricing 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 re-pricing 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 swap rates. The expected duration ranges from 30 days for certain rate-sensitive deposits to five years.

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 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 10 following, net income attributable to our lines of business increased $106.8 million or 44% over the prior year. Net interest revenue grew by $111.6 million over the prior year. Other operating revenue was consistent with the prior year while other operating expenses decreased $20.0 million. Net charge-offs were down $19.1 million compared to the prior year.

Table 10 – Net Income by Line of Business
(In thousands)

	Year Ended December 31,		
	2017	2016	2015
Commercial Banking	**$ 265,147**	$ 210,927	$ 199,516
Consumer Banking	**24,444**	18	23,131
Wealth Management	**60,304**	32,174	29,431
Subtotal	**349,895**	243,119	252,078
Funds Management and other	**(15,251)**	(10,451)	36,487
Total	**$ 334,644**	$ 232,668	$ 288,565

Commercial Banking

Commercial Banking contributed $265.1 million to consolidated net income in 2017, up $54.2 million or 26% over the prior year. The increased contribution was largely driven by improved loan yields, growth in average balances of loans attributed to Commercial Banking and lower net charge-offs.

Table 11 – Commercial Banking
(Dollars in thousands)

	Year Ended December 31,		
	2017	2016	2015
Net interest revenue from external sources	**$ 588,938**	$ 492,967	$ 439,751
Net interest expense from internal sources	**(84,290)**	(58,781)	(52,313)
Total net interest revenue	**504,648**	434,186	387,438
Net loans charged off (recovered)	**13,881**	32,959	(6,748)
Net interest revenue after net loans charged off (recovered)	**490,767**	401,227	394,186
Fees and commissions revenue	**198,297**	193,508	177,251
Other gains, net	**7,813**	2,013	478
Other operating revenue	**206,110**	195,521	177,729
Personnel expense	**115,494**	112,021	108,661
Non-personnel expense	**110,840**	104,430	94,143
Other operating expense	**226,334**	216,451	202,804
Net direct contribution	**470,543**	380,297	369,111
Gain on financial instruments, net	**52**	10	—
Gain (loss) on repossessed assets, net	**(2,681)**	669	708
Corporate expense allocations	**33,958**	35,760	43,279
Income before taxes	**433,956**	345,216	326,540
Federal and state income taxes	**168,809**	134,289	127,024
Net income	**$ 265,147**	$ 210,927	$ 199,516
Average assets	**$ 17,517,217**	$ 16,998,626	$ 16,284,527
Average loans	**14,154,105**	13,600,221	12,404,064
Average deposits	**8,681,424**	8,430,507	8,773,512
Average invested capital	**1,303,185**	1,212,429	1,037,510

Net interest revenue increased $70.5 million or 16% over 2016. Growth in net interest revenue was due to improved yields and a $554 million increase in average loan balances as discussed further in the Loans section of Management's Discussion and Analysis of Financial Condition. Commercial and commercial real estate loans are primarily attributed to the Commercial Banking segment.

Average deposits attributed to Commercial Banking were $8.7 billion for 2017, an increase of $251 million or 3% over 2016. See additional discussion concerning changes in Commercial Banking deposits in the Liquidity and Capital section of Management's Discussion and Analysis following.

Fees and commissions revenue increased $4.8 million or 3% over 2016. Transaction card revenue generated by the TransFund EFT network increased $3.8 million or 3% largely due to a $2.1 million customer early termination fee received in 2017. Commercial deposit service charges and fees increased $2.0 million or 5% partially offset by a decrease in Other revenue of $1.4 million or 5% .

Other gains, net, of $7.8 million for 2017 was primarily due to a gain on sale of certain merchant banking investments.

Operating expense increased $9.9 million or 5% over 2016. Personnel costs increased $3.5 million or 3% primarily due to an increase in incentive compensation expense. Non-personnel expense increased $6.4 million or 6% over the prior year. Deposit insurance expense increased $6.2 million mainly due to increased granularity in allocation to the segments. Net repossession expense increased $4.4 million primarily due to the revaluation of certain oil and gas properties. Professional fees and services increased $1.6 million, data processing and communications expense increased $1.5 million and equipment expense increased $1.5 million primarily due to the implementation of projects. Other expense was down $9.6 million compared to the prior year primarily due to litigation settlements and post-acquisition valuation adjustments to a consolidated merchant banking investment that occurred in 2016. Corporate expense allocations decreased $1.8 million compared to the prior year.

Consumer Banking

Consumer Banking services are provided 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 and through HomeDirect Mortgage, an online origination channel.

Net income attributed to Consumer Banking totaled $24.4 million for 2017, compared to $18 thousand in the prior year. Changes in the fair value of our mortgage servicing rights, net of economic hedge, resulted in a $1.9 million decrease to pre-tax net income for 2017 compared to a $28.4 million decrease to pre-tax net income in 2016.

Table 12 – Consumer Banking
(Dollars in thousands)

	Year Ended December 31,		
	2017	**2016**	**2015**
Net interest revenue from external sources	**$ 96,360**	$ 85,998	$ 84,848
Net interest revenue from internal sources	**47,218**	37,777	28,503
Total net interest revenue	**143,578**	123,775	113,351
Net loans charged off	**4,783**	4,927	6,934
Net interest revenue after net loans charged off	**138,795**	118,848	106,417
Fees and commissions revenue	**196,299**	224,980	218,859
Other losses, net	**(68)**	(178)	(764)
Other operating revenue	**196,231**	224,802	218,095
Personnel expense	**101,653**	103,034	96,604
Other non-personnel expense	**122,670**	146,710	106,466
Total other operating expense	**224,323**	249,744	203,070
Net direct contribution	**110,703**	93,906	121,442
Loss on financial instruments, net	**(3,331)**	(26,252)	(4,712)
Change in fair value of mortgage servicing rights	**172**	(2,193)	(4,853)
Gain on repossessed assets, net	**223**	979	916
Corporate allocations	**67,761**	66,411	74,936
Net income before taxes	**40,006**	29	37,857
Federal and state income taxes	**15,562**	11	14,726
Net income	**$ 24,444**	$ 18	$ 23,131
Average assets	**$ 8,956,713**	$ 8,722,372	$ 8,836,327
Average loans	**1,954,561**	1,893,375	1,900,768
Average deposits	**6,654,631**	6,632,687	6,668,520
Average invested capital	**321,706**	316,680	296,880

Net interest revenue from Consumer Banking activities grew by $19.8 million or 16% over 2016, primarily related to increased yields on deposit balances sold to the Funds Management unit. Average loans increased $61 million and average deposits increased $22 million. Net loans charged off by the Consumer Banking unit were largely unchanged compared 2016 at $4.8 million. Net consumer banking charge-offs include overdrawn deposit accounts and other consumer loans.

Fees and commissions revenue decreased $28.7 million or 13% compared to the prior year. Mortgage banking revenue was down $29.1 million or 22% compared the prior year. Mortgage loan production volumes decreased $2.6 billion compared to 2016, largely due to the strategic decision to exit the correspondent lending channel. Gain on sale margin remained relatively stable, increasing 2 basis points. Deposit service charges and fees decreased $1.3 million or 2% compared to the prior year primarily due to lower overdraft fees.

Operating expense decreased $25.4 million or 10% compared to 2016. Personnel expense was down $1.4 million or 1%, primarily due to incentive compensation expense as mortgage production volume is down. Non-personnel expense decreased $24.0 million or 16%. Mortgage banking costs were down $8.6 million compared to the prior year. Mortgage banking expense decreased $7.2 million due to the effect of actual residential mortgage loan prepayments on the fair value of mortgage servicing rights. Other expense was down $11.0 million due to $11.1 million of litigation and settlement costs that occurred in 2016. Decreases in professional fees and services of $3.7 million and insurance of $1.8 million were partially offset by an increase in data processing and communications expense of $1.1 million.

Wealth Management

Wealth Management contributed $60.3 million to consolidated net income in 2017, up $28.1 million or 87% over the prior year. This increase was driven by growth in both net interest revenue and fees and commissions revenue combined with lower operating expenses.

Table 13 – Wealth Management
(Dollars in thousands)

	Year Ended December 31,		
	2017	2016	2015
Net interest revenue from external sources	**$ 45,024**	$ 33,006	$ 24,744
Net interest revenue from internal sources	**38,344**	29,043	24,043
Total net interest revenue	**83,368**	62,049	48,787
Net loans charged off (recovered)	**(696)**	(801)	(1,083)
Net interest revenue after net loans charged off (recovered)	**84,064**	62,850	49,870
Fees and commissions revenue	**301,485**	282,710	266,790
Other gains (losses), net	**(51)**	512	733
Other operating revenue	**301,434**	283,222	267,523
Personnel expense	**183,727**	190,756	178,333
Other non-personnel expense	**62,899**	60,238	50,331
Other operating expense	**246,626**	250,994	228,664
Net direct contribution	**138,872**	95,078	88,729
Loss on financial instruments, net	**—**	(42)	(204)
Gain (loss) on repossessed assets, net	**387**	—	—
Corporate allocations	**40,562**	42,378	40,357
Net income before taxes	**98,697**	52,658	48,168
Federal and state income tax	**38,393**	20,484	18,737
Net income	**$ 60,304**	$ 32,174	$ 29,431
Average assets	**$ 7,072,622**	$ 6,281,127	$ 5,444,483
Average loans	**1,314,441**	1,132,966	1,068,638
Average deposits	**5,516,214**	4,867,293	4,573,710
Average invested capital	**233,762**	199,227	186,382

Net interest revenue increased $21.3 million or 34% over the prior year driven by loan growth and net interest margin expansion. Also, expansion of trading in mortgage-related financial instruments increased revenue by $9.2 million in 2017 compared to 2016. Average deposit balances increased $649 million or 13% over the prior year and average loan balances were up $181 million or 16%.

Fees and commissions revenue grew by $18.8 million or 7% over the prior year. Fiduciary and asset management revenue increased $27.4 million or 20% primarily related to increases in assets under management, improved pricing discipline and decreased fee waivers. Brokerage and trading revenue decreased $14.0 million compared to the prior year, excluding the previously noted $5.0 million effect of the unexpected increase in interest rates in the fourth quarter of 2016. The revenue decrease is primarily due to the effect of rising interest rates on customer activity and implementation of the DOL fiduciary rule in 2017.

Toward the end of 2016, we deepened our relationship with existing mortgage loan originator clients who hedge their production pipeline risk with us. We began buying U.S. government agency mortgage-backed securities from these customers as part of our trading activities. This expanded product set contributed to both net interest revenue and institutional trading revenue in 2017.

Other operating revenue includes fees earned from state and municipal bond underwriting and financial advisory services, primarily in the Oklahoma and Texas markets. In 2017, the Wealth Management division participated in 279 underwritings that totaled $8.3 billion. As a participant, the Wealth Management division was responsible for facilitating the sale of approximately $2.0 billion of these underwritings. The Wealth Management division also participated in 24 corporate debt underwritings during 2017 that totaled $11.6 billion. Our interest in these underwritings was $274 million. In 2016, the Wealth Management division participated in 417 underwritings that totaled approximately $17.8 billion. Our interest in these underwritings totaled approximately $2.7 billion. The Wealth Management division also participated in 24 corporate debt underwritings during 2016 that totaled $9.5 billion. Our interest in these underwritings was $223 million.

Operating expenses decreased $4.4 million or 2% compared to the prior year. Personnel expense decreased $7.0 million or 4%, primarily due to a $5.3 million decrease in incentive compensation expense. Non-personnel expense was up $2.7 million or 4% over 2016. Data processing and communications expense increased $5.9 million over 2016 due to continued technology upgrades along with increases due to the growth in trust accounts and price increases from certain vendors. This increase was offset by decreases in professional fees and services, insurance and other expense.

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.

Table 14 – Securities
(In thousands)

	December 31,					
	2017		2016		2015	
	Amortized Cost	Fair Value	Amortized Cost	Fair Value	Amortized Cost	Fair Value
Trading:						
U.S. government agency debentures	**$ 21,188**	**$ 21,196**	$ 6,238	$ 6,234	$ 61,366	$ 61,295
U.S. government agency residential mortgage-backed securities	**393,190**	**392,673**	309,432	310,067	10,972	10,989
Municipal and other tax-exempt securities	**13,476**	**13,559**	14,377	14,427	31,691	31,901
Asset-backed securities	**23,911**	**23,885**	—	—	—	—
Other trading securities	**11,359**	**11,363**	6,843	6,900	18,235	18,219
Total trading securities	**$ 463,124**	**$ 462,676**	$ 336,890	$ 337,628	$ 122,264	$ 122,404
Investment:						
Municipal and other tax-exempt securities	**$ 228,186**	**$ 230,349**	$ 320,364	321,225	$ 365,258	$ 368,910
U.S. government agency residential mortgage-backed securities	**15,891**	**16,242**	20,777	21,473	26,833	27,874
Other debt securities	**217,716**	**233,444**	205,004	222,795	205,745	232,375
Total investment securities	**$ 461,793**	**$ 480,035**	$ 546,145	$ 565,493	$ 597,836	$ 629,159
Available for sale:						
U.S. Treasury securities	**$ 1,000**	**$ 1,000**	$ 1,000	$ 999	$ 1,000	$ 995
Municipal and other tax-exempt securities	**27,182**	**27,080**	41,050	40,993	56,681	56,817
Residential mortgage-backed securities:						
U.S. government agencies	**5,355,148**	**5,309,152**	5,475,351	5,460,386	5,861,096	5,898,351
Private issue	**74,311**	**93,221**	101,192	115,535	128,111	139,118
Total residential mortgage-backed securities	**5,429,459**	**5,402,373**	5,576,543	5,575,921	5,989,207	6,037,469
Commercial mortgage-backed securities guaranteed by U.S. government agencies	**2,858,885**	**2,834,961**	3,035,750	3,017,933	2,919,044	2,905,796
Other debt securities	**25,500**	**25,481**	4,400	4,152	4,400	4,151
Perpetual preferred stock	**12,562**	**15,767**	15,561	18,474	17,171	19,672
Equity securities and mutual funds	**14,487**	**14,916**	17,424	18,357	17,121	17,833
Total available for sale securities	**$ 8,369,075**	**$ 8,321,578**	$ 8,691,728	$ 8,676,829	$ 9,004,624	$ 9,042,733
Fair value option securities:						
U.S. government agency residential mortgage-backed securities	**$ 756,931**	**$ 755,054**	$ 78,823	$ 77,046	$ 446,277	$ 444,217

We maintain 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 toward the end of 2016 in response to expanded relationships with mortgage loan originator clients. 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.

Investment securities consist primarily of intermediate and long-term, fixed rate Oklahoma and Texas municipal bonds and taxable Texas school construction bonds. The investment security portfolio is diversified among issuers. The largest obligation of any single issuer is $30 million. Substantially all of these bonds are general obligations of the issuers. Approximately $99 million of the Texas school construction bonds are also guaranteed by the Texas Permanent School Fund Guarantee Program supervised by the State Board of Education for the State of Texas.

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 $8.4 billion at December 31, 2017, a decrease of $323 million compared to December 31, 2016. Available for sale securities consist 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. At December 31, 2017, residential mortgage-backed securities represented 65% of total available for sale securities.

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 portfolios at December 31, 2017 is 3.3 years. Management estimates the combined portfolios' duration extends to 4.1 years assuming an immediate 200 basis point upward shock. The estimated duration contracts to 2.9 years assuming a 50 basis point decline in the current low rate environment.

The aggregate gross amount of unrealized losses on available for sale securities totaled $89 million at December 31, 2017, a $14 million increase compared to December 31, 2016. On a quarterly basis, we perform separate evaluations on debt and equity 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 in 2017.

Certain residential mortgage-backed securities issued by U.S. government agencies and included in Fair value option securities on the Consolidated Balance Sheets, have been segregated and designated as economic hedges of changes in the fair value of our mortgage servicing rights. We have elected to carry these securities at fair value with changes in fair value recognized in current period income. These securities are held with the intent that gains or losses will offset changes in the fair value of mortgage servicing rights and related derivative contracts.

We are required to hold stock as members of the Federal Reserve system and the Federal Home Loan Banks ("FHLB"). These restricted equity securities are carried at cost as these securities do not have a readily determined fair value because ownership of these shares are restricted and they lack a market. We are required to hold FHLB stock in proportion to our borrowings with the FHLB.

Bank-Owned Life Insurance

We have approximately $316 million of bank-owned life insurance at December 31, 2017. This investment is expected to provide a long-term source of earnings to support existing employee benefit programs. Approximately $288 million is held in separate accounts. Our separate account holdings are invested in diversified portfolios of investment-grade fixed income securities and cash equivalents, including U.S. Treasury and Agency securities, residential mortgage-backed securities, corporate debt, asset-backed and commercial mortgage-backed securities. The portfolios are managed by unaffiliated professional managers within parameters established in the portfolio's investment guidelines. The cash surrender value of certain life insurance policies is further supported by a stable value wrap, which protects against changes in the fair value of the investments. At December 31, 2017, the fair value of investments held in separate accounts was approximately $293 million. As the underlying fair value of the investments held in a separate account at December 31, 2017 exceeded the net book value of the investments, no cash surrender value was supported by the stable value wrap. The stable value wrap is provided by a domestic financial institution. The remaining cash surrender value of $28 million primarily represents the cash surrender value of policies held in general accounts and other amounts due from various insurance companies.

Loans

The aggregate loan portfolio before allowance for loan losses totaled $17.2 billion at December 31, 2017, an increase of $164 million or 1% over December 31, 2016. Commercial loans have grown by $343 million or 3% due largely to growth in energy and healthcare, partially offset by a decrease in services and wholesale/retail sector loan balances. Commercial real estate loans decreased $329 million or 9% due primarily to continued pay-down activity as borrowers took advantage of favorable long-term rates and refinanced into the permanent market. Residential mortgage loans increased $24 million and personal loans grew by $126 million.

Table 15 – Loans
(In thousands)

	December 31,				
	2017	**2016**	**2015**	**2014**	**2013**
Commercial:					
Services	**$ 2,986,949**	$ 3,108,990	$ 2,784,276	$ 2,391,530	$ 2,282,210
Energy	**2,930,156**	2,497,868	3,097,328	2,860,428	2,351,760
Healthcare	**2,314,753**	2,201,916	1,883,380	1,454,969	1,274,246
Wholesale/retail	**1,471,256**	1,576,818	1,422,064	1,440,015	1,201,364
Manufacturing	**496,774**	514,975	556,729	532,594	391,751
Other commercial and industrial	**534,087**	490,257	508,754	416,134	441,890
Total commercial	**10,733,975**	10,390,824	10,252,531	9,095,670	7,943,221
Commercial real estate:					
Multifamily	**980,017**	903,272	751,085	704,298	576,502
Office	**831,770**	798,888	637,707	415,544	411,499
Retail	**691,532**	761,888	796,499	666,889	586,047
Industrial	**573,014**	871,749	563,169	428,817	243,877
Residential construction and land development	**117,245**	135,533	160,426	143,591	206,258
Other commercial real estate	**286,409**	337,716	350,147	369,011	391,170
Total commercial real estate	**3,479,987**	3,809,046	3,259,033	2,728,150	2,415,353
Residential mortgage:					
Permanent mortgage	**1,043,435**	1,006,820	945,336	969,951	1,062,744
Permanent mortgages guaranteed by U.S. government agencies	**197,506**	199,387	196,937	205,950	181,598
Home equity	**732,745**	743,625	734,620	773,611	807,684
Total residential mortgage	**1,973,686**	1,949,832	1,876,893	1,949,512	2,052,026
Personal	**965,776**	839,958	552,697	434,705	381,664
Total	**$ 17,153,424**	$ 16,989,660	$ 15,941,154	$ 14,208,037	$ 12,792,264

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 on-going 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 $10.7 billion or 63% of the loan portfolio at December 31, 2017, an increase of $343 million or 3% over December 31, 2016. Energy sector loans grew by $432 million or 17% and healthcare sector loans increased $113 million or 5% over December 31, 2016. This growth was partially offset by a decrease of $122 million or 4% in services sector loan balances and $106 million or 7% decrease in wholesale/retail sector loan balances.

Table 16 presents our commercial loan portfolio distributed primarily by collateral location. Loans for which the collateral location is less relevant, such as unsecured loans and reserve-based energy loans, are distributed by the borrower's primary operating location.

Table 16 – Commercial Loans by Collateral Location
(In thousands)

	Oklahoma	Texas	New Mexico	Arkansas	Colorado	Arizona	Kansas/ Missouri	Other	Total
Services	$ 708,329	$ 819,272	$169,836	$ 12,309	$ 325,692	$244,818	$ 300,118	$ 406,575	$ 2,986,949
Energy	533,960	1,543,888	43,439	3,270	326,132	8,374	68,881	402,212	2,930,156
Healthcare	257,780	364,956	130,490	92,541	133,506	136,940	267,919	930,621	2,314,753
Wholesale/retail	275,919	583,115	42,648	25,595	69,179	69,318	85,208	320,274	1,471,256
Manufacturing	94,045	148,444	221	4,672	62,090	44,348	77,689	65,265	496,774
Other commercial and industrial	81,051	156,676	2,404	70,876	26,617	18,820	81,152	96,491	534,087
Total commercial loans	$1,951,084	$3,616,351	$389,038	$ 209,263	$ 943,216	$522,618	$ 880,967	$2,221,438	$10,733,975

The majority of our commercial portfolio is located within our geographic footprint. At December 31, 2017, the Other category is composed primarily of California totaling $314 million or 3% of the commercial portfolio, Florida totaling $220 million or 2% of the commercial portfolio, Louisiana totaling $162 million or 2% of the commercial portfolio and Pennsylvania totaling $129 million or 1% of the commercial portfolio. All other states individually represent one percent or less of the total commercial loan portfolio.

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 $2.9 billion or 17% of total loans at December 31, 2017. Unfunded energy loan commitments increased by $189 million during the year to $2.9 billion at December 31, 2017. Growth in both energy loan balances and unfunded commitments demonstrates the support for this industry that we maintained during the recent downturn in oil and gas prices. Total outstanding loan balances as a percentage of total energy loan commitments increased to 52% at December 31, 2017, compared to 50% at December 31, 2016. Approximately $2.5 billion or 85% of energy loans were to oil and gas producers, a $488 million increase over December 31, 2016. 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% of the committed production loans are secured by properties primarily producing oil and 43% of the committed production loans are secured by properties primarily producing natural gas. Loans to borrowers in the midstream sector of the industry totaled $261 million or 9% of energy loans, a decrease of $3.0 million compared to the prior year. Loans to borrowers that provide services to the energy industry totaled $130 million or 4% of energy loans, a decrease of $56 million during 2017. Loans to other energy borrowers, including those engaged in wholesale or retail energy sales totaled $61 million or 2% of energy loans, an increase of $2.5 million over the prior year.

The services sector of the loan portfolio totaled $3.0 billion or 17% of total loans and consists of a large number of loans to a variety of businesses, including governmental, educational, commercial services, consumer services and utilities. Loans to governmental entities totaled $556 million at December 31, 2017. Approximately $1.5 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 $2.3 billion or 13% 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. Growth in the healthcare sector was subdued as the whole industry paused to wait for any potential impact from healthcare reform earlier in 2017.

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 $20 million and with three or more non-affiliated banks as participants. At December 31, 2017, the outstanding principal balance of these loans totaled $4.1 billion. Approximately 86% of these loans are to borrowers with local market relationships. We serve as the agent lender in approximately 17% of our shared national credits, based on dollars committed. We hold shared 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. The majority of commercial real estate loans are secured by properties within our geographic footprint, with the larger concentrations in Texas and Oklahoma, which represent 35% and 12% of the total commercial real estate portfolio at December 31, 2017, 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 $3.5 billion or 20% of the loan portfolio at December 31, 2017. The outstanding balance of commercial real estate loans decreased $329 million compared to 2016 due primarily to continued pay-down activity as borrowers took advantage of favorable long-term rates and refinanced into the permanent market and as we neared internal concentration limits earlier this year. We now have capacity to grow commercial real estate loans, although it will take time before commitments start to fund. Loans secured by industrial facilities, loans secured by retail facilities and other commercial real estate loans decreased compared to the prior year, partially offset by growth in loans secured by multifamily residential properties and office buildings. The commercial real estate loan balance as a percentage of our total loan portfolio has ranged from 19% to 22% over the past five years. The commercial real estate segment of our loan portfolio distributed by collateral location follows in Table 17.

Table 17 – Commercial Real Estate Loans by Collateral Location
(In thousands)

	Oklahoma	Texas	New Mexico	Arkansas	Colorado	Arizona	Kansas/ Missouri	Other	Total
Multifamily	$ 112,942	$ 456,018	$ 19,186	$ 27,102	$ 70,959	$ 61,944	$ 113,156	$ 118,710	$ 980,017
Office	92,766	278,285	88,309	7,570	30,766	62,738	46,082	225,254	831,770
Retail	57,350	268,198	113,821	7,660	31,825	29,217	17,073	166,388	691,532
Industrial	75,907	150,459	22,836	—	13,030	10,221	44,545	256,016	573,014
Residential construction and land development	11,900	23,228	17,134	1,809	18,037	7,664	14,638	22,835	117,245
Other commercial real estate	55,939	31,506	12,640	3,504	15,132	21,056	33,111	113,521	286,409
Total commercial real estate loans	$ 406,804	$1,207,694	$ 273,926	$ 47,645	$ 179,749	$192,840	$ 268,605	$ 902,724	$ 3,479,987

The Other category includes California with $137 million or 4% of total commercial real estate loans and Florida with $103 million or 3% of total commercial real estate loans. All other states individually represent less than 3% of the total commercial real estate loan population.

While recent changes nationally in consumer purchasing trends from brick-and-mortar store 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. Credit scoring is assessed based on significant credit characteristics including credit history, residential and employment stability.

Residential mortgage loans totaled $2.0 billion, a $24 million or 1% increase compared to December 31, 2016. In general, we sell the majority of our fixed rate loan originations that conform to U.S. government agency standards 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 95% of our residential mortgage portfolio is located within our geographic footprint.

The majority of our permanent mortgage loan portfolio is primarily 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 exceed 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%. Loan-to-value ratios ("LTV") are tiered from 60% to 100%, 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 December 31, 2017, $198 million of permanent residential mortgage loans are guaranteed by U.S. government agencies. We have minimal credit exposure on loans guaranteed by the agencies. This amount includes residential mortgage loans previously sold into GNMA mortgage pools that are eligible to be repurchased. We may repurchase these loans 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 in the Consolidated Balance Sheets. Permanent residential mortgage loans guaranteed by U.S. government agencies decreased $1.9 million or 1% compared to December 31, 2016.

Home equity loans totaled $733 million at December 31, 2017, an $11 million or 1% decrease compared to December 31, 2016. Our home equity 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%. 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 15 year term of amortizing repayments. 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 December 31, 2017 by lien position and amortizing status follows in Table 18.

Table 18 – Home Equity Loans
(In thousands)

	Revolving	Amortizing	Total
First lien	$ 72,649	$ 392,807	$ 465,456
Junior lien	143,463	123,826	267,289
Total home equity	$ 216,112	$ 516,633	$ 732,745

Personal loans totaled $966 million, growing by $126 million or 15% over the prior year. This growth is primarily due to loans to Wealth Management customers for investment in businesses that will be repaid from personal income.

The distribution of residential mortgage and personal loans at December 31, 2017 is presented in Table 19. Residential mortgage loans are distributed by collateral location. Personal loans are generally distributed by borrower location.

Table 19 – Residential Mortgage and Personal Loans by Collateral Location
(In thousands)

	Oklahoma	Texas	New Mexico	Arkansas	Colorado	Arizona	Kansas/ Missouri	Other	Total
Residential mortgage:									
Permanent mortgage	$ 176,303	$429,517	$ 47,635	$ 13,533	$ 177,952	$ 97,364	$ 57,214	$ 43,917	$ 1,043,435
Permanent mortgages guaranteed by U.S. government agencies	53,056	35,906	37,511	7,387	5,027	1,879	14,241	42,499	197,506
Home equity	384,178	133,280	92,077	5,395	38,166	9,434	67,581	2,634	732,745
Total residential mortgage	$ 613,537	$598,703	$ 177,223	$ 26,315	$ 221,145	$108,677	$ 139,036	$ 89,050	$ 1,973,686
Personal	$ 300,362	$401,533	$ 11,555	$ 10,118	$ 65,137	$ 48,993	$ 76,289	$ 51,789	$ 965,776

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 BOKF, NA are centrally managed by the Bank of Oklahoma division.

Table 20 – Loans Managed by Primary Geographical Market
(In thousands)

	December 31,				
	2017	**2016**	**2015**	**2014**	**2013**
Bank of Oklahoma:					
Commercial	**$ 3,238,720**	$ 3,370,259	$ 3,782,687	$ 3,142,689	$ 2,902,140
Commercial real estate	**682,037**	684,381	739,829	603,610	602,010
Residential mortgage	**1,435,432**	1,407,197	1,409,114	1,467,096	1,524,212
Personal	**342,212**	303,823	255,387	206,115	192,283
Total Bank of Oklahoma	**5,698,401**	5,765,660	6,187,017	5,419,510	5,220,645
Bank of Texas:					
Commercial	**4,520,401**	4,022,455	3,908,425	3,549,128	3,052,274
Commercial real estate	**1,261,864**	1,415,011	1,204,202	1,027,817	816,574
Residential mortgage	**233,675**	233,981	219,126	235,948	260,544
Personal	**375,084**	306,748	203,496	154,363	131,297
Total Bank of Texas	**6,391,024**	5,978,195	5,535,249	4,967,256	4,260,689
Bank of Albuquerque:					
Commercial	**343,296**	399,256	375,839	383,439	342,336
Commercial real estate	**341,282**	284,603	313,422	296,358	308,829
Residential mortgage	**98,018**	108,058	120,507	127,999	133,900
Personal	**11,721**	11,483	11,557	10,899	13,842
Total Bank of Albuquerque	**794,317**	803,400	821,325	818,695	798,907
Bank of Arkansas:					
Commercial	**95,644**	86,577	92,359	95,510	81,556
Commercial real estate	**87,393**	73,616	69,320	88,301	78,264
Residential mortgage	**6,596**	7,015	8,169	7,261	7,922
Personal	**9,992**	6,524	819	5,169	8,023
Total Bank of Arkansas	**199,625**	173,732	170,667	196,241	175,765
Colorado State Bank & Trust:					
Commercial	**1,130,714**	1,018,208	987,076	977,961	735,626
Commercial real estate	**174,201**	265,264	223,946	194,553	190,355
Residential mortgage	**63,350**	59,631	53,782	57,119	62,821
Personal	**63,115**	50,372	23,384	27,918	22,686
Total Colorado State Bank & Trust	**1,431,380**	1,393,475	1,288,188	1,257,551	1,011,488
Bank of Arizona:					
Commercial	**687,792**	686,253	606,733	547,524	417,702
Commercial real estate	**660,094**	747,409	507,523	355,140	257,477
Residential mortgage	**41,771**	36,265	44,047	35,872	47,111
Personal	**57,140**	52,553	31,060	12,883	7,887
Total Bank of Arizona	**1,446,797**	1,522,480	1,189,363	951,419	730,177
Mobank (Kansas City):					
Commercial	**717,408**	807,816	499,412	399,419	411,587
Commercial real estate	**273,116**	338,762	200,791	162,371	161,844
Residential mortgage	**94,844**	97,685	22,148	18,217	15,516
Personal	**106,512**	108,455	26,994	17,358	5,646
Total Mobank (Kansas City)	**1,191,880**	1,352,718	749,345	597,365	594,593
Total BOK Financial loans	**$ 17,153,424**	$ 16,989,660	$ 15,941,154	$ 14,208,037	$ 12,792,264

Table 21 – Loan Maturity and Interest Rate Sensitivity at December 31, 2017
(In thousands)

		Remaining Maturities of Selected Loans		
	Total	Within 1 Year	1-5 Years	After 5 Years
Loan maturity:				
Commercial	$ 10,733,975	$ 882,438	$ 5,965,679	$ 3,885,858
Commercial real estate	3,479,987	243,751	2,290,818	945,418
Total	$ 14,213,962	$ 1,126,189	$ 8,256,497	$ 4,831,276
Interest rate sensitivity for selected loans with:				
Predetermined interest rates	$ 2,734,269	$ 44,414	$ 653,321	$ 2,036,534
Floating or adjustable interest rates	11,479,693	1,081,775	7,603,177	2,794,741
Total	$ 14,213,962	$ 1,126,189	$ 8,256,498	$ 4,831,275

Loan Commitments

We enter into certain off-balance sheet arrangements in the normal course of business. These arrangements include unfunded loan commitments which totaled $10.0 billion and standby letters of credit which totaled $648 million at December 31, 2017. 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. Approximately $55 thousand of the outstanding standby letters of credit were issued on behalf of customers whose loans are nonperforming at December 31, 2017.

Table 22 – Off-Balance Sheet Credit Commitments
(In thousands)

	December 31,				
	2017	2016	2015	2014	2013
Loan commitments	**$ 9,958,080**	$ 9,404,665	$ 8,455,037	$ 8,328,416	$ 7,096,373
Standby letters of credit	**647,653**	585,472	507,988	447,599	444,248
Mortgage loans sold with recourse	**125,127**	139,486	155,489	179,822	191,299

We have off-balance sheet commitments related to certain residential mortgage loans originated under community development loan programs that were sold to a U.S. government agency with full recourse. These mortgage loans were underwritten to standards approved by the agencies, including full documentation and originated under programs available only for owner-occupied properties. We no longer sell residential mortgage loans with recourse other than obligations under standard representations and warranties. We are obligated to repurchase these loans for the life of these loans in the event of foreclosure for the unpaid principal and interest at the time of foreclosure. Substantially all of these loans are to borrowers in our primary markets including $75 million to borrowers in Oklahoma, $14 million to borrowers in Arkansas and $12 million to borrowers in New Mexico. At December 31, 2017, approximately 3% of these loans were nonperforming and 7% were past due 30 to 89 days. A separate accrual for credit risk of $3.7 million is available to absorb losses on these loans.

We also have an off-balance sheet obligation to repurchase residential mortgage loans sold to government sponsored entities through our mortgage banking activities due to standard representations and warranties made under contractual agreements and to service loans in accordance with investor guidelines. The Company has established accruals for losses related to these obligations that are included in Other liabilities in the Consolidated Balance Sheets and in Mortgage banking costs in the Consolidated Statements of Earnings.

In 2017, the Company repurchased 18 loans from the agencies for $3.5 million and paid indemnification for 11 loans. Losses on both repurchases and indemnifications were insignificant. For the period from 2010 through 2017, approximately 21% of repurchase requests have currently resulted in actual repurchases or indemnification by the Company.

A summary of unresolved deficiency requests from U.S. government agencies follows (in thousands, except for number of unresolved deficiency requests):

Table 23 - Summary of Unresolved Deficiency Requests
(In thousands, except number of unresolved deficiency requests)

	December 31,	
	2017	**2016**
Number of unresolved deficiency requests	**191**	233
Aggregate outstanding principal balance subject to unresolved deficiency requests	**$ 9,737**	$ 17,382
Unpaid principal balance subject to indemnification by the Company	**4,519**	5,803

The accrual for credit losses related to potential loan repurchases under representations and warranties totaled $1.4 million at December 31, 2017 and $2.8 million at December 31, 2016.

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 or exchanges to minimize market risk to us from 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 options 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 counter-parties 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 supports the contract or the customer or 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 December 31, 2017, the net fair values of derivative contracts, before consideration of cash margin, reported as assets under these programs totaled $225 million compared to $690 million at December 31, 2016. Derivative contracts carried as assets include foreign exchange contracts with fair values of $130 million, energy contracts with fair values of $55 million, interest rate swaps primarily sold to loan customers with fair values of $28 million, to-be-announced residential mortgage-backed securities with fair values of $5.5 million and equity option contracts with fair values of $5.5 million. Before consideration of cash margin paid to counterparties, the aggregate net fair values of derivative contracts held under these programs reported as liabilities totaled $214 million.

At December 31, 2017, total derivative assets were reduced by $6.5 million of cash collateral received from counterparties and total derivative liabilities were reduced by $56 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 December 31, 2017 follows in Table 24.

Table 24 – Fair Value of Derivative Contracts
(In thousands)

Customers	$	114,566
Banks and other financial institutions		95,356
Exchanges and clearing organizations		8,179
Fair value of customer hedge asset derivative contracts, net	$	218,101

The largest exposure to a single counterparty was to an exchange organization for interest rate swaps which totaled $7.9 million at December 31, 2017.

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 $29.96 per barrel of oil would decrease the fair value of derivative assets by $33 million. An increase in prices equivalent to $83.53 per barrel of oil would increase the fair value of derivative assets by $366 million. Liquidity requirements of this program are also affected by our credit rating. A decrease in credit rating to below investment grade would increase our obligation to post cash margin on existing contracts by approximately $10 million. 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 December 31, 2017, 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 December 31, 2017, the combined allowance for loan losses and accrual for off-balance sheet credit risk totaled $234 million or 1.37% of outstanding loans and 131% of nonaccruing loans, excluding loans guaranteed by U.S. Government agencies. The allowance for loan losses was $231 million and the accrual for off-balance sheet credit risk was $3.7 million. At December 31, 2016, the combined allowance for credit losses was $257 million or 1.52% of outstanding loans and 117% of nonaccruing loans, excluding loans guaranteed by U.S. Government agencies. The allowance for loan losses was $246 million and the accrual for off-balance sheet credit risk was $11.2 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 or credit 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 sustained improvement in nonaccruing and potential problem loans and net charge-offs during the year, the Company determined that a $7.0 million negative provision for credit losses was appropriate.

Based on currently available information, such as historical credit factors by loan type and other qualitative and environmental factors, including the results of our energy stress testing, we anticipate continued improvement in credit quality in the first half of 2018.

Table 25 – Summary of Loan Loss Experience
(In thousands)

	Year Ended December 31,				
	2017	**2016**	**2015**	**2014**	**2013**
Allowance for loan losses:					
Beginning balance	**$ 246,159**	$ 225,524	$ 189,056	$ 185,396	$ 215,507
Loans charged off:					
Commercial	**(19,810)**	(35,828)	(6,734)	(3,569)	(6,335)
Commercial real estate	**(76)**	—	(944)	(2,047)	(5,845)
Residential mortgage	**(649)**	(1,312)	(2,205)	(4,448)	(5,753)
Personal	**(5,064)**	(5,448)	(5,288)	(6,168)	(7,349)
Total	**(25,599)**	(42,588)	(15,171)	(16,232)	(25,282)
Recoveries of loans previously charged off:					
Commercial	**4,461**	1,727	2,729	5,703	7,488
Commercial real estate	**1,940**	1,283	11,079	7,003	9,420
Residential mortgage	**760**	1,999	1,260	2,000	1,558
Personal	**2,451**	2,747	3,052	4,328	4,778
Total	**9,612**	7,756	18,120	19,034	23,244
Net loans recovered (charged off)	**(15,987)**	(34,832)	2,949	2,802	(2,038)
Provision for loan losses	**510**	55,467	33,519	858	(28,073)
Ending balance	**$ 230,682**	$ 246,159	$ 225,524	$ 189,056	$ 185,396
Accrual for off-balance sheet credit risk:					
Beginning balance	**$ 11,244**	$ 1,711	$ 1,230	$ 2,088	$ 1,915
Provision for off-balance sheet credit risk	**(7,510)**	9,533	481	(858)	173
Ending balance	**$ 3,734**	$ 11,244	$ 1,711	$ 1,230	$ 2,088
Total combined provision for credit losses	**$ (7,000)**	$ 65,000	$ 34,000	$ —	$ (27,900)
Allowance for loan losses to loans outstanding at period end	**1.34 %**	1.45%	1.41 %	1.33 %	1.45 %
Net charge-offs (recoveries) to average loans	**0.09 %**	0.21%	(0.02)%	(0.02)%	0.02 %
Total provision for credit losses to average loans	**(0.04)%**	0.40%	0.23 %	— %	(0.23)%
Recoveries to gross charge-offs	**37.55 %**	18.21%	119.44 %	117.26 %	91.94 %
Allowance for loan losses as a multiple of net charge-offs	**14.43x**	7.07x	(76.47)x	(67.47)x	90.97x
Accrual for off-balance sheet credit risk to off-balance sheet credit commitments	**0.04 %**	0.11%	0.02 %	0.01 %	0.03 %
Combined allowance for credit losses to loans outstanding at period-end	**1.37 %**	1.52%	1.43 %	1.34 %	1.47 %

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 agreements. This includes all nonaccruing loans, all loans modified in trouble debt restructurings and all government guaranteed loans repurchased from GNMA pools. At December 31, 2017, impaired loans totaled $376 million, including $51 million with specific allowances of $8.8 million and $325 million with no specific allowances because the loan balances represent the amounts we expect to recover. Our most recently completed energy portfolio redetermination supported that $41 million of impaired energy loans required no allowance for credit losses based on the adequacy of collateral. In addition, $43 million of impaired energy loans are current on all payments due. At December 31, 2016, impaired loans totaled $419 million, including $11 million of impaired loans with specific allowances of $843 thousand and $407 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 risks 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 $200 million at December 31, 2017, compared to $217 million at December 31, 2016. The general allowance for the commercial loan portfolio segment decreased by $24 million, primarily related to improved risk grading of energy loans. The general allowance for the commercial real estate loan portfolio segment increased $5.9 million over December 31, 2016 primarily due to increased inherent risk in retail, office and multifamily loans. The general allowance for residential mortgage loans increased $273 thousand and the general allowance for personal loans increased $351 thousand over the prior year.

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 $22 million at December 31, 2017, down from $28 million at December 31, 2016. The nonspecific allowance decreased due to decreased concentration in loans with large balances and improving economic trends in our primary geographical lending areas, offset by the estimated impact of Hurricane Harvey in the Houston, Texas area.

An allocation of the allowance for loan losses by loan category follows in Table 26.

Table 26 – Allowance for Loan Losses Allocation
(Dollars in thousands)

	December 31,									
	2017		2016		2015		2014		2013	
	Allowance	% of Loans[1]	Allowance	% of Loans[1]	Allowance	% of Loans[1]	Allowance	% of Loans[1]	Allowance	% of Loans[1]
Loan category:										
Commercial	**$ 124,269**	**62.58%**	$ 140,213	61.16%	$ 130,334	64.32%	$ 90,875	64.02%	$ 79,180	62.10%
Commercial real estate	**56,621**	**20.29%**	50,749	22.42%	41,391	20.44%	42,445	19.20%	41,573	18.88%
Residential mortgage	**18,451**	**11.50%**	18,224	11.48%	19,509	11.77%	23,458	13.72%	29,465	16.04%
Personal	**9,124**	**5.63%**	8,773	4.94%	4,164	3.47%	4,233	3.06%	6,965	2.98%
Nonspecific allowance	**22,217**		28,200		30,126		28,045		28,213	
Total	**$ 230,682**	**100.00%**	$ 246,159	100.00%	$ 225,524	100.00%	$ 189,056	100.00%	$ 185,396	100.00%

[1] Represents ratio of loan category balance to total loans.

Our loan monitoring process also identified certain accruing substandard loans, based on regulatory guidelines, 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' continued ability to comply with current repayment terms. These potential problem loans totaled $241 million at December 31, 2017 composed primarily of $145 million or 5% of energy loans, $43 million or less than 2% of healthcare loans, $27 million or 1% of services loans and $11 million or 2% of manufacturing loans. Potential problem loans totaled $399 million at December 31, 2016.

Our loan monitoring process also identified loans considered to be "other loans especially mentioned" 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 $118 million at December 31, 2017 and were composed primarily of $60 million or 2% of energy loans, $19 million or 1% of wholesale/retail sector loans and $14 million or less than 1% of service sector loans. Other loans especially mentioned totaled $230 million at December 31, 2016.

We updated our semi-annual energy loan portfolio stress test as of December 31, 2017 to estimate how the energy portfolio may respond in a prolonged low-price environment. Stress test assumptions applied the five year forward pricing curve to a starting price of $2.17 per million BTUs for natural gas and $45.88 per barrel of oil and then escalating 3% annually for years six through ten to a maximum of $2.67 and $47.26, respectively.

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 loans charged off of $16.0 million or 0.09% of average loans for 2017, compared to net loans charged off of $34.8 million or 0.21% of average loans in 2016.

Net commercial loans charged off totaled $15.3 million, primarily from $11.9 million of net charge-offs from healthcare sector loans and $5.1 million of net charge-offs from energy sector loans, partially offset by $749 thousand of net recoveries from service sector loans. Net commercial real estate loan recoveries totaled $1.9 million. Net recoveries of residential mortgage loans totaled $111 thousand for the year and net charge-offs of personal loans were $2.6 million.

Table 26 – Nonperforming Assets
(In thousands)

	December 31,				
	2017	**2016**	**2015**	**2014**	**2013**
Nonaccruing loans:					
Commercial	**$ 137,303**	$ 178,953	$ 76,424	$ 13,527	$ 16,760
Commercial real estate	**2,855**	5,521	9,001	18,557	40,850
Residential mortgage	**47,447**	46,220	61,240	48,121	42,320
Personal	**269**	290	463	566	1,219
Total nonaccruing loans	**187,874**	230,984	147,128	80,771	101,149
Accruing renegotiated loans guaranteed by U.S. government agencies	**73,994**	81,370	74,049	73,985	54,322
Real estate and other repossessed assets:					
Guaranteed by U.S. government agencies[1]	**—**	—	—	49,898	37,431
Other	**28,437**	44,287	30,731	51,963	54,841
Real estate and other repossessed assets	**28,437**	44,287	30,731	101,861	92,272
Total nonperforming assets	**$ 290,305**	$ 356,641	$ 251,908	$ 256,617	$ 247,743
Total nonperforming assets excluding those guaranteed by U.S. government agencies	**$ 207,132**	$ 263,425	$ 155,959	$ 129,022	$ 155,213
Nonaccruing loans by loan class:					
Commercial:					
Services	**$ 2,620**	$ 8,173	$ 10,290	$ 5,201	$ 4,922
Energy	**92,284**	132,499	61,189	1,416	1,860
Healthcare	**14,765**	825	1,072	1,380	1,586
Wholesale/retail	**2,574**	11,407	2,919	4,149	6,969
Manufacturing	**5,962**	4,931	331	450	592
Other commercial and industrial	**19,098**	21,118	623	931	831
Total commercial	**137,303**	178,953	76,424	13,527	16,760
Commercial real estate:					
Multifamily	**—**	38	274	—	7
Office	**275**	426	651	3,420	6,391
Retail	**276**	326	1,319	3,926	4,857
Industrial	**—**	76	76	—	252
Residential construction and land development	**1,832**	3,433	4,409	5,299	17,377
Other commercial real estate	**472**	1,222	2,272	5,912	11,966
Total commercial real estate	**2,855**	5,521	9,001	18,557	40,850
Residential mortgage:					
Permanent mortgage	**25,193**	22,855	28,984	34,845	34,279
Permanent mortgages guaranteed by U.S. government agencies	**9,179**	11,846	21,900	3,712	777
Home equity	**13,075**	11,519	10,356	9,564	7,264
Total residential mortgage	**47,447**	46,220	61,240	48,121	42,320
Personal	**269**	290	463	566	1,219
Total nonaccruing loans	**$ 187,874**	$ 230,984	$ 147,128	$ 80,771	$ 101,149

Table 26 – Nonperforming Assets
(In thousands)

	December 31,				
	2017	2016	2015	2014	2013
Allowance for loan losses to nonaccruing loans[2]	**129.09%**	112.33%	180.09%	245.34%	184.71%
Accruing loans 90 days or more past due[2]	**$ 633**	$ 5	$ 1,207	$ 125	$ 1,415
Foregone interest on nonaccruing loans[3]	**16,496**	15,990	7,432	8,170	5,361

[1] Approximately $50 million was reclassified from Real estate and other repossessed assets to Receivables on the balance sheet on January 1, 2015 with the adoption of Financial Accounting Standards Board Update No. 2014-14, *Classification of Certain Government-Guaranteed Mortgage Loans Upon Foreclosure* ("ASU 2014-14"). With the implementation of ASU 2014-14, upon foreclosure of loans for which the loan balance is expected to be recovered from the guarantee by a U.S. government agency, the loan balance is directly reclassified to other receivables without including such foreclosed assets in real estate and other repossessed assets.

[2] Excludes residential mortgages guaranteed by agencies of the U.S. government.

[3] Interest collected and recognized on nonaccruing loans was not significant in 2017 and previous years.

Nonperforming assets totaled $290 million or 1.69% of outstanding loans and repossessed assets at December 31, 2017, a $66 million decrease compared to the prior year. Nonaccruing loans totaled $188 million, accruing renegotiated residential mortgage loans totaled $74 million and real estate and other repossessed assets totaled $28 million. All accruing renegotiated residential mortgage loans and $9.2 million of nonaccruing loans are guaranteed by U.S. government agencies. Excluding assets guaranteed by U.S. government agencies, nonperforming assets decreased $56 million to $207 million or 1.22% of outstanding non-guaranteed loans and repossessed assets. The decrease was primarily due to nonaccruing energy loans and real estate and other repossessed assets. 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 a troubled debt restructuring. 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 residential mortgage loans guaranteed by U.S. government agencies, are classified as nonaccruing. We may 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. All nonaccruing loans generally remain on nonaccruing 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.

As of December 31, 2017, renegotiated loans consist solely of accruing residential mortgage loans guaranteed by U.S. government agencies that have been modified in 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. 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 year ended December 31, 2017 follows in Table 28.

Table 28 – Rollforward of Nonperforming Assets
(In thousands)

	Year Ended December 31, 2017			
	Nonaccruing Loans	Renegotiated Loans	Real Estate and Other Repossessed Assets	Total Nonperforming Assets
Balance, December 31, 2016	$ 230,984	$ 81,370	$ 44,287	$ 356,641
Additions	138,632	56,562	—	195,194
Net transfer from premises and equipment	—	—	1,307	1,307
Payments	(137,879)	(3,090)	—	(140,969)
Charge-offs	(25,599)	—	—	(25,599)
Net losses and write-downs	—	—	(1,951)	(1,951)
Foreclosure of nonaccruing loans	(6,060)	—	6,060	—
Foreclosure of loans guaranteed by U.S. government agencies	(5,881)	(7,023)	—	(12,904)
Proceeds from sales	—	(54,721)	(19,073)	(73,794)
Net transfers to nonaccruing loans	205	(205)	—	—
Return to accrual status	(6,598)	—	—	(6,598)
Other, net	70	1,101	(2,193)	(1,022)
Balance, December 31, 2017	$ 187,874	$ 73,994	$ 28,437	$ 290,305

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 minimal. At foreclosure, these amounts are transferred to claims receivable accounts. These properties will be conveyed to the agencies and receivables collected once applicable criteria have been met.

Nonaccruing loans totaled $188 million or 1.10% of outstanding loans at December 31, 2017, compared to $231 million or 1.36% of outstanding loans at December 31, 2016. Nonaccruing loans decreased $43 million compared to December 31, 2016. Newly identified nonaccruing loans totaled $139 million for 2017, partially offset by $138 million of payments, $26 million of charge-offs and $6.1 million of foreclosures.

Commercial

Nonaccruing commercial loans totaled $137 million or 1.28% of total commercial loans at December 31, 2017, down from $179 million or 1.72% of total commercial loans at December 31, 2016. Newly identified nonaccruing commercial loans totaled $109 million, offset by $125 million in payments, $20 million of charge-offs and $329 thousand of repossessions.

Nonaccruing commercial loans at December 31, 2017 were primarily composed of $92 million or 3.15% of total energy loans, $19 million or 3.58% of other commercial and industrial loans and $15 million or 0.64% of healthcare sector loans.

Commercial Real Estate

Nonaccruing commercial real estate loans were $2.9 million or 0.08% of outstanding commercial real estate loans at December 31, 2017, compared to $5.5 million or 0.14% of outstanding commercial real estate loans at December 31, 2016. The $2.7 million decrease was primarily due to $4.7 million of cash payments received, $1.1 million of foreclosures and $76 thousand of charge-offs, partially offset by $3.2 million of newly identified commercial real estate loans during the year.

Nonaccruing commercial real estate loans were composed of $1.8 million or 1.56% of total residential land development and construction loans.

Residential Mortgage and Personal

Nonaccruing residential mortgage loans totaled $47 million or 2.40% of outstanding residential mortgage loans at December 31, 2017, compared to $46 million or 2.37% of outstanding residential mortgage loans at December 31, 2016. Newly identified nonaccruing residential mortgage loans of $21 million were offset by $11 million of foreclosures, $8.2 million of cash payments and $649 thousand of loans charged off during the year. Nonaccruing residential mortgage loans primarily consisted of $25 million or 2.41% of non-guaranteed permanent residential mortgage loans and $13 million or 1.78% of total home equity loans.

Payments on 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 29. Substantially all non-guaranteed residential loans past due 90 days or more are nonaccruing. At December 31, 2017, residential mortgage loans 30 to 59 days past due of $5.6 million was largely unchanged compared to the prior year. Residential mortgage loans 60 to 89 days past due decreased $958 thousand from December 31, 2016. Personal loans 30 to 59 days past due increased $92 thousand and personal loans 60 to 89 days past due decreased $72 thousand compared to December 31, 2016. Personal loans 90 days or more past due increased $256 thousand.

Table 29 – Residential Mortgage and Personal Loans Past Due
(In thousands)

	December 31, 2017			December 31, 2016		
	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]	**$ —**	**$ 219**	**$ 3,435**	$ —	$ 1,280	$ 3,299
Home equity	**17**	**440**	**2,206**	—	337	2,276
Total residential mortgage	**$ 17**	**$ 659**	**$ 5,641**	$ —	$ 1,617	$ 5,575
Personal	**$ 261**	**$ 191**	**$ 681**	$ 5	$ 263	$ 589

[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 date of foreclosure or current fair value, less estimated selling costs.

Real estate and other repossessed assets totaled $28 million at December 31, 2017, composed primarily of $18 million of oil and gas properties, $5.9 million of 1-4 family residential properties and $4.2 million of undeveloped land primarily zoned for commercial development. The residential properties and undeveloped land are widely disbursed across our geographical footprint. Real estate and other repossessed assets decreased $16 million compared to December 31, 2016.

Liquidity and Capital

Based on the average balances for 2017, approximately 67% of our funding was provided by deposit accounts, 19% from borrowed funds, less than 1% from long-term subordinated debt and 10% from equity. Our funding sources, which primarily include deposits and borrowings from the Federal Home Loan Banks, provide adequate liquidity to meet our operating needs.

Subsidiary Bank

Deposits and borrowed funds are the primary sources of liquidity for the Bank. Deposit accounts represent our largest funding source. 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 Express Bank 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.

Table 30 - Average Deposits by Line of Business
(In thousands)

	Year Ended December 31,	
	2017	**2016**
Commercial Banking	**$ 8,681,424**	$ 8,430,507
Consumer Banking	**6,654,631**	6,632,687
Wealth Management	**5,516,214**	4,867,293
Subtotal	**20,852,269**	19,930,487
Funds Management and other	**1,332,512**	$ 962,086
Total	**$ 22,184,781**	$ 20,892,573

Average deposits for 2017 totaled $22.2 billion and represented approximately 67% of total liabilities and capital compared with $20.9 billion and 65% of total liabilities and capital for 2016. Average deposits increased $1.3 billion over the prior year, including $491 million related to the full-year impact of the Mobank acquisition. Demand deposits grew by $839 million and interest-bearing transaction deposit account balances increased by $475 million, partially offset by a $66 million decrease in time deposits.

Average deposits attributed to Commercial Banking were $8.7 billion for 2017, a $251 million or 3% increase over 2016. Growth in demand and time deposit balances was partially offset by decreased interest-bearing transaction account balances. Average balances attributed to our commercial & industrial loan customers increased $127 million or 3% and small business banking customer balances increased $117 million or 9%. Average balances attributed to our energy customers increased $33 million or 2%. Average balances attributed to commercial real estate customers were up $27 million or 6%. This growth was partially offset as average balances attributed to our healthcare customers decreased $54 million or 8% and treasury services account balances decreased $22 million or 20%. 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 once the economic outlook improves and customers deploy cash or related earnings credit rates rise, reducing the amount of deposits required to offset service charges.

Average Consumer Banking deposit balances were largely unchanged compared to the prior year. Average demand deposit balances grew by $92 million or 6%. Average savings account balances were up $39 million or 10% and average interest-bearing transaction accounts increased $30 million or 1%. Higher costing time deposit balances decreased $139 million or 12%. Average Wealth Management deposit balances grew by $649 million or 13% over the prior year. Interest-bearing transaction balances increased $420 million or 14%. Non-interest-bearing demand deposits increased $165 million or 14%, and time deposit balances were up $62 million or 9%.

The general trend of increased deposits over the past several years reflects modest growth in the overall economy and low short-term interest rates. If economic activity were to improve significantly, deposits may decline as customers deploy funds into projects. In addition, if short-term interest rates were to increase further, customers could shift deposits from non-interest bearing demand deposits into interest-bearing alternatives.

Table 31 - Maturity of Domestic CDs and Public Funds in Amounts of $100,000 or More
(In thousands)

	December 31,	
	2017	2016
Months to maturity:		
3 or less	**$ 368,584**	$ 295,755
Over 3 through 6	**278,607**	243,210
Over 6 through 12	**253,277**	315,506
Over 12	**661,074**	590,981
Total	**$ 1,561,542**	$ 1,445,452

Brokered deposits included in time deposits averaged $588 million for 2017, compared to $495 million for 2016. Brokered deposits included in time deposits totaled $573 million at December 31, 2017 and $514 million at December 31, 2016.

Average interest-bearing transaction accounts for 2017 included $1.4 billion of brokered deposits compared to $732 million for 2016. Brokered deposits included in interest-bearing transaction accounts totaled $1.5 billion at December 31, 2017 and $1.3 billion at December 31, 2016. The increase in brokered interest-bearing transaction account balances was primarily due to use of a reciprocal program by Wealth Management that spreads large customer deposits among participating banks in amounts that qualify for FDIC insurance. In exchange, we also receive deposits from participating banks in amounts that qualify for FDIC insurance. Our increased use of this reciprocal program has enabled us to reduce the amount of deposits we are required to collateralize, thereby improving liquidity. In addition, non-reciprocal brokered interest-bearing transaction accounts attributed to Funds Management and Other increased during the year.

The distribution of our period end deposit account balances among principal markets follows in Table 32.

Table 31 -- Period End Deposits by Principal Market Area
(In thousands)

	December 31,				
	2017	**2016**	**2015**	**2014**	**2013**
Bank of Oklahoma:					
Demand	**$ 3,885,008**	$ 3,993,170	$ 4,133,520	$ 3,828,819	$ 3,432,940
Interest-bearing:					
Transaction	**5,901,293**	6,345,536	5,971,819	6,117,886	6,318,045
Savings	**265,870**	241,696	226,733	206,357	191,880
Time	**1,092,133**	1,118,355	1,202,274	1,301,194	1,214,507
Total interest-bearing	**7,259,296**	7,705,587	7,400,826	7,625,437	7,724,432
Total Bank of Oklahoma	**11,144,304**	11,698,757	11,534,346	11,454,256	11,157,372
Bank of Texas:					
Demand	**3,239,098**	3,137,009	2,627,764	2,639,732	2,481,603
Interest-bearing:					
Transaction	**2,397,071**	2,388,812	2,132,099	2,065,723	1,966,580
Savings	**93,620**	83,101	77,902	72,037	64,632
Time	**502,879**	535,642	549,740	547,316	638,465
Total interest-bearing	**2,993,570**	3,007,555	2,759,741	2,685,076	2,669,677
Total Bank of Texas	**6,232,668**	6,144,564	5,387,505	5,324,808	5,151,280
Bank of Albuquerque:					
Demand	**663,353**	627,979	487,286	487,819	502,395
Interest-bearing:					
Transaction	**552,393**	590,571	563,723	519,544	529,140
Savings	**55,647**	49,963	43,672	37,471	33,944
Time	**216,743**	238,408	267,821	295,798	327,281
Total interest-bearing	**824,783**	878,942	875,216	852,813	890,365
Total Bank of Albuquerque	**1,488,136**	1,506,921	1,362,502	1,340,632	1,392,760
Bank of Arkansas:					
Demand	**30,384**	26,389	27,252	35,996	38,566
Interest-bearing:					
Transaction	**85,095**	105,232	202,857	158,115	144,018
Savings	**1,881**	2,192	1,747	1,936	1,986
Time	**14,045**	16,696	24,983	28,520	32,949
Total interest-bearing	**101,021**	124,120	229,587	188,571	178,953
Total Bank of Arkansas	**131,405**	150,509	256,839	224,567	217,519

Table 31 -- Period End Deposits by Principal Market Area
(In thousands)

	December 31,				
	2017	**2016**	**2015**	**2014**	**2013**
Colorado State Bank & Trust:					
Demand	**633,714**	576,000	497,318	445,755	409,942
Interest-bearing:					
Transaction	**657,629**	616,679	616,697	631,874	541,675
Savings	**35,223**	32,866	31,927	29,811	26,880
Time	**224,962**	242,782	296,224	353,998	407,088
Total interest-bearing	**917,814**	892,327	944,848	1,015,683	975,643
Total Colorado State Bank & Trust	**1,551,528**	1,468,327	1,442,166	1,461,438	1,385,585
Bank of Arizona:					
Demand	**334,701**	366,755	326,324	369,115	204,092
Interest-bearing:					
Transaction	**274,846**	305,099	358,556	347,214	364,736
Savings	**3,343**	2,973	2,893	2,545	2,432
Time	**20,394**	27,765	29,498	36,680	34,391
Total interest-bearing	**298,583**	335,837	390,947	386,439	401,559
Total Bank of Arizona	**633,284**	702,592	717,271	755,554	605,651
Mobank (Kansas City):					
Demand	**457,080**	508,418	197,424	259,121	246,739
Interest-bearing:					
Transaction	**382,066**	513,176	153,203	273,999	69,857
Savings	**13,574**	12,679	1,378	1,274	1,252
Time	**27,260**	42,152	35,524	45,210	41,312
Total interest-bearing	**422,900**	568,007	190,105	320,483	112,421
Total Mobank (Kansas City)	**879,980**	1,076,425	387,529	579,604	359,160
Total BOK Financial deposits	**$ 22,061,305**	$ 22,748,095	$ 21,088,158	$ 21,140,859	$ 20,269,327

See Note 9 to the Consolidated Financial Statements for a summary of other borrowings.

In addition to deposits, liquidity for the Bank 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. There were no wholesale federal funds purchased outstanding at December 31, 2017. 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 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 $5.9 billion during 2017 and $6.0 billion during 2016.

At December 31, 2017, the estimated unused credit available to the Bank from collateralized sources was approximately $5.7 billion.

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 and Other Non-Bank Subsidiaries

The primary sources of liquidity for BOK Financial are cash on hand and dividends from the Bank. Cash and cash equivalents totaled $206 million at December 31, 2017. 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 December 31, 2017, based on the most restrictive limitations as well as management's internal capital policy, BOKF, NA could declare up to $321 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 could also affect its ability to pay dividends to the parent company.

On June 27, 2016, the parent company issued $150 million of subordinated debt that will mature on June 30, 2056. This debt bears interest at the rate of 5.375%, payable quarterly. On June 30, 2021, we will have the option to redeem the debt at the principal amount plus accrued interest, subject to regulatory approval.

Shareholders' equity at December 31, 2017 was $3.5 billion, an increase of $221 million over December 31, 2016. Net income less cash dividends paid increased equity $225 million during 2017. Changes in interest rates resulted in an increase in the accumulated other comprehensive loss to $36 million at December 31, 2017, compared to $11 million at December 31, 2016. The Company also repurchased $7.4 million of our common stock during 2017. 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 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 laws and other regulatory compliance limitations. As of December 31, 2017, a cumulative total of 2,959,243 shares have been repurchased under this authorization. The Company repurchased 80,000 shares during 2017 at an average price of $92.54 per share.

BOK Financial and the Bank are subject to various capital requirements administered by federal agencies. Failure to meet minimum capital requirements can result in certain mandatory and 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.

Effective January 1, 2015, capital rules establish a 7% threshold for the common equity Tier 1 ratio consisting of a minimum level plus capital conservation buffer. The Company has elected to exclude unrealized gains and losses from available for sale securities from its calculation of Tier 1 capital, consistent with the treatment under previous capital rules. Components of the capital rules effective January 1, 2015 will phase in through January 1, 2019, with certain exceptions.

A summary of minimum capital requirements, including capital conservation buffer follows in Table 33. Failure to meet these minimum capital requirements, including capital conservation buffer, could subject BOK Financial 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 33 following.

Table 33 – Capital Ratios

	Minimum Capital Requirement	Capital Conservation Buffer	Minimum Capital Requirement Including Capital Conservation Buffer	December 31,	
				2017	2016
Risk-based capital:					
Common equity Tier 1	4.50%	2.50%	7.00%	**12.05%**	11.21%
Tier 1 capital	6.00%	2.50%	8.50%	**12.05%**	11.21%
Total capital	8.00%	2.50%	10.50%	**13.54%**	12.81%
Tier 1 Leverage	4.00%	N/A	4.00%	**9.31%**	8.72%
Average total equity to average assets				**10.43%**	10.38%
Tangible common equity ratio				**9.50%**	8.61%

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"), including unrealized gains and losses on available for sale securities, 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 34 following provides a reconciliation of the non-GAAP measures with financial measures defined by GAAP.

Table 34 – Non-GAAP Measures
(Dollars in thousands)

	December 31,	
	2017	2016
Tangible common equity ratio:		
Total shareholders' equity	**$ 3,495,367**	$ 3,274,854
Less: Goodwill and intangible assets, net	**476,088**	495,830
Tangible common equity	**3,019,279**	2,779,024
Total assets	**32,272,160**	32,772,281
Less: Goodwill and intangible assets, net	**476,088**	495,830
Tangible assets	**$ 31,796,072**	$ 32,276,451
Tangible common equity ratio	**9.50%**	8.61%

On October 18, 2017, BOK Financial published the results of its annual capital stress test. In accordance with the Dodd-Frank Act, the Federal Reserve must publish regulations that require bank holding companies with $10 billion to $50 billion in assets to perform annual capital stress tests. The requirements for annual capital stress tests became effective for the Company in the fourth quarter of 2013. The Dodd-Frank Act Stress Test ("DFAST") is a forward-looking exercise under which the Company and its banking subsidiary estimate the impact of a hypothetical severely adverse macroeconomic scenario provided by the Federal Reserve and Office of the Comptroller of the Currency on its financial condition and regulatory capital ratios over a nine-quarter time horizon. Under the scenario provided by the regulatory agencies, all capital ratio measures remain above minimum regulatory thresholds. Additional information concerning the annual stress test may be found on the Company's Investor Relations page at www.bokf.com under the "Presentations" tab. The results of future capital stress tests may place constraints on capital distributions or increases in required regulatory capital under certain circumstances.

Off-Balance Sheet Arrangements

See Note 14 to the Consolidated Financial Statements for a discussion of the Company's significant off-balance sheet commitments.

Aggregate Contractual Obligations

BOK Financial has numerous contractual obligations in the normal course of business. These obligations include time deposits and other borrowed funds, premises used under various operating leases, commitments to extend credit to borrowers and to purchase securities, derivative contracts and contracts for services such as data processing that are integral to our operations. Table 35 following summarizes payments due on contractual obligations with initial terms in excess of one year.

Table 35 – Contractual Obligations as of December 31, 2017
(In thousands)

	Less Than 1 Year	1 to 3 Years	4 to 5 Years	More Than 5 Years	Total
Time deposits	$ 605,018	$ 308,532	$ 245,133	$ 365,219	$ 1,523,902
Other borrowings	840	2,168	2,218	12,839	18,065
Subordinated debentures	8,063	16,125	16,125	414,771	455,084
Operating lease obligations	18,858	36,428	24,697	72,960	152,943
Derivative contracts	49,303	17,774	14,835	5,972	87,884
Data processing services	15,696	14,353	3,068	—	33,117
Total	$ 697,778	$ 395,380	$ 306,076	$ 871,761	$ 2,270,995
Loan commitments					$ 9,958,080
Standby letters of credit					647,653
Mortgage loans sold with recourse					125,127
Alternative investment commitments					70,827
Unfunded third-party private equity commitments					3,360

Payments on time deposits, other borrowed funds and subordinated debentures include interest which has been calculated from rates at December 31, 2017. These obligations may have variable interest rates and actual payments will differ from the amounts shown on this table.

Payments on time deposits are based on contractual maturity dates. These funds may be withdrawn prior to maturity. We may charge the customer a penalty for early withdrawal.

Operating lease commitments generally represent real property we rent for branch offices, corporate offices and operations facilities. Payments presented represent the minimum lease payments and exclude related costs such as utilities and property taxes.

Obligations under derivative contracts are used in customer hedging programs. As previously discussed, we have entered into derivative contracts which are expected to substantially offset the cash payments due on these obligations.

We also have obligations with respect to employee benefit plans. See Note 11 to the Consolidated Financial Statements for additional information about our employee benefit plans.

Data processing and communications contracts represent the minimum obligations under the contracts. Additional payments that are based on the volume of transactions processed are excluded.

Loan commitments represent legally binding obligations to provide financing to our customers. Some of these commitments are expected to expire before being drawn upon and the total commitment amounts do not necessarily represent future cash requirements. Approximately $1.3 billion of the loan commitments expire within one year.

The Company has funded $217 million and has commitments to fund an additional $71 million for various alternative investments. Alternative investments generally consist of limited partnership interests in or loans to entities that invest in low income housing or economic development projects, distressed assets, energy development, venture capital and other activities. The Company is prohibited by banking regulations from controlling or actively managing the activities of these investments. Legally binding commitments to fund alternative investments are recognized as liabilities in the Consolidated Financial Statements.

An indirect wholly-owned subsidiary of the Company is general partner of two private equity funds and has contingent obligations to make additional investments totaling $3.4 million as of December 31, 2017. These commitments, which are included in unfunded third-party private equity commitments, generally reflect customer investment obligations. We do not recognize contingent commitments to fund investments that are primarily customer obligations as liabilities in the Consolidated Financial Statements.

Recently Issued Accounting Standards

See Note 1 of the Consolidated Financial Statements for disclosure of newly adopted and pending accounting standards.

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 in general. 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 loan losses and accrual for off-balance sheet credit risk, 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 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 that BOK Financial has not independently verified. These statements are not guarantees of future performance and involve certain risks, uncertainties and assumptions that 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 expressed, 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, 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. 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.

Legal Notice

As used in this report, the term “BOK Financial” and such terms as “the Company,” “the Corporation,” “our,” “we” and “us” may refer to one or more of the consolidated subsidiaries or all of them taken as a whole. All these terms are used for convenience only and are not intended as a precise description of any of the separate companies, each of which manages its own affairs.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

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 un-pledged 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 50 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 36 – Interest Rate Sensitivity
(Dollar in thousands)

	200 bp Increase		50 bp Decrease	
	2017	2016	**2017**	2016
Anticipated impact over the next twelve months on net interest revenue	**$ (2,692)**	$ (4,932)	**$ (17,805)**	$ (18,021)
	(0.30)%	(0.60)%	**(2.00)%**	(2.19)%

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 37 - MSR Asset and Hedge Sensitivity Analysis
(In thousands)

	December 31,			
	2017		2016	
	Up 50 bp	**Down 50 bp**	Up 50 bp	Down 50 bp
MSR Asset	**$ 25,818**	**$ (32,856)**	$ 25,233	$ (31,823)
MSR Hedge	**(29,501)**	**25,021**	(29,196)	28,552
Net Exposure	**(3,683)**	**(7,835)**	(3,963)	(3,271)

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 38 - Mortgage Pipeline Sensitivity Analysis
(In thousands)

	Year Ended December 31,			
	2017		2016	
	Up 50 bp	Down 50 bp	Up 50 bp	Down 50 bp
Average[1]	**$ 23**	**$ (1,040)**	$ (1,840)	$ (583)
Low[2]	**1,314**	**789**	2,037	1,815
High[3]	**(1,979)**	**(2,377)**	(6,858)	(2,953)
Period End	**(263)**	**(114)**	602	(1,158)

[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 enters into 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 39 –Trading Securities Sensitivity Analysis
(In thousands)

	Year Ended December 31,			
	2017		2016	
	Up 50 bp	Down 50 bp	Up 50 bp	Down 50 bp
Average[1]	**$ (1,702)**	**$ 1,799**	$ (3,150)	$ 3,196
Low[2]	**668**	**5,210**	146	7,013
High[3]	**(4,386)**	**(1,046)**	(6,130)	(107)
Period End	**(488)**	**539**	(734)	1,212

[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.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Report of Management on Internal Control over Financial Reporting

Management of BOK Financial Corporation is responsible for establishing and maintaining adequate internal control over financial reporting and for assessing the effectiveness of internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f), as amended. Management has assessed the effectiveness of the Company's internal control over financial reporting based on the criteria established in "Internal Control – Integrated Framework," issued by the Committee of Sponsoring Organizations ("COSO") of the Treadway Commission in 2013. Based on that assessment and criteria, management has determined that the Company maintained effective internal control over financial reporting as of December 31, 2017.

Ernst & Young LLP, the independent registered public accounting firm that audited the Consolidated Financial Statements of the Company included in this annual report has issued an audit report on the effectiveness of the Company's internal control over financial reporting as of December 31, 2017. Their report, which expresses unqualified opinion on the effectiveness of the Company's internal control over financial reporting as of December 31, 2017, is included in this annual report.

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors of BOK Financial Corporation

Opinion on Internal Control over Financial Reporting

We have audited BOK Financial Corporation's internal control over financial reporting as of December 31, 2017, based on the criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, BOK Financial Corporation (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2017, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of BOK Financial Corporation as of December 31, 2017 and 2016, and the related consolidated statements of earnings, comprehensive income, changes in equity, and cash flows for each of the three years in the period ended December 31, 2017, and the related notes and our report dated February 27, 2018 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Report of Management on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

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

Definition and Limitations of Internal Control over Financial Reporting

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

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

/s/ Ernst & Young LLP

February 27, 2018

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of BOK Financial Corporation

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of BOK Financial Corporation (the Company) as of December 31, 2017 and 2016, and the related consolidated statements of earnings, comprehensive income, changes in equity, and cash flows for each of the three years in the period ended December 31, 2017, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the consolidated financial position of the Company at December 31, 2017 and 2016, and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 31, 2017, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2017, based on the criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 27, 2018 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1990.
February 27, 2018

Consolidated Statements of Earnings

(In thousands, except share and per share data)

	Year Ended December 31,		
Interest and dividend revenue	**2017**	**2016**	**2015**
Loans	**$ 696,479**	$ 581,030	$ 529,683
Residential mortgage loans held for sale	**8,706**	12,658	13,602
Trading securities	**17,002**	8,527	2,240
Investment securities	**16,121**	16,894	18,098
Available for sale securities	**177,070**	175,321	174,829
Fair value option securities	**16,755**	6,723	9,264
Restricted equity securities	**18,490**	17,238	13,532
Interest-bearing cash and cash equivalents	**22,128**	10,726	5,580
Total interest and dividend revenue	**972,751**	829,117	766,828
Interest expense			
Deposits	**53,803**	40,494	44,170
Borrowed funds	**69,124**	35,336	14,204
Subordinated debentures	**8,123**	6,059	5,100
Total interest expense	**131,050**	81,889	63,474
Net interest and dividend revenue	**841,701**	747,228	703,354
Provision for credit losses	**(7,000)**	65,000	34,000
Net interest and dividend revenue after provision for credit losses	**848,701**	682,228	669,354
Other operating revenue			
Brokerage and trading revenue	**131,601**	138,377	129,556
Transaction card revenue	**119,988**	116,452	109,579
Fiduciary and asset management revenue	**162,893**	135,477	126,153
Deposit service charges and fees	**112,075**	111,499	109,473
Mortgage banking revenue	**104,719**	133,914	126,002
Other revenue	**52,168**	51,029	49,883
Total fees and commissions	**683,444**	686,748	650,646
Other gains, net	**9,004**	4,030	5,702
Gain (loss) on derivatives, net	**779**	(15,685)	430
Loss on fair value option securities, net	**(2,733)**	(10,555)	(3,684)
Change in fair value of mortgage servicing rights	**172**	(2,193)	(4,853)
Gain on available for sale securities, net	**4,428**	11,675	12,058
Total other-than-temporary impairment losses	—	—	(2,443)
Portion of loss recognized in other comprehensive income	—	—	624
Net impairment losses recognized in earnings	—	—	(1,819)
Total other operating revenue	**695,094**	674,020	658,480
Other operating expense			
Personnel	**573,408**	553,119	515,298
Business promotion	**28,877**	26,582	27,851
Charitable contributions to BOKF Foundation	**2,000**	2,000	796
Professional fees and services	**51,067**	56,783	40,123
Net occupancy and equipment	**86,477**	80,024	76,016
Insurance	**19,653**	32,489	20,375
Data processing and communications	**146,970**	131,841	122,383
Printing, postage and supplies	**15,689**	15,584	13,498
Net losses and operating expenses of repossessed assets	**9,687**	3,359	1,446
Amortization of intangible assets	**6,779**	6,862	4,359
Mortgage banking costs	**52,856**	61,387	38,813
Other expense	**32,054**	47,560	35,233
Total other operating expense	**1,025,517**	1,017,590	896,191
Net income before taxes	**518,278**	338,658	431,643
Federal and state income taxes	**182,593**	106,377	139,384
Net income	**335,685**	232,281	292,259
Net income (loss) attributable to non-controlling interests	**1,041**	(387)	3,694
Net income attributable to BOK Financial Corporation shareholders	**$ 334,644**	$ 232,668	$ 288,565
Earnings per share:			
Basic	**$ 5.11**	$ 3.53	$ 4.22
Diluted	**$ 5.11**	$ 3.53	$ 4.21
Average shares used in computation:			
Basic	**64,745,364**	65,085,627	67,594,689
Diluted	**64,806,284**	65,143,898	67,691,658
Dividends declared per share	**$ 1.77**	$ 1.73	$ 1.69

See accompanying notes to Consolidated Financial Statements.

Consolidated Statements of Comprehensive Income

(In thousands)

	Year Ended December 31,		
	2017	**2016**	**2015**
Net income	**$ 335,685**	$ 232,281	$ 292,259
Other comprehensive income (loss) before income taxes:			
Net change in unrealized gain (loss)	**(26,152)**	(41,521)	(46,803)
Reclassification adjustments included in earnings:			
Interest revenue, Investment securities, Taxable securities	**—**	(112)	(503)
Interest expense, Subordinated debentures	**—**	—	121
Net impairment losses recognized in earnings	**—**	—	1,819
Gain on available for sale securities, net	**(4,428)**	(11,675)	(12,058)
Other comprehensive loss, before income taxes	**(30,580)**	(53,308)	(57,424)
Federal and state income taxes	**(11,923)**	(20,754)	(22,338)
Other comprehensive loss, net of income taxes	**(18,657)**	(32,554)	(35,086)
Comprehensive income	**317,028**	199,727	257,173
Comprehensive income (loss) attributable to non-controlling interests	**1,041**	(387)	3,694
Comprehensive income attributable to BOK Financial Corp. shareholders	**$ 315,987**	$ 200,114	$ 253,479

See accompanying notes to Consolidated Financial Statements.

Consolidated Balance Sheets

(In thousands, except share data)

	December 31,	
	2017	**2016**
Assets		
Cash and due from banks	**$ 602,510**	$ 620,846
Interest-bearing cash and cash equivalents	**1,714,544**	1,916,651
Trading securities	**462,676**	337,628
Investment securities (fair value: **2017 – $480,035;** 2016 – $565,493)	**461,793**	546,145
Available for sale securities	**8,321,578**	8,676,829
Fair value option securities	**755,054**	77,046
Restricted equity securities	**320,189**	307,240
Residential mortgage loans held for sale	**221,378**	301,897
Loans	**17,153,424**	16,989,660
Allowance for loan losses	**(230,682)**	(246,159)
Loans, net of allowance	**16,922,742**	16,743,501
Premises and equipment, net	**317,335**	325,849
Receivables	**442,897**	772,952
Goodwill	**447,430**	448,899
Intangible assets, net	**28,658**	46,931
Mortgage servicing rights	**252,867**	247,073
Real estate and other repossessed assets, net of allowance (**2017 – $12,648**; 2016 – $9,562)	**28,437**	44,287
Derivative contracts	**220,502**	689,872
Cash surrender value of bank-owned life insurance	**316,498**	308,430
Receivable on unsettled available for sale securities sales	**75,980**	7,188
Other assets	**359,092**	353,017
Total assets	**$ 32,272,160**	$ 32,772,281
Liabilities and Equity		
Liabilities:		
Noninterest-bearing demand deposits	**$ 9,243,338**	$ 9,235,720
Interest-bearing deposits:		
Transaction	**10,250,393**	10,865,105
Savings	**469,158**	425,470
Time	**2,098,416**	2,221,800
Total deposits	**22,061,305**	22,748,095
Funds purchased	**58,628**	57,929
Repurchase agreements	**516,335**	668,661
Other borrowings	**5,134,897**	4,846,072
Subordinated debentures	**144,677**	144,640
Accrued interest, taxes and expense	**164,895**	146,704
Derivative contracts	**171,963**	664,531
Due on unsettled available for sale securities purchases	**151,198**	6,508
Other liabilities	**349,928**	182,784
Total liabilities	**28,753,826**	29,465,924
Shareholders' equity:		
Common stock ($.00006 par value; 2,500,000,000 shares authorized; shares issued and outstanding: **2017 – 75,147,686;** 2016 – 74,993,407)	**4**	4
Capital surplus	**1,035,895**	1,006,535
Retained earnings	**3,048,487**	2,823,334
Treasury stock (shares at cost: **2017 – 9,752,749**; 2016 – 9,655,975)	**(552,845)**	(544,052)
Accumulated other comprehensive loss	**(36,174)**	(10,967)
Total shareholders' equity	**3,495,367**	3,274,854
Non-controlling interests	**22,967**	31,503
Total equity	**3,518,334**	3,306,357
Total liabilities and equity	**$ 32,272,160**	$ 32,772,281

See accompanying notes to Consolidated Financial Statements.

Consolidated Statements of Changes in Equity

(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, 2014	74,004	$ 4	$ 954,644	$2,530,837	4,890	$ (239,979)	$ 56,673	$ 3,302,179	$ 34,027	$3,336,206
Net income	—	—	—	288,565	—	—	—	288,565	3,694	292,259
Other comprehensive loss	—	—	—	—	—	—	(35,086)	(35,086)	—	(35,086)
Repurchase of common stock	—	—	—	—	3,634	(229,540)	—	(229,540)	—	(229,540)
Share-based compensation plans:										
Stock options exercised	286	—	14,357	—	—	—	—	14,357	—	14,357
Non-vested shares awarded, net	240	—	925	—	—	—	—	925	—	925
Vesting of non-vested shares	—	—	—	—	112	(7,646)	—	(7,646)	—	(7,646)
Share-based compensation	—		12,083		—	—		12,083		12,083
Cash dividends on common stock	—	—	—	(115,281)	—	—	—	(115,281)	—	(115,281)
Sale of non-controlling interest	—	—	—	—	—	—	—	—	5,500	5,500
Capital calls and distributions, net	—	—	—	—	—	—	—	—	(6,138)	(6,138)
Balance, December 31, 2015	74,530	4	982,009	2,704,121	8,636	(477,165)	21,587	3,230,556	37,083	3,267,639
Net income	—	—	—	232,668	—	—	—	232,668	(387)	232,281
Other comprehensive loss	—	—	—	—	—	—	(32,554)	(32,554)	—	(32,554)
Repurchase of common stock	—	—	—	—	1,005	(66,792)	—	(66,792)	—	(66,792)
Share-based compensation plans:										
Stock options exercised	214	—	12,465	—	—	—	—	12,465		12,465
Non-vested shares awarded, net	249	—	1,590	—	—	—	—	1,590		1,590
Vesting of non-vested shares	—	—	—	—	15	(95)	—	(95)		(95)
Share-based compensation	—	—	10,471	—	—	—	—	10,471	—	10,471
Cash dividends on common stock	—	—	—	(113,455)	—	—	—	(113,455)	—	(113,455)
Capital calls and distributions, net	—	—	—	—	—	—	—	—	(5,193)	(5,193)
Balance, December 31, 2016	74,993	$ 4	$1,006,535	$2,823,334	9,656	$ (544,052)	$ (10,967)	$ 3,274,854	$ 31,503	$3,306,357

Consolidated Statements of Changes in Equity

(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, 2016	74,993	$ 4	$1,006,535	$2,823,334	9,656	$ (544,052)	$ (10,967)	$ 3,274,854	$ 31,503	$3,306,357
Net income	—	—	—	334,644	—	—	—	334,644	1,041	335,685
Other comprehensive loss	—	—	—	—	—	—	(18,657)	(18,657)	—	(18,657)
Repurchase of common stock	—	—	—	—	80	(7,403)	—	(7,403)	—	(7,403)
Share-based compensation plans:										
Stock options exercised	100	—	5,758	—	—	—	—	5,758	—	5,758
Non-vested shares awarded, net	55	—	—	—	—	—	—	—	—	—
Vesting of non-vested shares	—	—	—	—	17	(1,390)	—	(1,390)	—	(1,390)
Share-based compensation	—	—	23,602	—	—	—	—	23,602	—	23,602
Cash dividends on common stock	—	—	—	(116,041)	—	—	—	(116,041)	—	(116,041)
Capital calls and distributions, net	—	—	—	—	—	—	—	—	(9,577)	(9,577)
Reclassification of stranded accumulated other comprehensive loss related to tax reform	—	—	—	6,550	—	—	(6,550)	—	—	—
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

See accompanying notes to Consolidated Financial Statements.

Consolidated Statements of Cash Flows
(In thousands)

	Year Ended		
	2017	2016	2015
Cash Flows From Operating Activities:			
Net income	**$ 335,685**	$ 232,281	$ 292,259
Adjustments to reconcile net income to net cash provided by (used in) operating activities:			
Provision for credit losses	**(7,000)**	65,000	34,000
Change in fair value of mortgage servicing rights due to market changes	**(172)**	2,193	4,853
Change in fair value of mortgage servicing rights due to loan runoff	**33,527**	40,744	28,064
Net unrealized losses from derivative contracts	**3,704**	11,234	964
Depreciation and amortization	**54,466**	47,016	37,918
Share-based compensation	**23,602**	10,471	12,083
Net amortization of securities discounts and premiums	**28,693**	41,643	55,145
Net realized gains on financial instruments and other net gains	**(2,828)**	(13,011)	(15,212)
Net gain on mortgage loans held for sale	**(47,159)**	(63,636)	(75,780)
Mortgage loans originated for sale	**(3,286,873)**	(6,117,417)	(6,372,956)
Proceeds from sale of mortgage loans held for sale	**3,405,890**	6,193,587	6,446,659
Capitalized mortgage servicing rights	**(39,149)**	(71,405)	(79,546)
Change in trading and fair value option securities	**(804,204)**	149,921	(69,298)
Change in receivables	**321,880**	(603,861)	(6,943)
Change in other assets	**(5,506)**	(49,565)	(29,548)
Change in accrued interest, taxes and expense	**18,191**	44,269	17,517
Change in other liabilities	**182,184**	(11,413)	15,756
Net cash provided by (used in) operating activities	**214,931**	(91,949)	295,935
Cash Flows From Investing Activities:			
Proceeds from sales of available for sale securities	**1,309,215**	899,381	1,600,380
Proceeds from maturities or redemptions of investment securities	**112,022**	86,847	72,664
Proceeds from maturities or redemptions of available for sale securities	**1,841,217**	1,740,226	1,542,517
Purchases of investment securities	**(32,972)**	(41,590)	(25,132)
Purchases of available for sale securities	**(2,845,557)**	(2,333,740)	(3,300,601)
Change in amount receivable on unsettled securities sales	**(68,792)**	33,005	34,066
Loans originated, net of principal collected	**(78,232)**	(621,605)	(1,681,035)
Net payments on derivative asset contracts	**479,409**	(103,668)	(156,419)
Proceeds from disposition of assets	**274,029**	198,922	195,760
Acquisitions, net of cash acquired	**—**	56,017	(18,098)
Purchases of assets	**(250,783)**	(199,802)	(265,406)
Net cash provided by (used in) investing activities	**739,556**	(286,007)	(2,001,304)
Cash Flows From Financing Activities:			
Net change in demand deposits, transaction deposits and savings accounts	**(563,406)**	1,277,285	149,951
Net change in time deposits	**(123,384)**	(216,084)	(202,652)
Net change in other borrowed funds	**(10,909)**	(606,476)	2,547,688
Repayment of subordinated debentures	**—**	(226,550)	(121,810)
Issuance of subordinated debentures, net of issuance costs	**—**	144,615	—
Change in amount due on unsettled security purchases	**144,690**	(10,389)	(273,643)
Issuance of common and treasury stock, net	**4,368**	12,455	6,711
Net change in derivative margin accounts	**(17,726)**	(28,806)	(43,226)
Net payments or proceeds on derivative liability contracts	**(485,119)**	106,051	149,428
Sale of non-controlling interests	**—**	—	5,500
Repurchase of common stock	**(7,403)**	(66,792)	(229,540)
Dividends paid	**(116,041)**	(113,455)	(115,281)
Net cash provided by (used in) financing activities	**(1,174,930)**	271,854	1,873,126
Net increase (decrease) in cash and cash equivalents	**(220,443)**	(106,102)	167,757
Cash and cash equivalents at beginning of period	**2,537,497**	2,643,599	2,475,842
Cash and cash equivalents at end of period	**$ 2,317,054**	$ 2,537,497	$ 2,643,599

Consolidated Statements of Cash Flows
(In thousands)

	Year Ended		
	2017	**2016**	**2015**
Supplemental Cash Flow Information:			
Cash paid for interest	**$ 127,513**	$ 82,876	$ 66,091
Cash paid for taxes	**$ 121,697**	$ 79,883	$ 101,991
Net loans and bank premises transferred to repossessed real estate and other assets	**$ 7,367**	$ 36,391	$ 12,592
Residential mortgage loans guaranteed by U.S. government agencies that became eligible for repurchase during the period	**$ 148,107**	$ 120,406	$ 123,383
Conveyance of other real estate owned guaranteed by U.S. government agencies	**$ 40,528**	$ 68,873	$ 110,505

See accompanying notes to Consolidated Financial Statements.

Notes to Consolidated Financial Statements

(1) Significant Accounting Policies

Basis of Presentation

The Consolidated Financial Statements of BOK Financial Corporation (“BOK Financial” or “the Company”) have been prepared in conformity with accounting principles generally accepted in the United States ("U.S. GAAP"), including interpretations of U.S. GAAP issued by federal banking regulators and general practices of the banking industry. The Consolidated Financial Statements include the accounts of BOK Financial and its subsidiaries, principally BOKF, NA, BOK Financial Securities, Inc., The Milestone Group, Inc. and Cavanal Hill Distributors, Inc. All significant intercompany transactions are eliminated in consolidation.

The Consolidated Financial Statements include the assets, liabilities, non-controlling interests and results of operations of variable interest entities (“VIEs”) when BOK Financial is determined to be the primary beneficiary. Variable interest entities are generally defined as entities that either do not have sufficient equity to finance their activities without support from other parties or whose equity investors lack a controlling financial interest. See additional discussion of variable interest entities at Note 14 following.

Certain prior year amounts have been reclassified to conform to current year presentation. Check card revenue of $19.3 million in 2016 and $19.0 million in 2015 were reclassified from transaction card revenue to deposit service charges and fees.

Nature of Operations

BOK Financial, through its subsidiaries, provides a wide range of financial services to commercial and industrial customers, other financial institutions, municipalities, and consumers. These services include depository and cash management; lending and lease financing; mortgage banking; securities brokerage, trading and underwriting; and personal and corporate trust.

BOKF, NA ("the Bank") operates as Bank of Oklahoma primarily in the Tulsa and Oklahoma City metropolitan areas of the state of Oklahoma and Bank of Texas primarily in the Dallas, Fort Worth and Houston metropolitan areas of the state of Texas. In addition, BOKF, NA does business as Bank of Albuquerque in Albuquerque, New Mexico; Colorado State Bank and Trust in Denver, Colorado; Bank of Arizona in Phoenix, Arizona; Mobank in Kansas City, Missouri/Kansas and Bank of Arkansas in Northwest Arkansas. BOKF, NA also operates the TransFund electronic funds network, Cavanal Hill Investment Management, and BOK Financial Asset Management, Inc.

Use of Estimates

Preparation of BOK Financial's Consolidated Financial Statements requires management to make estimates of future economic activities, including loan collectability, prepayments and cash flows from customer accounts. These estimates are based upon current conditions and information available to management. Actual results may differ significantly from these estimates.

Acquisitions

Assets and liabilities acquired, including identifiable intangible assets, are recorded at fair value on the acquisition date. The purchase price includes consideration paid at closing and the estimated fair value of contingent consideration that will be paid in the future, subject to achieving defined performance criteria. Premiums and discounts assigned to interest-earning assets and interest-bearing liabilities are amortized over the lives of the acquired assets and liabilities on either an individual instrument or pool basis. Provision for credit losses is recognized for changes in credit quality after the acquisition date. Goodwill is recognized as the excess of the purchase price over the net fair value of assets acquired and liabilities assumed. The Consolidated Statements of Earnings include the results of operations from the acquisition date.

Goodwill and Intangible Assets

Goodwill and intangible assets generally result from business combinations and are evaluated for each of BOK Financial's reporting units for impairment annually or more frequently if conditions indicate impairment. The evaluation of possible impairment of goodwill and intangible assets involves significant judgment based upon short-term and long-term projections of future performance.

Reporting units are defined by the Company as significant lines of business within each operating segment. This definition is consistent with the manner in which the chief operating decision maker assesses the performance of the Company and makes decisions concerning the allocation of resources. The Company qualitatively assesses whether it is more likely than not that the fair value of the reporting units are less than their carrying value, including goodwill. Reporting unit carrying value includes sufficient capital to exceed regulatory requirements. This assessment includes consideration of relevant events and circumstances including but not limited to macroeconomic conditions, industry and market conditions, the financial and stock performance of the Company and other relevant factors.

If the Company concludes based on the qualitative assessment that goodwill may be impaired, a quantitative one-step impairment test will be applied to goodwill at all reporting units. The quantitative analysis compares the fair value of the reporting unit with its carrying value, including goodwill. The fair value of each reporting unit is estimated by the discounted future earnings method. Goodwill is considered impaired if the fair value of the reporting unit is less than the carrying value of the reporting unit, including goodwill.

Intangible assets are generally composed of customer relationships, naming rights, non-compete agreements and core deposit premiums. They are amortized using accelerated or straight-line methods, as appropriate, over the estimated benefit periods. These periods range from 3 years to 20 years. The net book values of identifiable intangible assets are evaluated for impairment when economic conditions indicate impairment may exist.

Cash Equivalents

Due from banks, funds sold (generally federal funds sold for one day), resell agreements (which generally mature within one to 30 days) and investments in money market funds are considered cash equivalents.

Securities

Securities are identified as trading, investment (held to maturity) or available for sale at the time of purchase based upon the intent of management, liquidity and capital requirements, regulatory limitations and other relevant factors. Trading securities, which are acquired for profit through resale, are carried at fair value with unrealized gains and losses included in current period earnings. Investment securities are carried at amortized cost. Amortization is computed by methods that approximate level yield and is adjusted for changes in prepayment estimates. Securities identified as available for sale are carried at fair value. Unrealized gains and losses are recorded, net of deferred income taxes, as accumulated other comprehensive income in shareholders' equity. Available for sale securities are separately identified as pledged to creditors if the creditor has the right to sell or re-pledge the collateral.

The purchase or sale of securities is recognized on a trade date basis. Realized gains and losses on sales of securities are based upon specific identification of the security sold. A receivable or payable is recognized for subsequent transaction settlement. Securities meeting certain criteria may also be transferred from the available for sale classification to the investment securities portfolio at fair value on the date of transfer. The unrealized gain or loss at the date of transfer is retained in accumulated other comprehensive income and in the carrying value of the investment securities portfolio. Such amounts are amortized over the estimated remaining life of the security as an adjustment to yield, offsetting the related amortization of the premium or accretion of the discount on the transferred securities.

On a quarterly basis, the Company performs separate evaluations of impaired debt investment and available for sale securities and equity available for sale securities to determine if the decline in fair value below the amortized cost is other-than-temporary.

For debt securities, management determines whether it intends to sell or if it is more likely than not that it will be required to sell impaired securities. This determination considers current and forecasted liquidity requirements and securities portfolio management. If the Company intends to sell or it is more likely than not that it will be required to sell the impaired debt security, a charge is recognized against earnings for the entire unrealized loss. For all impaired debt securities for which there is no intent or expected requirement to sell, the evaluation considers all available evidence to assess whether it is more likely than not that all amounts due would not be collected according to the security's contractual terms. Impairment of debt securities rated investment grade by all nationally-recognized rating agencies is considered temporary unless specific contrary information is identified. Impairment of debt securities rated below investment grade by at least one of the nationally recognized rating agencies is evaluated based on projections of estimated cash flows. Any expected credit loss due to the inability to collect all amounts due according to the security's contractual terms is recognized as a charge against earnings. Any remaining unrealized loss related to other factors would be recognized in other comprehensive income, net of taxes.

For equity securities, management evaluates various factors including cause, severity and duration of the decline in value of the security and prospects for recovery, as well as the Company's intent and ability not to sell the security until the fair value exceeds amortized cost. If an unrealized loss is determined to be other-than-temporary, a charge is recognized against earnings for the difference between the security's amortized cost and fair value.

BOK Financial may elect to carry certain securities at fair value with changes in fair value recognized in current period income. These securities are held with the intent that gains or losses will offset changes in the fair value of mortgage servicing rights or certain derivative instruments.

Restricted equity securities represent equity interests the Company is required to hold in the Federal Reserve Banks and Federal Home Loan Banks. Restricted equity securities are carried at cost as these securities do not have a readily determined fair value because ownership of these shares is restricted and they lack a market.

Derivative Instruments

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 generally reported in income as they occur. The determination of fair value of derivative instruments considers changes in interest rates, commodity prices and foreign exchange rates. Credit risk is also considered in determining fair value. Deterioration in the credit rating of customers or other counterparties reduces 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 agreements 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 by counterparty basis.

Derivative contracts may also 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.

Derivative instruments may be designated as cash flow hedges of variable rate assets or liabilities, or of anticipated transactions. Changes in the fair value of derivative instruments designated as cash flow hedges are recorded in accumulated other comprehensive income to the extent they are effective. The amount recorded in other comprehensive income is reclassified to earnings in the same periods as the hedged cash flows impact earnings. The ineffective portion of changes in fair value is reported in current earnings.

BOK Financial may use derivative instruments in managing its interest rate sensitivity, as part of its economic hedge of the changes 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 its 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 Operating Revenue - Brokerage and trading revenue.

BOK Financial also enters into mortgage loan commitments that are considered derivative contracts. Forward sales contracts that have not been designated as hedging instruments are used to economically hedge these mortgage loan commitments as well as mortgage loans held for sale. Mortgage loan commitments are carried at fair value based upon quoted prices. Changes in the fair value of mortgage loan commitments, mortgage loans held for sale and forward sales contracts are reported in Other Operating Revenue - Mortgage Banking Revenue.

BOK Financial offers programs that 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 the borrower to modify interest rate terms of their loans or to-be-announced securities used by our 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 market risk from 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.

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 financial 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 loans guaranteed by U.S. government agencies, are as follows.

Interest is accrued at the applicable interest rate on the outstanding principal amount. 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 90 days or more 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 received 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. 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, debt service ratio and other underwriting standards. Nonaccruing loans may also 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 gain (loss) on assets.

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 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 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 has 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 Sheet. Guaranteed loans are considered to be impaired because we do not expect to receive all principal and interest based on the loan's contractual terms. The principal balance continues to be guaranteed, 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 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 at the modified rate. U.S. government 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 Credits Losses. Classes are based on the risk characteristics of the loans and the Company's method for monitoring and assessing credit risk.

Allowance for Loan Losses and Accrual for Off-Balance Sheet Credit Risk

The appropriateness of the allowance for loan losses and accrual for off-balance sheet credit risk (collectively "Allowance for Credit Losses") is assessed by management quarterly based on an ongoing quarterly evaluation of the probable estimated losses inherent in the portfolio, including probable losses on outstanding loans and unused commitments to provide financing. A consistent well-documented methodology has been developed and is applied by an independent Credit Administration department to assure consistency across the Company.

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 based on estimated loss rates by loan class and nonspecific allowances based on factors that affect more than one portfolio segment. There were no changes to the methodology for estimating general allowances during 2017 or 2016.

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 personal loans are risk graded based on a quarterly evaluation of the borrowers' ability to repay. Certain commercial loans and most residential mortgage and personal 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, modified in a troubled debt restructuring 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 loan's initial effective interest rate or the fair value of collateral for certain collateral dependent loans. The fair value of real property held as collateral 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 generally are not adjusted by the Company. Updated appraisals are obtained at least annually or more frequently if market conditions indicate collateral values may have declined. Collateral value of mineral rights is generally determined by our internal staff of engineers based on projected cash flows from proven oil and gas reserves under existing economic and operating conditions. The value of other collateral is generally determined by our special assets staff based on projected liquidation 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 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 an estimated loss rate by loan class. The appropriate historical gross loss rate for each loan class is determined by the greater of the current loss rate based on the most recent twelve months or a ten-year average gross loss rate. Recoveries are not directly considered in the estimation of historical 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, historical 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 weighted average risk grade. This comparison determines whether credit risk in each loan class is increasing or decreasing. Historical 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 a specific loan class which have not yet been represented in the historical 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 portfolio segment or loan class. These factors include trends in the economy in our primary lending areas, concentration in large-balance loans and other relevant factors.

An accrual for off-balance sheet credit risk is included in Other liabilities. The appropriateness of the 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.

Real Estate and Other Repossessed Assets

Real estate and other repossessed assets are acquired in partial or total forgiveness of loans. These assets are initially recognized at cost, which is determined by fair value at date of foreclosure less estimated disposal costs. They are subsequently carried at the lower of cost or current fair value less estimated disposal costs. Decreases in fair value below cost are recognized as asset-specific valuation allowances which may be reversed when supported by future increases in fair value. Subsequent increases in fair value may be used to reduce the allowance but not below zero.

Fair values of real estate are based on “as is” appraisals which are updated at least annually or more frequently for certain asset types or assets located in certain distressed markets. Fair values based on appraisals are generally considered to be based on significant other observable inputs. The Company also considers decreases in listing price and other relevant information in quarterly evaluations and reduces the carrying value of real estate and other repossessed assets when necessary. Fair values based on list prices and other relevant information are generally considered to be based on significant unobservable inputs. Additional costs incurred to complete real estate and other repossessed assets may increase the carrying value, up to current fair value based on “as completed” appraisals. The fair value of mineral rights included in repossessed assets are generally determined by our internal staff of engineers based on projected cash flows from proven oil and gas reserves under existing economic and operating conditions. The value of other repossessed assets is generally determined by our special assets staff based on projected liquidation cash flows under current market conditions.

Income generated by these assets is recognized as received. Operating expenses are recognized as incurred. Gains or losses on sales of real estate and other repossessed assets are based on the cash proceeds received less the cost basis of the asset, net of any valuation allowances. The estimated disposal costs of real estate and other repossessed assets are evaluated by the Company on an annual basis based on actual results.

Transfers of Financial Assets

BOK Financial regularly transfers financial assets as part of its mortgage banking activities and periodically may transfer other financial assets. Transfers are recorded as sales when the criteria for surrender of control are met.

The Company has elected to carry certain residential mortgage loans held for sale at fair value under the fair value option. Changes in fair value are recognized in net income as they occur. These loans are reported separately in the Consolidated Balance Sheets and changes in fair value are recorded in other operating revenue - mortgage banking revenue in the Consolidated Statements of Earnings.

Fair value of conforming residential mortgage loans that will be sold to U.S. government agencies is based on sales commitments or market quotes considered Level 2 inputs. Fair value of mortgage loans that are unable to be sold to U.S. government agencies is based on Level 3 inputs using quoted prices of loans that are sold in securitization transactions with a liquidity discount applied. The fair value is corroborated with an independent third party on at least an annual basis.
BOK Financial retains a repurchase obligation under underwriting representations and warranties related to residential mortgage loans transferred and generally retains the right to service the loans. The Company may incur a recourse obligation in limited circumstances. Separate accruals are recognized in Other liabilities in the Consolidated Balance Sheets for repurchase and recourse obligations. These reserves reflect the estimated amount of probable loss the Company will incur as a result of repurchasing a loan, indemnifications, and other settlement resolutions.

Repurchases of loans with an origination defect that are also credit impaired are considered collateral dependent and are initially recognized at net realizable value (appraised value less the cost to sell). The difference between unpaid principal balance and net realizable value is not accreted. Repurchases of loans with an origination defect that are not credit impaired are carried at fair value as of the repurchase date. Interest income continues to accrue on these loans and the discount is accreted over the estimated life of the loan.

The Company may also choose to purchase GNMA loans once certain mandated delinquency criteria are met. The loans that are eligible and are chosen to be repurchased are initially recognized at fair value based on expected cash flow discounted using the average agency guaranteed debenture rates, average actual principal loss rates and liquidity premium.

Mortgage Servicing Rights

Mortgage servicing rights may be purchased or may be recognized when mortgage loans are originated and sold with servicing rights retained. All mortgage servicing rights are carried at fair value. Changes in the fair value are recognized in earnings as they occur.

Mortgage servicing rights are not traded in active markets. A cash flow model is used to determine fair value. Key assumptions and estimates, including projected prepayment speeds and assumed servicing costs, earnings on escrow deposits, ancillary income and discount rates, used by this model are based on current market sources. Assumptions used to value mortgage servicing rights are considered significant unobservable inputs. 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 daily for changes in market conditions and adjusted to better correlate with actual performance of BOK Financial's servicing portfolio. Fair value estimates from outside sources are received at least annually to corroborate the results of the valuation model.

Premises and Equipment

Premises and equipment are carried at cost, including capitalized interest when appropriate, less accumulated depreciation and amortization. Depreciation and amortization are computed on a straight-line basis over the estimated useful lives of the assets or, for leasehold improvements, over the shorter of the estimated useful lives or remaining lease terms. Useful lives range from 5 years to 40 years for buildings and improvements, 3 years to 10 years for software and 3 years to 10 years for furniture and equipment. Construction in progress represents facilities construction and data processing systems projects underway that have not yet been placed into service. Depreciation and amortization begin once the assets are placed into service.

Repair and maintenance costs, including software maintenance and enhancement costs, are charged to expense as incurred. Software licensing costs are generally charged to expense as incurred. Software licensing costs are capitalized if the contractual right to take possession of the software exists and it is feasible to take possession without significant penalty. Capitalized costs are amortized over the shorter of the estimated useful life of the software or remaining contractual life of the license.

Premises no longer used by the Company are transferred to real estate and other repossessed assets. The transferred amount is the lower of cost less accumulated depreciation or fair value less estimated disposal costs as of the transfer date.

Rent expense for leased premises is recognized as incurred over the lease term. The effects of rent holidays, significant rent escalations and other adjustments to rent payments are recognized on a straight-line basis over the lease term.

Ongoing technology projects of significant size or length are reviewed at least annually for impairment. Accumulated costs are reviewed for projects or components of projects that do not support the value of the asset being developed. Findings of obsolescence, duplicate effort or other conditions that do not support the recorded value are impaired, with the cost of the impaired components being charged to current-year earnings.

Federal and State Income Taxes

BOK Financial and its subsidiaries file consolidated tax returns. The subsidiaries provide for income taxes on a separate return basis and remit to BOK Financial amounts determined to be currently payable. BOK Financial is agent for its subsidiaries under the Company's tax sharing agreements and has no ownership rights to any refunds received for the benefit of its subsidiaries.

Current income tax expense or benefit is based on an evaluation that considers estimated taxable income, tax credits, and statutory federal and state income tax rates. The amount of current income tax expense or benefit recognized in any period may differ from amounts reported to taxing authorities. Annually, tax returns are filed with each jurisdiction where the Company conducts business and recognized current income tax expense or benefit is adjusted to the filed tax returns.

Deferred tax assets and liabilities are based upon the temporary differences between the values of assets and liabilities as recognized in the financial statements and their related tax basis using enacted tax rates in effect for the year in which the differences are expected to be recovered or settled. The effect of changes in statutory tax rates on the measurement of deferred tax assets and liabilities is recognized through income tax expense in the period the change is enacted. A valuation allowance is provided when it is more likely than not that some portion of the entire deferred tax asset may not be realized.

BOK Financial has unrecognized tax benefits, which are included in accrued current income taxes payable, for the uncertain portion of recorded tax benefits and related interest. These uncertainties result from the application of complex tax laws, rules, regulations and interpretations, primarily in state taxing jurisdictions. Unrecognized tax benefits are assessed quarterly and may be adjusted through current income tax expense in future periods based on changing facts and circumstances, completion of examinations by taxing authorities or expiration of a statute of limitations. Estimated penalties and interest on uncertain tax positions are recognized in income tax expense.

Employee Benefit Plans

BOK Financial sponsors a defined benefit cash balance pension plan (“Pension Plan”), a defined contribution plan (“Thrift Plan”) and employee health care plans. Pension Plan costs, which are based upon actuarial computations of current costs, are expensed annually. Unrecognized prior service cost and net gains or losses are amortized on a straight-line basis over a period not to exceed the average remaining service periods of the participants. Employer contributions to the Pension Plan are in accordance with Federal income tax regulations. Pension Plan benefits were curtailed as of April 1, 2006. No participants may be added to the Pension Plan and no additional service benefits will be accrued.

BOK Financial recognizes the funded status of its employee benefit plans. For a pension plan, the funded status is the difference between the fair value of plan assets and the projected benefit obligation measured as of the fiscal year-end date. Adjustments required to recognize the Pension Plan's net funded status are made through accumulated other comprehensive income, net of deferred income taxes.

Employer contributions to the Thrift Plan, which matches employee contributions subject to percentage and years of service limits, are expensed when incurred. BOK Financial recognizes the expense of health care benefits on the accrual method.

Share-Based Compensation Plans

BOK Financial awards stock options and non-vested common shares as compensation to certain officers. Compensation cost is generally fixed based on the grant date fair value of the award. The grant date fair value of stock options is based on the Black-Scholes option pricing model. Stock options generally have graded vesting over 7 years. Each tranche is considered a separate award for valuation and compensation cost recognition. Grant date fair value of non-vested shares is based on the then-current market value of BOK Financial common stock. Non-vested shares awarded since January 1, 2013 generally cliff vest in 3 years and are subject to a two year holding period after vesting. Shares awarded under the Executive Incentive Plan are subject to downward adjustment at the discretion of the Incentive Compensation Committee. Compensation cost of non-vested shares granted under the Executive Incentive Plan varies based on changes in the fair value of BOKF common shares.

Compensation cost is recognized as expense over the service period, which is generally the vesting period. Expense is reduced for estimated forfeitures over the vesting period and adjusted for actual forfeitures as they occur. Stock-based compensation awarded to certain officers has performance conditions that affect the number of awards granted. Compensation cost is adjusted based on the probable outcome of the performance conditions.

Tax effects of share-based payments are recognized through tax expense. Dividends on non-vested shares that are not subject to forfeiture are charged to retained earnings..

Other Operating Revenue

Fees and commission revenue is recognized at the time the related services are provided or products are sold and may be accrued when appropriate. Accrued fees and commissions are reversed against revenue if amounts are subsequently deemed to be uncollectible. Revenue is recognized on a gross basis whenever we have primary responsibility and risk in providing the services or products to our customers and on a net basis whenever we act as an agent for products or services of others.

Brokerage and trading revenue includes realized and unrealized gains and losses from securities and derivatives held for trading purposes and derivatives held for customer risk management programs, including credit losses, commissions earned from the retail sale of securities, mutual funds and other financial instruments, and underwriting and financial advisory fees.

Transaction card revenue includes merchant discount fees and electronic funds transfer network fees. Merchant discount fees represent fees paid by customers for account management and electronic processing of 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 BOKF, NA. Electronic funds transfer fees are recognized as electronic transactions are 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 are recognized at least quarterly in accordance with a 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. Interchange fees are generally recognized on a gross basis. Related expenses are generally recognized as Data processing and communications expense.

Newly Adopted and Pending Accounting Pronouncements

The following is a summary of newly adopted and pending accounting pronouncements that may have a more than insignificant effect on the Company's financial statements.

Financial Accounting Standards Board ("FASB")

FASB Accounting Standards Update No. 2014-09, *Revenue from Contracts with Customers* ("ASU 2014-09")

On May 28, 2014, the FASB issued ASU 2014-09 to clarify the principles for recognizing revenue by providing a more robust framework that will give greater consistency and comparability in revenue recognition practices. In the new framework, an entity recognizes revenue in an amount that reflects the consideration to which the entity expects to be entitled in exchange for goods or services. The new model requires the identification of performance obligations included in contracts with customers, a determination of the transaction price and an allocation of the price to those performance obligations. The entity recognizes revenue when performance obligations are satisfied. Revenue from financial assets and liabilities is explicitly excluded from the scope of ASU 2014-09. Management adopted the standard in the first quarter of 2018. There were no significant cumulative effect adjustments as a result of implementation as of January 1, 2018 as our current revenue recognition policies generally conform with the principals in ASU 2014-09.

FASB Accounting Standards Update No. 2016-08, *Revenue from Contracts with Customers (Topic 606): Principal versus Agent Considerations (Reporting Revenue Gross versus Net) ("ASU 2016-08")*

On March 17, 2016, the FASB Issued ASU 2016-08 to amend the principal versus agent implementation guidance in ASU 2014-09. The ASU clarifies that an entity should evaluate whether it is the principal or the agent for each specified good or service promised in a contract with a customer. ASU 2016-08 is effective for the Company for annual reporting periods beginning after December 15, 2017, including interim periods within that reporting period. Management expects that interchange fees paid to issuing banks for card transactions processed related to its merchant processing services currently included in data processing and communication expense, will be netted against the amounts charged to the merchant in transaction card processing revenue. For 2017, interchange fees related to merchant processing services were approximately $39 million.

FASB Accounting Standards Update No. 2016-01, *Financial Instruments - Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities ("ASU 2016-01")*

On January 5, 2016, the FASB issued ASU 2016-01 over the recognition and measurement of financial assets and liabilities. The update requires equity investments, in general, to be measured at fair value with changes in fair value recognized in earnings. It also eliminates the requirement to disclose the methods and significant assumptions used to estimate the fair value for financial instruments measured at amortized cost, requires entities to use the exit price notion when measuring fair value, requires an entity to present separately in other comprehensive income the portion of the total change in fair value of a liability resulting from a change in the instrument-specific credit risk when the fair value option has been elected, requires separate presentation of financial assets and liabilities by measurement category and form on the balance sheet or accompanying notes, clarifies that an entity should evaluate the need for a valuation allowance on a deferred tax asset related to available-for-sale securities in combination with the entity's other deferred tax assets, and simplifies the impairment assessment of equity investments without readily determinable fair values. The ASU is effective for the Company for interim and annual periods beginning after December 15, 2017. Upon adoption, unrealized gains and losses from equity securities will be reclassified from other comprehensive income to retained earnings. At December 31, 2017, the Company had $2.7 million of net unrealized gains included in accumulated other comprehensive income.

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 will be required to recognize an obligation for future lease payments measured on a discounted basis and a right-of-use asset. The ASU is effective for the Company for interim and annual periods beginning after December 15, 2018 and requires transition through a modified retrospective approach for leases existing at or entered into after January 1, 2017. The Company currently estimates that implementation of ASU 2016-02 will increase reported right of use assets and liabilities by approximately $100 million to $150 million.

FASB Accounting Standards Update No. 2016-09, *Compensation - Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting ("ASU 2016-09")*

On March 30, 2016, the FASB issued ASU 2016-09 to simplify multiple aspects of accounting for employee share-based payment transactions including accounting for income taxes, forfeitures, and statutory tax withholding requirements. The ASU became effective for annual reporting periods beginning after December 15, 2016, including interim periods within those annual reporting periods. Implementation of ASU 2016-09 decreased tax expense $2.8 million in 2017.

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 in order to provide more timely recording of credit losses on loans and other financial instruments. The ASU adds an impairment model (known as the current expected credit loss ("CECL") model) that is based on expected credit losses rather than incurred credit losses. It requires measurement of all expected credit losses for financial assets carried at amortized cost, including loans and investment securities, based on historical experience, current conditions, and reasonable and supportable forecasts. ASU 2016-13 also changes the recognition of other-than-temporary impairment of available for sale securities to an allowance methodology from a direct write-down methodology. ASU 2016-13 will be effective for the Company for annual reporting periods beginning after December 15, 2019, including interim periods within those fiscal years. Early adoption is permitted for annual reporting periods beginning after December 15, 2018. ASU 2016-13 will be applied through a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is effective. The Company is evaluating the impact the adoption of ASU 2016-13 will have on the Company's financial statements.

FASB Accounting Standards Update No. 2016-15, *Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments ("ASU 2016-15")*

On August 26, 2016, the FASB issued ASU 2016-15, which amends guidance in ASC 230 on the classification of certain cash receipts and payments in the statement of cash flows. The amendments address eight cash flow issues. ASU 2016-15 is effective for the Company for interim and annual reporting periods beginning after December 15, 2017. Entities generally must apply the guidance retrospectively to all periods presented. Adoption of ASU 2016-15 is not expected to have a material impact on the Company's financial statements.

FASB Accounting Standards Update No. 2017-12, *Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities ("ASU 2017-12")*

On August 28, 2017, the FASB issued ASU 2017-12, which amends the hedge accounting recognition and presentation requirements in ASC 815 in order to improve transparency and understandability of information and reduce the complexity. The update expands the types of transactions eligible for hedge accounting, eliminates the requirement to separately measure and present hedge ineffectiveness, simplifies hedge effectiveness assessments and updates documentation and presentation requirements. The update allows the reclassification of certain debt securities from held to maturity to available for sale if the debt security is eligible to be hedged under the last-of-layer method. ASU 2017-12 is effective for the Company for fiscal years beginning after December 15, 2018, and interim periods therein; however, early adoption is permitted. The Company is evaluating the impact the adoption of ASU 2017-12 will have on the Company's financial statements.

FASB Accounting Standards Update No. 2018-02, *Income Statement - Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income ("ASU 2018-02")*

On February 10, 2018, the FASB issued ASU 2018-02, which allows a reclassification from accumulated other comprehensive income to retained earnings for the tax effect of temporary differences originated through comprehensive income resulting from the Tax Cuts and Jobs Act (the "stranded tax effects"). ASU 2018-02 is effective for all entities for fiscal years beginning after December 15, 2018. Early adoption is permitted. The Company elected to early adopt ASU 2018-02 and reclassified $6.6 million of stranded tax effects from accumulated other comprehensive income to retained earnings.

(2) Securities

Trading Securities

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

	December 31, 2017		December 31, 2016	
	Fair Value	Net Unrealized Gain (Loss)	Fair Value	Net Unrealized Gain (Loss)
U.S. government agency debentures	**$ 21,196**	**$ 8**	$ 6,234	$ (4)
U.S. government agency residential mortgage-backed securities	**392,673**	**(517)**	310,067	635
Municipal and other tax-exempt securities	**13,559**	**83**	14,427	50
Asset-backed securities	**23,885**	**(26)**	—	—
Other trading securities	**11,363**	**4**	6,900	57
Total trading securities	**$ 462,676**	**$ (448)**	$ 337,628	$ 738

Investment Securities

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

	December 31, 2017			
	Amortized	Fair	Gross Unrealized	
	Cost	Value	Gain	Loss
Municipal and other tax-exempt securities	**$ 228,186**	**$ 230,349**	**$ 2,967**	**$ (804)**
U.S. government agency residential mortgage-backed securities – Other	**15,891**	**16,242**	**446**	**(95)**
Other debt securities	**217,716**	**233,444**	**17,095**	**(1,367)**
Total investment securities	**$ 461,793**	**$ 480,035**	**$ 20,508**	**$ (2,266)**

	December 31, 2016			
	Amortized	Fair	Gross Unrealized	
	Cost	Value	Gain	Loss
Municipal and other tax-exempt securities	$ 320,364	$ 321,225	$ 2,272	$ (1,411)
U.S. government agency residential mortgage-backed securities – Other	20,777	21,473	767	(71)
Other debt securities	205,004	222,795	18,115	(324)
Total investment securities	$ 546,145	$ 565,493	$ 21,154	$ (1,806)

The amortized cost and fair values of investment securities at December 31, 2017, 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 Maturity[2]
Municipal and other tax-exempt securities:						
Carrying value	$ 102,569	$ 74,738	$ 14,929	$ 35,950	$ 228,186	3.51
Fair value	102,414	74,467	15,538	37,930	230,349	
Nominal yield[1]	1.82%	2.34%	5.06%	5.19%	2.73%	
Other debt securities:						
Carrying value	$ 13,996	$ 51,502	$ 135,233	$ 16,985	$ 217,716	6.23
Fair value	14,058	53,827	149,517	16,042	233,444	
Nominal yield	4.24%	4.75%	5.69%	4.36%	5.27%	
Total fixed maturity securities:						
Carrying value	$ 116,565	$ 126,240	$ 150,162	$ 52,935	$ 445,902	4.83
Fair value	116,472	128,294	165,055	53,972	463,793	
Nominal yield	2.11%	3.32%	5.63%	4.92%	3.97%	
Residential mortgage-backed securities:						
Carrying value					$ 15,891	[3]
Fair value					16,242	
Nominal yield[4]					2.76%	
Total investment securities:						
Carrying value					$ 461,793	
Fair value					480,035	
Nominal yield					3.93%	

[1] Calculated on a taxable equivalent basis using a 39% effective tax rate.

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

[3] The average expected lives of residential mortgage-backed securities were 4.8 years based upon current prepayment assumptions.

[4] The nominal yield on residential mortgage-backed securities is based upon prepayment assumptions at the purchase date. Actual yields earned may differ significantly based upon actual prepayments. See Quarterly Financial Summary - Unaudited for current yields on the investment securities portfolio.

Available for Sale Securities

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

	December 31, 2017				
	Amortized Cost	Fair Value	Gross Unrealized Gain	Gross Unrealized Loss	OTTI
U.S. Treasury securities	$ 1,000	$ 1,000	$ —	$ —	$ —
Municipal and other tax-exempt securities	27,182	27,080	181	(283)	—
Residential mortgage-backed securities:					
U.S. government agencies:					
FNMA	3,021,551	2,997,563	11,549	(35,537)	—
FHLMC	1,545,971	1,531,009	3,148	(18,110)	—
GNMA	787,626	780,580	1,607	(8,653)	—
Total U.S. government agencies	5,355,148	5,309,152	16,304	(62,300)	—
Private issue	74,311	93,221	19,301	—	(391)
Total residential mortgage-backed securities	5,429,459	5,402,373	35,605	(62,300)	(391)
Commercial mortgage-backed securities guaranteed by U.S. government agencies	2,858,885	2,834,961	1,963	(25,887)	—
Other debt securities	25,500	25,481	50	(69)	—
Perpetual preferred stock	12,562	15,767	3,205	—	—
Equity securities and mutual funds	14,487	14,916	515	(86)	—
Total available for sale securities	$ 8,369,075	$ 8,321,578	$ 41,519	$ (88,625)	$ (391)

	December 31, 2016				
	Amortized Cost	Fair Value	Gross Unrealized Gain	Gross Unrealized Loss	OTTI
U.S. Treasury securities	$ 1,000	$ 999	$ —	$ (1)	$ —
Municipal and other tax-exempt securities	41,050	40,993	343	(400)	—
Residential mortgage-backed securities:					
U.S. government agencies:					
FNMA	3,062,525	3,055,676	25,066	(31,915)	—
FHLMC	1,534,451	1,531,116	8,475	(11,810)	—
GNMA	878,375	873,594	2,259	(7,040)	—
Total U.S. government agencies	5,475,351	5,460,386	35,800	(50,765)	—
Private issue	101,192	115,535	14,577	(16)	(218)
Total residential mortgage-backed securities	5,576,543	5,575,921	50,377	(50,781)	(218)
Commercial mortgage-backed securities guaranteed by U.S. government agencies	3,035,750	3,017,933	5,472	(23,289)	—
Other debt securities	4,400	4,152	—	(248)	—
Perpetual preferred stock	15,561	18,474	2,913	—	—
Equity securities and mutual funds	17,424	18,357	1,060	(127)	—
Total available for sale securities	$ 8,691,728	$ 8,676,829	$ 60,165	$ (74,846)	$ (218)

The amortized cost and fair values of available for sale securities at December 31, 2017, 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 Maturity[5]
U.S. Treasury securities:						
Amortized cost	$ 1,000	$ —	$ —	$ —	$ 1,000	0.04
Fair value	1,000	—	—	—	1,000	
Nominal yield	0.87%	—%	—%	—%	0.87%	
Municipal and other tax-exempt securities:						
Amortized cost	9,008	2,680	—	15,494	27,182	9.15
Fair value	9,022	2,811	—	15,247	27,080	
Nominal yield[1]	3.45%	6.04%	—%	2.26% [6]	3.03%	
Commercial mortgage-backed securities:						
Amortized cost	22,742	970,611	1,604,465	261,067	2,858,885	7.17
Fair value	22,667	965,099	1,590,107	257,088	2,834,961	
Nominal yield	1.49%	1.93%	2.03%	2.03%	1.99%	
Other debt securities:						
Amortized cost	—	—	—	25,500	25,500	14.68
Fair value	—	—	—	25,481	25,481	
Nominal yield	—%	—%	—%	1.59%	1.59%	
Total fixed maturity securities:						
Amortized cost	$ 32,750	$ 973,291	$ 1,604,465	$ 302,061	$ 2,912,567	7.25
Fair value	32,689	967,910	1,590,107	297,816	2,888,522	
Nominal yield	2.01%	1.94%	2.03%	2.01%	2.00%	
Residential mortgage-backed securities:						
Amortized cost					$ 5,429,459	[2]
Fair value					5,402,373	
Nominal yield[4]					2.04%	
Perpetual preferred stock. equity securities and mutual funds:						
Amortized cost					$ 27,049	[3]
Fair value					30,683	
Nominal yield					—%	
Total available-for-sale securities:						
Amortized cost					$ 8,369,075	
Fair value					8,321,578	
Nominal yield					2.02%	

[1] Calculated on a taxable equivalent basis using a 39% effective tax rate.
[2] The average expected lives of mortgage-backed securities were 4.2 years based upon current prepayment assumptions.
[3] Primarily common stock and preferred stock of corporate issuers with no stated maturity.
[4] The nominal yield on mortgage-backed securities is based upon prepayment assumptions at the purchase date. Actual yields earned may differ significantly based upon actual prepayments. See Quarterly Financial Summary — Unaudited following for current yields on available for sale securities portfolio.
[5] Expected maturities may differ from contractual maturities, because borrowers may have the right to call or prepay obligations with or without penalty.
[6] Nominal yield on municipal and other tax-exempt securities and other debt securities with contractual maturity dates over ten years are based on variable rates which generally are reset within 35 days.

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

	Year Ended December 31,		
	2017	**2016**	**2015**
Proceeds	**$ 1,309,215**	$ 899,381	$ 1,600,380
Gross realized gains	**10,223**	11,696	15,849
Gross realized losses	**(5,795)**	(21)	(3,791)
Related federal and state income tax expense	**1,722**	4,542	4,691

A summary of investment and available for sale securities that have been pledged as collateral for repurchase agreements, public trust funds on deposit and for other purposes, as required by law was as follows (in thousands):

	December 31,	
	2017	**2016**
Investment:		
Carrying value	**$ 226,852**	$ 322,208
Fair value	**229,429**	323,808
Available for sale:		
Amortized cost	**7,151,468**	7,353,116
Fair value	**7,089,346**	7,327,470

The secured parties do not have the right to sell or re-pledge these securities.

Temporarily Impaired Securities as of December 31, 2017
(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 securities	100	$ 145,960	$ 643	$ 5,833	$ 161	$ 151,793	$ 804
U.S. government agency residential mortgage-backed securities – Other	1	—	—	3,356	95	3,356	95
Other debt securities	49	20,091	1,238	3,076	129	23,167	1,367
Total investment securities	150	$ 166,051	$ 1,881	$ 12,265	$ 385	$ 178,316	$ 2,266

	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 securities	—	$ —	$ —	$ —	$ —	$ —	$ —
Municipal and other tax-exempt securities	19	12,765	18	4,802	265	17,567	283
Residential mortgage-backed securities:							
U.S. government agencies:							
FNMA	113	1,203,041	9,618	824,029	25,919	2,027,070	35,537
FHLMC	69	863,778	7,297	385,816	10,813	1,249,594	18,110
GNMA	27	201,887	1,452	248,742	7,201	450,629	8,653
Total U.S. agencies	209	2,268,706	18,367	1,458,587	43,933	3,727,293	62,300
Private issue[1]	8	5,898	391	—	—	5,898	391
Total residential mortgage-backed securities	217	2,274,604	18,758	1,458,587	43,933	3,733,191	62,691
Commercial mortgage-backed securities guaranteed by U.S. government agencies	185	1,465,703	11,824	652,296	14,063	2,117,999	25,887
Other debt securities	2	19,959	41	472	28	20,431	69
Perpetual preferred stock	—	—	—	—	—	—	—
Equity securities and mutual funds	111	911	7	2,203	79	3,114	86
Total available for sale securities	534	$ 3,773,942	$ 30,648	$ 2,118,360	$ 58,368	$ 5,892,302	$ 89,016

[1] Includes securities for which an unrealized loss remains in AOCI after an other-than-temporary credit loss has been recognized in income.

Temporarily Impaired Securities as of December 31, 2016
(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 securities	151	$ 219,892	$ 1,316	$ 4,333	$ 95	$ 224,225	$ 1,411
U.S. government agency residential mortgage-backed securities – Other	1	4,358	71	—	—	4,358	71
Other debt securities	41	11,820	322	855	2	12,675	324
Total investment securities	193	$ 236,070	$ 1,709	$ 5,188	$ 97	$ 241,258	$ 1,806

	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 securities	1	$ 999	$ 1	$ —	$ —	$ 999	$ 1
Municipal and other tax-exempt securities	24	15,666	22	4,689	378	20,355	400
Residential mortgage-backed securities:							
U. S. government agencies:							
FNMA	91	1,787,644	30,238	72,105	1,677	1,859,749	31,915
FHLMC	58	964,017	11,210	18,307	600	982,324	11,810
GNMA	31	548,637	6,145	25,796	895	574,433	7,040
Total U.S. agencies	180	3,300,298	47,593	116,208	3,172	3,416,506	50,765
Private issue[1]	6	7,931	174	13,508	60	21,439	234
Total residential mortgage-backed securities	186	3,308,229	47,767	129,716	3,232	3,437,945	50,999
Commercial mortgage-backed securities guaranteed by U.S. government agencies	171	1,904,584	22,987	38,875	302	1,943,459	23,289
Other debt securities	2	—	—	4,152	248	4,152	248
Perpetual preferred stock	—	—	—	—	—	—	—
Equity securities and mutual funds	104	2,127	41	817	86	2,944	127
Total available for sale securities	488	$ 5,231,605	$ 70,818	$ 178,249	$ 4,246	$ 5,409,854	$ 75,064

[1] Includes securities for which an unrealized loss remains in AOCI after an other-than-temporary credit loss has been recognized in income.

Based on separate evaluations of impaired debt and equity securities, including perpetual preferred stocks, as of December 31, 2017, the Company does not intend to sell any impaired available for sale 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.

No other-than-temporary impairment losses were recorded in earnings during 2017 and none were recorded in 2016. Cumulative other-than-temporary impairment on available for sale securities was $55 million at December 31, 2017.

Fair Value Option Securities

Fair value option securities represent securities which the Company has elected to carry at fair value and are separately identified on the Consolidated Balance Sheets with changes in the fair value recognized in earnings as they occur. Certain residential mortgage-backed securities issued by U.S. government agencies and derivative contracts are held as an economic hedge of the mortgage servicing rights.

The fair value and net unrealized gain (loss) included in Fair value option securities is as follows (in thousands):

	December 31, 2017		December 31, 2016	
	Fair Value	Net Unrealized Gain (Loss)	Fair Value	Net Unrealized Gain (Loss)
U.S. government agency residential mortgage-backed securities	**$ 755,054**	**$ (1,877)**	$ 77,046	$ (1,777)

Restricted Equity Securities

Restricted equity securities include stock we are required to hold as members of the Federal Reserve system and the Federal Home Loan Banks ("FHLB"). Restricted equity securities are carried at cost as these securities do not have a readily determined fair value because ownership of these shares is restricted and they lack a market. A summary of restricted equity securities follows (in thousands):

	December 31,	
	2017	2016
Federal Reserve Bank stock	**$ 40,746**	$ 36,498
Federal Home Loan Bank stock	**279,200**	270,541
Other	**243**	201
Total	**$ 320,189**	$ 307,240

(3) Derivatives

The following table summarizes the fair values of derivative contracts recorded as "derivative contracts" assets and liabilities in the balance sheet at December 31, 2017 (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	$ 12,347,542	$ 23,606	$ (18,096)	$ 5,510	$ —	$ 5,510
Interest rate swaps	1,478,944	28,278	—	28,278	(4,964)	23,314
Energy contracts	1,190,067	103,044	(47,873)	55,171	(196)	54,975
Agricultural contracts	53,238	1,576	(960)	616	—	616
Foreign exchange contracts	132,397	129,551	—	129,551	(448)	129,103
Equity option contracts	99,633	5,503	—	5,503	(920)	4,583
Total customer risk management programs	15,301,821	291,558	(66,929)	224,629	(6,528)	218,101
Internal risk management programs	4,736,701	9,494	(7,093)	2,401	—	2,401
Total derivative contracts	$ 20,038,522	$ 301,052	$ (74,022)	$ 227,030	$ (6,528)	$ 220,502

	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	$ 11,537,742	$ 20,367	$ (18,096)	$ 2,271	$ (704)	$ 1,567
Interest rate swaps	1,478,944	28,298	—	28,298	(12,896)	15,402
Energy contracts	1,166,924	101,603	(47,873)	53,730	(42,767)	10,963
Agricultural contracts	48,552	1,551	(960)	591	—	591
Foreign exchange contracts	126,251	123,321	—	123,321	(53)	123,268
Equity option contracts	99,633	5,503	—	5,503	—	5,503
Total customer risk management programs	14,458,046	280,643	(66,929)	213,714	(56,420)	157,294
Internal risk management programs	5,728,421	21,762	(7,093)	14,669	—	14,669
Total derivative contracts	$ 20,186,467	$ 302,405	$ (74,022)	$ 228,383	$ (56,420)	$ 171,963

[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, 2016 (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	$ 16,949,152	$ 180,695	$ (60,555)	$ 120,140	$ —	$ 120,140
Interest rate swaps	1,403,408	34,442	—	34,442	(4,567)	29,875
Energy contracts	835,566	64,140	(28,298)	35,842	(71)	35,771
Agricultural contracts	53,209	1,382	(515)	867	—	867
Foreign exchange contracts	580,886	494,349	—	494,349	(5,183)	489,166
Equity option contracts	100,924	4,357	—	4,357	(730)	3,627
Total customer risk management programs	19,923,145	779,365	(89,368)	689,997	(10,551)	679,446
Internal risk management programs	2,514,169	10,426	—	10,426	—	10,426
Total derivative contracts	$ 22,437,314	$ 789,791	$ (89,368)	$ 700,423	$ (10,551)	$ 689,872

	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	$ 16,637,532	$ 176,928	$ (60,555)	$ 116,373	$ —	$ 116,373
Interest rate swaps	1,403,408	34,442	—	34,442	(11,977)	22,465
Energy contracts	820,365	64,306	(28,298)	36,008	(31,534)	4,474
Agricultural contracts	53,216	1,365	(515)	850	(769)	81
Foreign exchange contracts	580,712	494,695	—	494,695	(3,630)	491,065
Equity option contracts	100,924	4,357	—	4,357	—	4,357
Total customer risk management programs	19,596,157	776,093	(89,368)	686,725	(47,910)	638,815
Internal risk management programs	2,582,202	25,716	—	25,716	—	25,716
Total derivative contracts	$ 22,178,359	$ 801,809	$ (89,368)	$ 712,441	$ (47,910)	$ 664,531

[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 Consolidated Statements of Earnings (in thousands):

	Year Ended December 31,					
	2017		2016		2015	
	Brokerage and Trading Revenue	Gain (Loss) on Derivatives, Net	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	**$ 34,532**	**$ —**	$ 38,523	$ —	$ 33,877	$ —
Interest rate swaps	**2,647**	**—**	2,589	—	2,066	—
Energy contracts	**5,536**	**—**	5,027	—	4,060	—
Agricultural contracts	**79**	**—**	111	—	123	—
Foreign exchange contracts	**1,352**	**—**	945	—	797	—
Equity option contracts	**—**	**—**	—	—	—	—
Total customer risk management programs	**44,146**	**—**	47,195	—	40,923	—
Internal risk management programs	**4,615**	**779**	(4,592)	(15,685)	(209)	430
Total derivative contracts	**$ 48,761**	**$ 779**	$ 42,603	$ (15,685)	$ 40,714	$ 430

As discussed in Note 7, 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 7 for additional discussion of notional, fair value and impact on earnings of these contracts.

No derivative contracts have been designated as hedging instruments for financial reporting purposes.

(4) Loans and Allowances for Credit Losses

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

	December 31, 2017				December 31, 2016			
	Fixed Rate	**Variable Rate**	**Non-accrual**	**Total**	**Fixed Rate**	**Variable Rate**	**Non-accrual**	**Total**
Commercial	**$ 2,217,432**	**$ 8,379,240**	**$ 137,303**	**$ 10,733,975**	$ 2,327,085	$ 7,884,786	$ 178,953	$ 10,390,824
Commercial real estate	**548,692**	**2,928,440**	**2,855**	**3,479,987**	624,187	3,179,338	5,521	3,809,046
Residential mortgage	**1,608,655**	**317,584**	**47,447**	**1,973,686**	1,647,357	256,255	46,220	1,949,832
Personal	**154,517**	**810,990**	**269**	**965,776**	154,971	684,697	290	839,958
Total	**$ 4,529,296**	**$ 12,436,254**	**$ 187,874**	**$ 17,153,424**	$ 4,753,600	$ 12,005,076	$ 230,984	$ 16,989,660
Accruing loans past due (90 days)[1]				**$ 633**				$ 5
Foregone interest on nonaccrual loans				**$ 16,496**				$ 15,990

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

At December 31, 2017, loans to businesses and individuals with collateral primarily located in Texas totaled $5.8 billion or 34% of the total loan portfolio. Loans to businesses and individuals with collateral primarily located in Oklahoma totaled $3.3 billion or 19% of our total loan portfolio. Loans for which the collateral location is not relevant, such as unsecured loans and reserve-based energy loans, are distributed by the borrower's primary operating location. These geographic concentrations subject the loan portfolio to the general economic conditions within these areas. At December 31, 2016, loans to businesses and individuals with collateral primarily located in Texas totaled $5.4 billion or 32% of the loan portfolio and loans to businesses and individuals with collateral primarily located in Oklahoma totaled $3.5 billion or 21% of the loan portfolio.

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 on-going 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, interest 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 on-going cash flow from operations of the customer's business. Inherent lending risk is centrally monitored on a continuous basis from underwriting throughout the life of the loan for compliance with commercial lending policies.

At December 31, 2017, commercial loans with collateral primarily located in Texas totaled $3.6 billion or 34% of the commercial loan portfolio segment and commercial loans with collateral primarily located in Oklahoma totaled $2.0 billion or 18% of the commercial loan portfolio segment. The commercial loan portfolio segment is further divided into loan classes. The services loan class totaled $3.0 billion or 17% of total loans. Approximately $1.5 billion of loans in the services class consisted of loans with individual balances of less than $10 million. Businesses included in the services class include governmental, educational, commercial services, consumer services and utilities. The energy loan class totaled $2.9 billion or 17% of total loans, including $2.5 billion of outstanding loans to energy producers. Approximately 57% of committed production loans were secured by properties primarily producing oil and 43% are secured by properties producing natural gas. The healthcare loan class totaled $2.3 billion or 13% of total loans. The healthcare loan class 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.

At December 31, 2016, commercial loans with collateral primarily located in Texas totaled $3.3 billion or 32% of the commercial loan portfolio segment and commercial loans with collateral primarily located in Oklahoma totaled $2.1 billion or 21% of the commercial loan portfolio segment. The energy loan class totaled $2.5 billion or 15% of total loans, including $2.0 billion of outstanding loans to energy producers. At December 31, 2016, approximately 57% of committed production loans were secured by properties primarily producing oil and 43% were secured by properties producing natural gas. The services loan class totaled $3.1 billion or 18% of total loans. Approximately $1.4 billion of loans in the services category consisted of loans with individual balances of less than $10 million. The healthcare loan class totaled $2.2 billion or 13% of total loans.

Commercial Real Estate

Commercial real estate loans are for the construction of buildings or other improvements to real estate and property held by borrowers for investment purposes primarily within our geographical footprint. 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.

At December 31, 2017, 35% of commercial real estate loans are secured by properties primarily located in the Dallas and Houston areas of Texas. An additional 12% of commercial real estate loans are secured by properties located primarily in the Tulsa and Oklahoma City metropolitan areas of Oklahoma. At December 31, 2016, 30% of commercial real estate loans were secured by properties in Texas, 11% of commercial real estate loans were secured by properties in Oklahoma.

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 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 other unsecured loans. Residential mortgage and personal loans are made in accordance with underwriting policies. Credit scoring is assessed based on significant credit characteristics including credit history, residential and employment stability. Residential mortgage loans retained in the Company's portfolio are primarily composed of various mortgage programs to support customer relationships including jumbo mortgage loans, non-builder construction loans and special loan programs for high net worth individuals and certain professionals. Jumbo loans may be fixed or variable rate and are fully amortizing. Jumbo loans generally conform to government sponsored entity standards, except that the loan size exceeds maximums required under these standards. These loans generally require a minimum FICO score of 720 and a maximum debt-to-income ratio ("DTI") of 38%. Loan-to-value ("LTV") ratios are tiered from 60% to 100%, depending on the market. Special mortgage programs include fixed and variable 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 December 31, 2017 and 2016, residential mortgage loans included $198 million and $199 million, respectively, of loans guaranteed by U.S. government agencies previously sold into GNMA mortgage pools. These loans either have been repurchased or are eligible to be repurchased by the Company when certain defined delinquency criteria are met. Although payments on these loans generally are past due more than 90 days, interest continues to accrue based on the government guarantee.

Home equity loans totaled $733 million at December 31, 2017 and $744 million at December 31, 2016. At December 31, 2017, 64% of the home equity loan portfolio was comprised of first lien loans and 36% of the home equity portfolio was comprised of junior lien loans. Junior lien loans were distributed 46% to amortizing term loans and 54% to revolving lines of credit. At December 31, 2016, 65% of the home equity portfolio was comprised of first lien loans and 35% of the home equity loan portfolio was comprised of junior lien loans. Junior lien loans were distributed 52% to amortizing term loans and 48% to revolving lines of credit. Home equity loans generally require a minimum FICO score of 700 and a maximum DTI of 40%. The maximum loan amount available for our home equity loan products is generally $400 thousand. Revolving loans have a 5 year revolving period followed by 15 year term of amortizing repayments. Interest-only home equity loans 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.

At December 31, 2017, 31% of residential mortgage loans are secured by properties located in Oklahoma, 30% of residential mortgage loans are secured by properties located in Texas and 11% of residential mortgage are secured by properties located in Colorado. At December 31, 2016, 33% of residential mortgage loans were secured by properties in Oklahoma, 29% of residential mortgage were secured by properties in Texas, 10% of residential mortgage loans are secured by properties in New Mexico and 10% of residential mortgage loans are secured by properties in Colorado.

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 December 31, 2017, outstanding commitments totaled $10.0 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 December 31, 2017, outstanding standby letters of credit totaled $648 million. Commercial letters of credit are used to facilitate customer trade transactions with the drafts being drawn when the underlying transaction is consummated. At December 31, 2017, outstanding commercial letters of credit totaled $3.2 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 7, the Company also has separate accruals related to 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 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, concentration in loans with large balances and other relevant factors.

The activity in the allowance for loan losses and the accrual for off-balance sheet credit risk related to loan commitments and standby letters of credit for the year ended December 31, 2017 is summarized as follows (in thousands):

	Commercial	Commercial Real Estate	Residential Mortgage	Personal	Nonspecific Allowance	Total
Allowance for loan losses:						
Beginning balance	**$ 140,213**	**$ 50,749**	**$ 18,224**	**$ 8,773**	**$ 28,200**	**$ 246,159**
Provision for loan losses	**(595)**	**4,008**	**116**	**2,964**	**(5,983)**	**510**
Loans charged off	**(19,810)**	**(76)**	**(649)**	**(5,064)**	**—**	**(25,599)**
Recoveries	**4,461**	**1,940**	**760**	**2,451**	**—**	**9,612**
Ending balance	**$ 124,269**	**$ 56,621**	**$ 18,451**	**$ 9,124**	**$ 22,217**	**$ 230,682**
Accrual for off-balance sheet credit risk:						
Beginning balance	**$ 11,063**	**$ 123**	**$ 50**	**$ 8**	**$ —**	**$ 11,244**
Provision for off-balance sheet credit risk	**(7,419)**	**(78)**	**(7)**	**(6)**	**—**	**(7,510)**
Ending balance	**$ 3,644**	**$ 45**	**$ 43**	**$ 2**	**$ —**	**$ 3,734**
Total provision for credit losses	**$ (8,014)**	**$ 3,930**	**$ 109**	**$ 2,958**	**$ (5,983)**	**$ (7,000)**

The activity in the allowance for loan losses and the accrual for off-balance sheet credit risk related to loan commitments and standby letters of credit for the year ended December 31, 2016 is summarized as follows (in thousands):

	Commercial	Commercial Real Estate	Residential Mortgage	Personal	Nonspecific Allowance	Total
Allowance for loan losses:						
Beginning balance	$ 130,334	$ 41,391	$ 19,509	$ 4,164	$ 30,126	$ 225,524
Provision for loan losses	43,980	8,075	(1,972)	7,310	(1,926)	55,467
Loans charged off	(35,828)	—	(1,312)	(5,448)	—	(42,588)
Recoveries	1,727	1,283	1,999	2,747	—	7,756
Ending balance	$ 140,213	$ 50,749	$ 18,224	$ 8,773	$ 28,200	$ 246,159
Accrual for off-balance sheet credit risk:						
Beginning balance	$ 1,506	$ 153	$ 30	$ 22	$ —	$ 1,711
Provision for off-balance sheet credit risk	9,557	(30)	20	(14)	—	9,533
Ending balance	$ 11,063	$ 123	$ 50	$ 8	$ —	$ 11,244
Total provision for credit losses	$ 53,537	$ 8,045	$ (1,952)	$ 7,296	$ (1,926)	$ 65,000

The activity in the allowance for loan losses and the accrual for off-balance sheet credit risk related to loan commitments and standby letters of credit for the year ended December 31, 2015 is summarized as follows (in thousands):

	Commercial	Commercial Real Estate	Residential Mortgage	Personal	Nonspecific Allowance	Total
Allowance for loan losses:						
Beginning balance	$ 90,875	$ 42,445	$ 23,458	$ 4,233	$ 28,045	$ 189,056
Provision for loan losses	43,464	(11,189)	(3,004)	2,167	2,081	33,519
Loans charged off	(6,734)	(944)	(2,205)	(5,288)	—	(15,171)
Recoveries	2,729	11,079	1,260	3,052	—	18,120
Ending balance	$ 130,334	$ 41,391	$ 19,509	$ 4,164	$ 30,126	$ 225,524
Accrual for off-balance sheet credit risk:						
Beginning balance	$ 475	$ 707	$ 28	$ 20	$ —	$ 1,230
Provision for off-balance sheet credit risk	1,031	(554)	2	2	—	481
Ending balance	$ 1,506	$ 153	$ 30	$ 22	$ —	$ 1,711
Total provision for credit losses	$ 44,495	$ (11,743)	$ (3,002)	$ 2,169	$ 2,081	$ 34,000

The allowance for loan losses and recorded investment of the related loans by portfolio segment for each impairment measurement method at December 31, 2017 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	**$ 10,596,672**	**$ 115,438**	**$ 137,303**	**$ 8,831**	**$ 10,733,975**	**$ 124,269**
Commercial real estate	**3,477,132**	**56,621**	**2,855**	**—**	**3,479,987**	**56,621**
Residential mortgage	**1,926,239**	**18,451**	**47,447**	**—**	**1,973,686**	**18,451**
Personal	**965,507**	**9,124**	**269**	**—**	**965,776**	**9,124**
Total	**16,965,550**	**199,634**	**187,874**	**8,831**	**17,153,424**	**208,465**
Nonspecific allowance	**—**	**—**	**—**	**—**	**—**	**22,217**
Total	**$ 16,965,550**	**$ 199,634**	**$ 187,874**	**$ 8,831**	**$ 17,153,424**	**$ 230,682**

The allowance for loan losses and recorded investment of the related loans by portfolio segment for each impairment measurement method at December 31, 2016 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	$ 10,211,871	$ 139,416	$ 178,953	$ 797	$ 10,390,824	$ 140,213
Commercial real estate	3,803,525	50,749	5,521	—	3,809,046	50,749
Residential mortgage	1,903,612	18,178	46,220	46	1,949,832	18,224
Personal	839,668	8,773	290	—	839,958	8,773
Total	16,758,676	217,116	230,984	843	16,989,660	217,959
Nonspecific allowance	—	—	—	—	—	28,200
Total	$ 16,758,676	$ 217,116	$ 230,984	$ 843	$ 16,989,660	$ 246,159

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 personal 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 personal 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 December 31, 2017 is as follows (in thousands):

	Internally Risk Graded		Non-Graded		Total	
	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance
Commercial	**$ 10,706,035**	**$ 123,383**	**$ 27,940**	**$ 886**	**$ 10,733,975**	**$ 124,269**
Commercial real estate	**3,479,987**	**56,621**	—	—	**3,479,987**	**56,621**
Residential mortgage	**234,477**	**2,947**	**1,739,209**	**15,504**	**1,973,686**	**18,451**
Personal	**877,390**	**6,461**	**88,386**	**2,663**	**965,776**	**9,124**
Total	**15,297,889**	**189,412**	**1,855,535**	**19,053**	**17,153,424**	**208,465**
Nonspecific allowance	—	—	—	—	—	**22,217**
Total	**$ 15,297,889**	**$ 189,412**	**$ 1,855,535**	**$ 19,053**	**$ 17,153,424**	**$ 230,682**

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, 2016 is as follows (in thousands):

	Internally Risk Graded		Non-Graded		Total	
	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance
Commercial	$ 10,360,725	$ 139,293	$ 30,099	$ 920	$ 10,390,824	$ 140,213
Commercial real estate	3,809,046	50,749	—	—	3,809,046	50,749
Residential mortgage	243,703	2,893	1,706,129	15,331	1,949,832	18,224
Personal	744,602	5,035	95,356	3,738	839,958	8,773
Total	15,158,076	197,970	1,831,584	19,989	16,989,660	217,959
Nonspecific allowance	—	—	—	—	—	28,200
Total	$ 15,158,076	$ 197,970	$ 1,831,584	$ 19,989	$ 16,989,660	$ 246,159

Loans are considered to be performing if they are in compliance with the original terms of the agreement which is consistent with the regulatory guideline of "pass." Performing also includes loans considered to be "other loans especially mentioned" by regulatory guidelines and all residential mortgage loans guaranteed by agencies of the U.S. government that continue to accrue interest based on criteria of the guarantor's 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 in accordance with the original terms of the loan agreements 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 December 31, 2017 by the risk grade categories (in thousands):

	Internally Risk Graded				Non-Graded		
	Performing						
	Pass	Other Loans Especially Mentioned	Accruing Substandard	Nonaccrual	Performing	Nonaccrual	Total
Commercial:							
Energy	$ 2,632,986	$ 60,288	$ 144,598	$ 92,284	$ —	$ —	$ 2,930,156
Services	2,943,869	13,927	26,533	2,620	—	—	2,986,949
Wholesale/retail	1,443,917	19,263	5,502	2,574	—	—	1,471,256
Manufacturing	472,869	6,653	11,290	5,962	—	—	496,774
Healthcare	2,253,497	3,186	43,305	14,765	—	—	2,314,753
Other commercial and industrial	478,951	7	8,161	19,028	27,870	70	534,087
Total commercial	10,226,089	103,324	239,389	137,233	27,870	70	10,733,975
Commercial real estate:							
Residential construction and land development	113,190	1,828	395	1,832	—	—	117,245
Retail	686,915	4,243	98	276	—	—	691,532
Office	824,408	7,087	—	275	—	—	831,770
Multifamily	979,969	—	48	—	—	—	980,017
Industrial	573,014	—	—	—	—	—	573,014
Other commercial real estate	285,506	145	286	472	—	—	286,409
Total commercial real estate	3,463,002	13,303	827	2,855	—	—	3,479,987
Residential mortgage:							
Permanent mortgage	232,492	—	822	1,163	784,928	24,030	1,043,435
Permanent mortgages guaranteed by U.S. government agencies	—	—	—	—	188,327	9,179	197,506
Home equity	—	—	—	—	719,670	13,075	732,745
Total residential mortgage	232,492	—	822	1,163	1,692,925	46,284	1,973,686
Personal	875,696	1,548	63	83	88,200	186	965,776
Total	$ 14,797,279	$ 118,175	$ 241,101	$ 141,334	$ 1,808,995	$ 46,540	$ 17,153,424

The following table summarizes the Company's loan portfolio at December 31, 2016 by the risk grade categories (in thousands):

	Internally Risk Graded				Non-Graded		
	Performing						
	Pass	Other Loans Especially Mentioned	Accruing Substandard	Nonaccrual	Performing	Nonaccrual	Total
Commercial:							
Energy	$ 1,937,790	$ 119,583	$ 307,996	132,499	$ —	$ —	$ 2,497,868
Services	3,052,002	10,960	37,855	8,173	—	—	3,108,990
Wholesale/retail	1,535,463	16,886	13,062	11,407	—	—	1,576,818
Manufacturing	468,314	26,532	15,198	4,931	—	—	514,975
Healthcare	2,140,458	44,472	16,161	825	—	—	2,201,916
Other commercial and industrial	433,789	5,309	—	21,060	30,041	58	490,257
Total commercial	9,567,816	223,742	390,272	178,895	30,041	58	10,390,824
Commercial real estate:							
Residential construction and land development	131,630	—	470	3,433	—	—	135,533
Retail	756,418	4,745	399	326	—	—	761,888
Office	798,462	—	—	426	—	—	798,888
Multifamily	898,800	—	4,434	38	—	—	903,272
Industrial	871,673	—	—	76	—	—	871,749
Other commercial real estate	336,488	—	6	1,222	—	—	337,716
Total commercial real estate	3,793,471	4,745	5,309	5,521	—	—	3,809,046
Residential mortgage:							
Permanent mortgage	238,769	1,186	2,331	1,417	741,679	21,438	1,006,820
Permanent mortgages guaranteed by U.S. government agencies	—	—	—	—	187,541	11,846	199,387
Home equity	—	—	—	—	732,106	11,519	743,625
Total residential mortgage	238,769	1,186	2,331	1,417	1,661,326	44,803	1,949,832
Personal	743,451	—	1,054	97	95,163	193	839,958
Total	$ 14,343,507	$ 229,673	$ 398,966	185,930	$ 1,786,530	$ 45,054	$ 16,989,660

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 includes all nonaccruing loans, all loans modified in a troubled debt restructuring and all loans repurchased from GNMA pools.

A summary of impaired loans follows (in thousands):

	As of December 31, 2017					Year Ended December 31, 2017	
		Recorded Investment					
	Unpaid Principal Balance	Total	With No Allowance	With Allowance	Related Allowance	Average Recorded Investment	Interest Income Recognized
Commercial:							
Energy	$ 111,011	$ 92,284	$ 40,968	$ 51,316	$ 8,814	$ 112,392	$ —
Services	5,324	2,620	2,620	—	—	5,396	—
Wholesale/retail	9,099	2,574	2,574	—	—	6,990	—
Manufacturing	6,073	5,962	5,962	—	—	5,446	—
Healthcare	25,140	14,765	14,765	—	—	7,795	—
Other commercial and industrial	27,957	19,098	19,080	18	17	20,108	—
Total commercial	184,604	137,303	85,969	51,334	8,831	158,127	—
Commercial real estate:							
Residential construction and land development	3,285	1,832	1,832	—	—	2,633	—
Retail	509	276	276	—	—	301	—
Office	287	275	275	—	—	351	—
Multifamily	—	—	—	—	—	19	—
Industrial	—	—	—	—	—	38	—
Other commercial real estate	670	472	472	—	—	847	—
Total commercial real estate	4,751	2,855	2,855	—	—	4,189	—
Residential mortgage:							
Permanent mortgage	30,435	25,193	25,193	—	—	24,024	1,229
Permanent mortgage guaranteed by U.S. government agencies[1]	203,814	197,506	197,506	—	—	199,244	7,632
Home equity	14,548	13,075	13,075	—	—	12,297	—
Total residential mortgage	248,797	235,774	235,774	—	—	235,565	8,861
Personal	307	269	269	—	—	280	—
Total	$ 438,459	$ 376,201	$ 324,867	$ 51,334	$ 8,831	$ 398,161	$ 8,861

[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, 2017, $9.2 million of these loans are nonaccruing and $188 million are 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, have been recovered. During 2017, we recognized $7.2 million as interest income on impaired loans that meet these conditions.

	As of December 31, 2016					Year Ended December 31, 2016	
		Recorded Investment					
	Unpaid Principal Balance	Total	With No Allowance	With Allowance	Related Allowance	Average Recorded Investment	Interest Income Recognized
Commercial:							
Energy	$ 146,897	$ 132,499	$ 121,418	$ 11,081	$ 762	$ 80,100	$ —
Services	11,723	8,173	8,173	—	—	9,232	—
Wholesale/retail	17,669	11,407	11,407	—	—	7,163	—
Manufacturing	5,320	4,931	4,931	—	—	2,631	—
Healthcare	1,147	825	825	—	—	949	—
Other commercial and industrial	29,006	21,118	21,083	35	35	10,870	—
Total commercial	211,762	178,953	167,837	11,116	797	110,945	—
Commercial real estate:							
Residential construction and land development	4,951	3,433	3,433	—	—	3,921	—
Retail	530	326	326	—	—	823	—
Office	521	426	426	—	—	539	—
Multifamily	1,000	38	38	—	—	156	—
Industrial	76	76	76	—	—	76	—
Other commercial real estate	7,349	1,222	1,222	—	—	1,747	—
Total commercial real estate	14,427	5,521	5,521	—	—	7,262	—
Residential mortgage:							
Permanent mortgage	28,830	22,855	22,809	46	46	25,920	1,255
Permanent mortgage guaranteed by U.S. government agencies[1]	205,564	199,387	199,387	—	—	193,889	7,759
Home equity	12,611	11,519	11,519	—	—	10,937	—
Total residential mortgage	247,005	233,761	233,715	46	46	230,746	9,014
Personal	332	290	290	—	—	377	—
Total	$ 473,526	$ 418,525	$ 407,363	$ 11,162	$ 843	$ 349,330	$ 9,014

[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, 2016, $12 million of these loans are nonaccruing and $188 million are accruing based on the guarantee by U.S. government agencies.

Troubled Debt Restructurings

At December 31, 2017 the Company has $126 million in troubled debt restructurings (TDRs), of which $74 million are accruing residential mortgage loans guaranteed by U.S. government agencies. Approximately $48 million of TDRs are performing in accordance with the modified terms. The loans designated as TDRs had $117 thousand in charge offs during the year ended December 31, 2017.

At December 31, 2016, TDRs totaled $147 million, of which $81 million were accruing residential mortgage loans guaranteed by U.S. government agencies. Approximately $75 million of TDRs were performing. The loans designated as TDRs had $4.7 million in charge offs during the year ended December 31, 2016.

TDRs generally consist of interest rate concessions, payment stream concessions or a combination of concessions to distressed borrowers. During the year ended December 31, 2017, $57 million of loans were restructured. During the year ended December 31, 2016, $52 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 December 31, 2017 is as follows (in thousands):

		Past Due				
	Current	30 to 59 Days	60 to 89 Days	90 Days or More	Nonaccrual	Total
Commercial:						
Energy	$ 2,833,668	$ —	4,204	$ —	$ 92,284	$ 2,930,156
Services	2,983,222	514	486	107	2,620	2,986,949
Wholesale/retail	1,468,284	398	—	—	2,574	1,471,256
Manufacturing	490,739	—	73	—	5,962	496,774
Healthcare	2,284,770	15,218	—	—	14,765	2,314,753
Other commercial and industrial	514,701	85	78	125	19,098	534,087
Total commercial	10,575,384	16,215	4,841	232	137,303	10,733,975
Commercial real estate:						
Residential construction and land development	115,213	200	—	—	1,832	117,245
Retail	691,256	—	—	—	276	691,532
Office	831,118	254	—	123	275	831,770
Multifamily	979,625	22	370	—	—	980,017
Industrial	573,014	—	—	—	—	573,014
Other commercial real estate	285,937	—	—	—	472	286,409
Total commercial real estate	3,476,163	476	370	123	2,855	3,479,987
Residential mortgage:						
Permanent mortgage	1,014,588	3,435	219	—	25,193	1,043,435
Permanent mortgages guaranteed by U.S. government agencies	22,692	18,978	13,468	133,189	9,179	197,506
Home equity	717,007	2,206	440	17	13,075	732,745
Total residential mortgage	1,754,287	24,619	14,127	133,206	47,447	1,973,686
Personal	964,374	681	191	261	269	965,776
Total	$ 16,770,208	$ 41,991	19,529	$ 133,822	$ 187,874	$ 17,153,424

A summary of loans currently performing, loans past due and accruing and nonaccrual loans as of December 31, 2016 is as follows (in thousands):

	Current	Past Due 30 to 59 Days	Past Due 60 to 89 Days	Past Due 90 Days or More	Nonaccrual	Total
Commercial:						
Energy	$ 2,364,890	$ 479	—	$ —	$ 132,499	$ 2,497,868
Services	3,099,605	191	1,021	—	8,173	3,108,990
Wholesale/retail	1,561,650	3,761	—	—	11,407	1,576,818
Manufacturing	509,662	382	—	—	4,931	514,975
Healthcare	2,201,050	—	41	—	825	2,201,916
Other commercial and industrial	468,981	155	3	—	21,118	490,257
Total commercial	10,205,838	4,968	1,065	—	178,953	10,390,824
Commercial real estate:						
Residential construction and land development	132,100	—	—	—	3,433	135,533
Retail	761,562	—	—	—	326	761,888
Office	798,462	—	—	—	426	798,888
Multifamily	903,234	—	—	—	38	903,272
Industrial	871,673	—	—	—	76	871,749
Other commercial real estate	336,488	6	—	—	1,222	337,716
Total commercial real estate	3,803,519	6	—	—	5,521	3,809,046
Residential mortgage:						
Permanent mortgage	979,386	3,299	1,280	—	22,855	1,006,820
Permanent mortgages guaranteed by U.S. government agencies	40,594	17,465	13,803	115,679	11,846	199,387
Home equity	729,493	2,276	337	—	11,519	743,625
Total residential mortgage	1,749,473	23,040	15,420	115,679	46,220	1,949,832
Personal	838,811	589	263	5	290	839,958
Total	$ 16,597,641	$ 28,603	16,748	$ 115,684	$ 230,984	$ 16,989,660

(5) Premises and Equipment

Premises and equipment at December 31 are summarized as follows (in thousands):

	December 31,	
	2017	2016
Land	**$ 71,348**	$ 70,552
Buildings and improvements	**249,139**	250,311
Software	**188,826**	158,155
Furniture and equipment	**223,163**	217,399
Construction in progress	**23,348**	36,743
Premises and equipment	**755,824**	733,160
Less accumulated depreciation	**438,489**	407,311
Premises and equipment, net of accumulated depreciation	**$ 317,335**	$ 325,849

Depreciation expense of premises and equipment was $48 million, $40 million and $34 million for the years ended December 31, 2017, 2016 and 2015, respectively.

(6) Goodwill and Intangible Assets

On December 1, 2016, the Company acquired MBT Bancshares ("MBT"), parent company of Missouri Bank and Trust of Kansas City ("Mobank") following regulatory approval of the transaction. Mobank operated four banking branches in the Kansas City, Mo. area. BOK Financial paid $102.5 million in an all-cash deal for all outstanding shares of MBT stock. MBT was merged into BOK Financial and Mobank became a wholly owned subsidiary of BOK Financial on December 1, 2016. On February 21, 2017, Mobank was merged with the Bank of Kansas City division of BOKF, NA. All branches in the Kansas City market operate under the Mobank name. The preliminary purchase price allocation was finalized during 2017, resulting in a $2.0 million increase in identifiable intangibles, $1.5 million decrease in premises and equipment and other repossessed assets, and a $526 thousand decrease in goodwill.

The following table presents the original cost and accumulated amortization of intangible assets (in thousands):

	Dec. 31,	
	2017	2016
Core deposit premiums	**$ 6,510**	$ 35,879
Less accumulated amortization	**808**	29,369
Net core deposit premiums	**5,702**	6,510
Other identifiable intangible assets	**44,468**	60,951
Less accumulated amortization	**21,512**	20,530
Net other identifiable intangible assets	**22,956**	40,421
Total intangible assets, net	**$ 28,658**	$ 46,931

Expected amortization expense for intangible assets that will continue to be amortized (in thousands):

	Core Deposit Premiums	Other Identifiable Intangible Assets	Total
2018	$ 732	$ 4,322	$ 5,054
2019	716	3,970	4,686
2020	697	3,834	4,531
2021	675	3,477	4,152
2022	649	2,628	3,277
Thereafter	2,233	4,725	6,958
	$ 5,702	$ 22,956	$ 28,658

The changes in the carrying value of goodwill by operating segment are as follows (in thousands):

	Commercial Banking	Consumer Banking	Wealth Management	Funds Management and Other	Total
Balance, December 31, 2015					
Goodwill	$ 277,044	$ 39,251	$ 69,394	$ —	$ 385,689
Accumulated impairment losses	—	(228)	—	—	(228)
	277,044	39,023	69,394	—	385,461
Goodwill recognized during 2016	1,210	—	2,126	66,160	69,496
Adjustment[2]	$ (6,058)	$ —	$ —	$ —	(6,058)
Balance, December 31, 2016					
Goodwill	272,196	39,251	71,520	66,160	449,127
Accumulated impairment losses	—	(228)	—	—	(228)
	272,196	39,023	71,520	66,160	448,899
Goodwill recognized during 2017	**4,301**	**—**	**—**	**—**	**4,301**
Sales of consolidated merchant banking investments during 2017	**(5,219)**	**—**	**(25)**	**—**	**(5,244)**
Adjustment[1]	**41,992**	**4,435**	**19,207**	**(66,160)**	**(526)**
Balance, December 31, 2017					
Goodwill	**313,270**	**43,686**	**90,702**	**—**	**447,658**
Accumulated impairment losses	**—**	**(228)**	**—**	**—**	**(228)**
	$ 313,270	**$ 43,458**	**$ 90,702**	**$ —**	**$ 447,430**

[1] Goodwill from Mobank acquisition was not yet allocated to the segments as of December 31, 2016. Adjustment was made in 2017 for final purchase price adjustments and to allocate to the segments.

[2] Completion of an external audit of Heartland Food Products resulted in a reallocation of the purchase price between net assets acquired, intangible assets and goodwill during 2016.

The annual goodwill evaluations for 2017 and 2016 did not indicate impairment for any reporting unit. Economic conditions did not indicate that impairment existed for any identifiable intangible assets and therefore no impairment evaluation was performed.

(7) 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 held for investment. 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):

	December 31, 2017		**December 31, 2016**	
	Unpaid Principal Balance/ Notional	**Fair Value**	**Unpaid Principal Balance/ Notional**	**Fair Value**
Residential mortgage loans held for sale	**$ 212,525**	**$ 215,113**	$ 286,414	$ 286,971
Residential mortgage loan commitments	**222,919**	**6,523**	318,359	9,733
Forward sales contracts	**380,159**	**(258)**	569,543	5,193
		$ 221,378		$ 301,897

No residential mortgage loans held for sale were 90 days or more past due or considered impaired as of December 31, 2017 or December 31, 2016. No credit losses were recognized on residential mortgage loans held for sale for the years ended December 31, 2017, 2016 and 2015.

Mortgage banking revenue was as follows (in thousands):

	Year Ended		
	2017	**2016**	**2015**
Production revenue:			
Net realized gains on sales of mortgage loans	**$ 45,128**	$ 68,947	$ 67,407
Net change in unrealized gain on mortgage loans held for sale	**2,031**	(5,311)	(784)
Net change in the fair value of mortgage loan commitments	**(3,210)**	1,599	(1,837)
Net change in the fair value of forward sales contracts	**(5,451)**	4,393	4,801
Total mortgage production revenue	**38,498**	69,628	69,587
Servicing revenue	**66,221**	64,286	56,415
Total mortgage banking revenue	**$ 104,719**	$ 133,914	$ 126,002

Mortgage 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 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

The Company generally retains the right to service residential mortgage loans sold and may purchase mortgage servicing rights. 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):

	December 31,		
	2017	2016	2015
Number of residential mortgage loans serviced for others	**136,528**	139,340	131,859
Outstanding principal balance of residential mortgage loans serviced for others	**$ 22,046,632**	$ 21,997,568	$ 19,678,226
Weighted average interest rate	**3.94%**	3.97%	4.12%
Remaining contractual term (in months)	**297**	301	300

Activity in capitalized mortgage servicing rights during the three years ended December 31, 2017 is as follows (in thousands):

Balance, December 31, 2014	$ 171,976
Additions, net	79,546
Change in fair value due to loan runoff	(28,064)
Change in fair value due to market changes	(4,853)
Balance, December 31, 2015	218,605
Additions, net	71,405
Change in fair value due to loan runoff	(40,744)
Change in fair value due to market changes	(2,193)
Balance, December 31, 2016	247,073
Additions, net	**39,149**
Change in fair value due to loan runoff	**(33,527)**
Change in fair value due to market changes	**172**
Balance, December 31, 2017	**$ 252,867**

Changes in the fair value of mortgage servicing rights due to market changes are included in Other operating revenue in the Consolidated Statements of Earnings. Changes in fair value due to loan runoff 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 assumptions used to determine fair value considered to be significant unobservable inputs were as follows:

	December 31,	
	2017	2016
Discount rate – risk-free rate plus a market premium	**9.84%**	10.08%
Prepayment rate - based upon loan interest rate, original term and loan type	**8.72%-15.16%**	8.98%-16.91%
Loan servicing costs – annually per loan based upon loan type:		
Performing loans	**$65 - $88**	$63 - $120
Delinquent loans	**$150 - $500**	$150 - $500
Loans in foreclosure	**$1,000 - $4,000**	$650 - $4,250
Primary/secondary mortgage rate spread	**105 bps**	105 bps
Escrow earnings rate – indexed to rates paid on deposit accounts with comparable average life	**2.24%**	1.98%

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.

The aging status of our mortgage loans serviced for others by investor at December 31, 2017 follows (in thousands):

		Past Due			
	Current	30 to 59 Days	60 to 89 Days	90 Days or More	Total
FHLMC	$ 7,995,369	$ 81,805	$ 14,091	$ 32,756	$ 8,124,021
FNMA	6,595,410	81,405	13,856	27,083	6,717,754
GNMA	6,431,808	232,937	60,556	19,743	6,745,044
Other	452,227	4,271	1,128	2,187	459,813
Total	$ 21,474,814	$ 400,418	$ 89,631	$ 81,769	$ 22,046,632

(8) Deposits

Interest expense on deposits is summarized as follows (in thousands):

	Year Ended December 31,		
	2017	2016	2015
Transaction deposits	**$ 28,627**	$ 13,906	$ 8,821
Savings	**359**	386	383
Time:			
Certificates of deposits under $100,000	**7,702**	8,776	11,894
Certificates of deposits $100,000 and over	**12,393**	10,123	10,643
Other time deposits	**4,722**	7,303	12,429
Total time	**24,817**	26,202	34,966
Total	**$ 53,803**	$ 40,494	$ 44,170

The aggregate amounts of time deposits in denominations of $250,000 or more at December 31, 2017 and 2016 were $797 million and $866 million, respectively.

Time deposit maturities are as follows: 2018 – $1.2 billion, 2019 – $221 million, 2020 – $86 million, 2021 – $102 million, 2022 – $132 million and $307 million thereafter.

The aggregate amount of overdrawn customer transaction deposits that have been reclassified as loan balances was $5.9 million at December 31, 2017 and $9.7 million at December 31, 2016.

(9) Other Borrowings

Information relating to other borrowings is summarized as follows (dollars in thousands):

	As of December 31, 2017		Year Ended December 31, 2017		
	Balance	Rate	Average Balance	Rate	Maximum Outstanding At Any Month End
Parent company and other non-bank subsidiaries:					
Trust preferred debt	$ —	—%	$ 3,296	3.52%	$ 7,217
Other	—	—%	935	11.11%	3,104
Total other borrowings	—		4,231	7.00%	
Subordinated debentures	144,677	5.60%	144,658	5.62%	$ 144,677
Total parent company and other non-bank subsidiaries	144,677		148,889	5.65%	
BOKF, NA:					
Funds purchased	58,628	1.00%	58,064	0.73%	80,967
Repurchase agreements	516,335	0.17%	433,791	0.10%	536,094
Other borrowings:					
Federal Home Loan Bank advances	5,100,000	1.47%	5,882,466	1.13%	6,200,000
GNMA repurchase liability	19,947	4.22%	20,509	4.59%	24,139
Other	14,950	2.61%	15,382	2.38%	15,506
Total other borrowings	5,134,897		5,918,357	1.14%	
Subordinated debentures	—	—%	—	—%	—
Total BOKF, NA	5,709,860		6,410,212	1.07%	
Total other borrowed funds	$ 5,854,537		$ 6,559,101	1.18%	

	As of December 31, 2016		Year Ended December 31, 2016		
	Balance	Rate	Average Balance	Rate	Maximum Outstanding At Any Month End
Parent company and other non-bank subsidiaries:					
Trust preferred debt	$ 7,217	3.28%	$ 611	3.27%	$ 7,217
Other	1,092	8.27%	2,073	16.11%	3,157
Total other borrowings	8,309		2,684	13.19%	
Subordinated debentures	144,640	5.60%	74,428	5.59%	145,393
Total parent company and other non-bank subsidiaries	152,949		77,112	5.86%	
BOKF, NA:					
Funds purchased	57,929	0.38%	78,222	0.24%	567,103
Repurchase agreements	668,661	0.02%	589,145	0.04%	668,661
Other borrowings:					
Federal Home Loan Bank advances	4,800,000	0.72%	5,985,656	0.55%	6,500,000
GNMA repurchase liability	22,471	4.26%	15,637	4.74%	22,471
Other	15,292	2.66%	15,670	2.41%	15,797
Total other borrowings	4,837,763		6,016,963	0.57%	
Subordinated debentures	—	—%	140,414	1.35%	226,434
Total BOKF, NA	5,564,353		6,824,744	0.54%	
Total other borrowed funds	$ 5,717,302		$ 6,901,856	0.60%	

	As of December 31, 2015		Year Ended December 31, 2015		
	Balance	Rate	Average Balance	Rate	Maximum Outstanding At Any Month End
Parent company and other non-bank subsidiaries:					
Trust preferred debt	$ —	—%	$ —	—%	$ —
Other	—	—%	—	—%	—
Total other borrowings	—		—	—%	
Subordinated debentures	—	—%	—	—%	—
Total parent company and other non-bank subsidiaries	—		—	—%	
BOKF, NA:					
Funds purchased	491,192	0.15%	73,219	0.09%	491,192
Repurchase agreements	722,444	0.02%	623,921	0.04%	1,008,144
Other borrowings:					
Federal Home Loan Bank advances	4,800,000	0.48%	4,921,739	0.28%	5,000,000
GNMA repurchase liability	19,478	4.75%	16,668	4.95%	19,478
Other	18,402	2.70%	18,768	2.35%	26,058
Total other borrowings	4,837,880		4,957,175	0.33%	
Subordinated debentures	226,350	1.05%	226,332	1.84%	348,076
Total BOKF, NA	6,277,866		5,880,647	0.36%	
Total other borrowed funds	$ 6,277,866		$ 5,880,647	0.36%	

Aggregate annual principal repayments at December 31, 2017 are as follows (in thousands):

	Parent Company and Other Non-bank Subsidiaries	BOKF, NA
2018	$ —	$ 5,695,621
2019	—	956
2020	—	961
2021	—	965
2022	—	970
Thereafter	144,677	10,387
Total	$ 144,677	$ 5,709,860

Funds purchased are unsecured and generally mature within one to ninety days from the transaction date. Securities repurchase agreements are recorded as secured borrowings that generally mature within ninety days and are secured by certain available for sale securities.

Additional information relating to securities sold under agreements to repurchase and related liabilities at December 31, 2017 and 2016 is as follows (dollars in thousands):

	December 31, 2017			
Security Sold/Maturity	**Amortized Cost**	**Fair Value**	**Repurchase Liability[1]**	**Average Rate**
U.S. government agency mortgage-backed securities:				
Overnight[1]	**$ 525,452**	**$ 523,914**	**$ 516,335**	**0.17%**
Long-term	**—**	**—**	**—**	**—%**
Total Agency Securities	**$ 525,452**	**$ 523,914**	**$ 516,335**	**0.17%**

	December 31, 2016			
Security Sold/Maturity	**Amortized Cost**	**Fair Value**	**Repurchase Liability[1]**	**Average Rate**
U.S. government agency mortgage-backed securities:				
Overnight[1]	$ 655,529	$ 655,851	$ 668,661	0.02 %
Long-term	—	—	—	— %
Total Agency Securities	$ 655,529	$ 655,851	$ 668,661	0.02 %

[1] BOK Financial maintains control over the securities underlying overnight repurchase agreements and generally transfers control over securities underlying longer-term dealer repurchase agreements to the respective counterparty.

Borrowings from the Federal Home Loan Banks are used for funding purposes. In accordance with policies of the Federal Home Loan Banks, BOK Financial has granted a blanket pledge of eligible assets (generally unencumbered U.S. Treasury and residential mortgage-backed securities, 1-4 family loans and multifamily loans) as collateral for these advances. The Federal Home Loan Banks have issued letters of credit totaling $272 million to secure BOK Financial's obligations to depositors of public funds. The unused credit available to BOK Financial at December 31, 2017 pursuant to the Federal Home Loan Bank's collateral policies is $1.2 billion.

In 2016, BOK Financial issued $150 million of subordinated debt that will mature on June 30, 2056. Interest on this debt bears an interest rate of 5.375%, payable quarterly. On June 30, 2021, BOK Financial will have the option to redeem the debt at the principal amount plus accrued interest, subject to regulatory approval.

In conjunction with the acquisition of MBT, BOK Financial assumed $7.2 million of variable rate subordinated trust preferred debt. Interest was payable quarterly at three-month LIBOR plus 2.95% on $3.1 million and three-month LIBOR plus 1.82% on $4.1 million. This trust preferred debt was redeemed during 2017.

BOK Financial Securities, Inc. may borrow funds from Pershing, LLC ("Pershing"), a clearing broker/dealer and a wholly owned subsidiary of Bank of New York Mellon, for the purposes of financing securities purchases or to facilitate funding of investment banking activities, on terms to be negotiated at the time of the borrowing. BOK Financial Securities, Inc. had no borrowings from Pershing outstanding at December 31, 2017 or December 31, 2016.

In 2007, BOKF, NA issued $250 million of subordinated debt due May 15, 2017. Interest on this debt was based upon a fixed rate of 5.75% through May 14, 2012 and is based on a floating rate of three-month LIBOR plus 0.69% thereafter. The proceeds of this debt were used to fund the Worth National Bank and First United Bank acquisitions and to fund continued asset growth. The outstanding balance of this subordinated debt was $226 million at December 31, 2015. The remaining outstanding balance was called during 2016.

The Company has a liability related to the repurchase of certain delinquent residential mortgage loans previously sold into GNMA mortgage pools. Interest is payable at rates contractually due to investors.

(10) Federal and State Income Taxes

The Tax Cuts and Jobs Act (the "Act"), which was enacted on December 22, 2017, reduces the federal corporate tax rate from 35% to 21% for periods beginning January 1, 2018. Provisions of the Act are broad and complex. As result, we are still evaluating the impact that certain aspects of the Act will have on the Company's financial position and results of operations, including recognition and measurement of deferred tax assets and liabilities and the determination of effective current and deferred federal and state income tax rates. We have made reasonable estimates of the Act's impact on net deferred tax assets and recorded a provisional adjustment of $9.5 million, including $6.4 million of net deferred tax assets resulting from temporary differences recognized in Accumulated other comprehensive income on the Company's balance sheets. Additionally, we recognized a provisional adjustment of $2.2 million for deferred taxes resulting from executive compensation that may no longer be deductible.

We are not aware of any material areas where we were not able to determine provisional amounts. However, accounting for income tax effects of the Act is still in process and provisional adjustments recognized in 2017 may be adjusted as a result of our on-going evaluation, including subsequent guidance provided by federal and state taxing authorities and other information as it becomes available.

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. As a result of the Act, deferred tax balances at December 31, 2017 generally have been revalued from the previous combined federal and state statutory rate of 38.9% to 25.5%. Significant components of deferred tax assets and liabilities are as follows (in thousands):

	December 31,	
	2017	**2016**
Deferred tax assets:		
Available for sale securities mark to market	**$ 12,083**	$ 5,779
Share-based compensation	**7,598**	9,360
Credit loss allowances	**58,666**	99,191
Valuation adjustments	**8,102**	12,222
Deferred compensation	**12,215**	30,262
Unearned fees	**9,265**	11,877
Other	**30,859**	42,541
Total deferred tax assets	**138,788**	211,232
Deferred tax liabilities:		
Depreciation	**15,817**	25,877
Mortgage servicing rights	**63,112**	92,748
Lease financing	**9,973**	17,923
Other	**34,880**	45,363
Total deferred tax liabilities	**123,782**	181,911
Net deferred tax assets	**$ 15,006**	$ 29,321

No valuation allowance was necessary on deferred tax assets as of December 31, 2017 and 2016.

The significant components of the provision for income taxes attributable to continuing operations for BOK Financial are shown below (in thousands):

	Year Ended December 31,		
	2017	**2016**	**2015**
Current income tax expense:			
Federal	**$ 141,607**	$ 107,379	$ 117,566
State	**14,592**	11,028	12,397
Total current income tax expense	**156,199**	118,407	129,963
Deferred income tax expense:			
Federal	**25,525**	(11,340)	8,397
State	**869**	(690)	1,024
Total deferred income tax expense	**26,394**	(12,030)	9,421
Total income tax expense	**$ 182,593**	$ 106,377	$ 139,384

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

	Year Ended December 31,		
	2017	2016	2015
Amount:			
Federal statutory tax	**$ 181,397**	$ 118,530	$ 151,075
Tax exempt revenue	**(12,402)**	(10,544)	(9,553)
Effect of state income taxes, net of federal benefit	**10,701**	6,478	9,082
Utilization of tax credits:			
Low-income housing tax credits, net of amortization	**(5,356)**	(4,171)	(3,874)
Other tax credits	**(1,455)**	(2,085)	(2,085)
Bank-owned life insurance	**(3,121)**	(2,911)	(3,264)
Share-based compensation	**(2,817)**	—	—
Revaluation of net deferred tax assets due to change in federal tax rates	**9,456**	—	—
Write-off of deferred tax assets related to executive compensation	**2,216**	—	—
Other, net	**3,974**	1,080	(1,997)
Total income tax expense	**$ 182,593**	$ 106,377	$ 139,384

	Year Ended December 31,		
	2017	2016	2015
Percent of pretax income:			
Federal statutory tax	**35.0%**	35.0%	35.0%
Tax exempt revenue	**(2.4)**	(3.1)	(2.2)
Effect of state income taxes, net of federal benefit	**2.0**	1.9	2.1
Utilization of tax credits:			
Low-income housing tax credits, net of amortization	**(1.0)**	(1.2)	(0.9)
Other tax credits	**(0.3)**	(0.6)	(0.5)
Bank-owned life insurance	**(0.6)**	(0.9)	(0.7)
Share-based compensation	**(0.5)**	—	—
Revaluation of net deferred tax assets due to change in federal tax rates	**1.8**	—	—
Write-off of deferred tax assets related to executive compensation	**0.4**	—	—
Other, net	**0.8**	0.3	(0.5)
Total	**35.2%**	31.4%	32.3%

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows (in thousands):

	2017	2016	2015
Balance as of January 1	**$ 15,841**	$ 13,232	$ 13,374
Additions for tax for current year positions	**4,645**	5,640	2,226
Settlements during the period	**—**	—	—
Lapses of applicable statute of limitations	**(2,376)**	(3,031)	(2,368)
Balance as of December 31	**$ 18,110**	$ 15,841	$ 13,232

Of the above unrecognized tax benefits, $12.2 million, if recognized, would have affected the effective tax rate.

BOK Financial recognizes interest and penalties accrued related to unrecognized tax benefits in income tax expense. The Company recognized $1.2 million for 2017, $1.0 million for 2016 and $1.0 million for 2015 in interest and penalties. The Company had approximately $4.0 million and $3.5 million accrued for the payment of interest and penalties at December 31, 2017 and 2016, respectively. Federal statutes remain open for federal tax returns filed in the previous three reporting periods. Various state income tax statutes remain open for the previous three to six reporting periods.

(11) Employee Benefits

BOK Financial sponsors a defined benefit cash balance Pension Plan for all employees who satisfy certain age and service requirements. Pension Plan benefits were curtailed as of April 1, 2006. No participants may be added to the plan and no additional service benefits will be accrued. During 2017 and 2016, interest accrued on employees' account balances at a variable rate tied to the five-year trailing average of five-year U.S. Treasury securities plus 1.5%. The rate has a floor of 3.0% and a ceiling of 5.0%. The 2017 quarterly variable rates remained at 3.00%.

The following table presents information regarding this plan (in thousands):

	December 31,	
	2017	**2016**
Change in projected benefit obligation:		
Projected benefit obligation at beginning of year	**$ 34,964**	$ 38,797
Interest cost	**1,153**	1,309
Actuarial loss (gain)	**223**	(55)
Benefits paid	**(5,443)**	(5,087)
Projected benefit obligation at end of year[1,2]	**$ 30,897**	$ 34,964
Change in plan assets:		
Plan assets at fair value at beginning of year	**$ 41,769**	$ 44,190
Actual return on plan assets	**4,093**	2,666
Benefits paid	**(5,443)**	(5,087)
Plan assets at fair value at end of year	**$ 40,419**	$ 41,769
Funded status of the plan	**$ 9,522**	$ 6,805
Components of net periodic benefit:		
Interest cost	**$ 1,153**	$ 1,309
Expected return on plan assets	**(2,041)**	(2,167)
Other	**184**	(741)
Net periodic benefit cost (credit)	**$ (704)**	$ (1,599)

[1] Projected benefit obligation equals accumulated benefit obligation.
[2] Projected benefit obligation is based on January 1 measurement date.

Weighted-average assumptions as of December 31:	**2017**	**2016**
Discount rate	**3.30%**	3.43%
Expected return on plan assets	**5.50%**	5.00%

As of December 31, 2017, expected future benefit payments related to the Pension Plan were as follows (in thousands):

2018	$ 2,831
2019	2,889
2020	2,763
2021	2,769
2022	2,813
Thereafter	25,501
Total estimated future benefit payments	$ 39,566

Assets of the Pension Plan consist primarily of shares in the Cavanal Hill Active Core Fund. The stated objective of this fund is to provide an attractive total return with a well-balanced mix of equities and bonds. The typical portfolio mix is approximately 60% equities and 40% bonds. The net asset value of shares in the Cavanal Hill Funds is reported daily based on market quotations for the Fund's securities. Management considers the Fund's recent and long-term performance as indicators when setting the expected return on plan assets. The maximum tax deductible Pension Plan contribution for 2017 was $10 million. No minimum contribution was required for 2017, 2016 or 2015.

Employee contributions to the Thrift Plan are eligible for Company matching equal to 6% of base compensation, as defined in the plan. The Company-provided matching contribution rates range from 50% for employees with less than 4 years of service to 200% for employees with 15 or more years of service. Additionally, a maximum Company-provided, non-elective annual contribution of up to $750 per participant is provided for employees whose annual base compensation is less than $40,000. Participants may direct investments in their accounts to a variety of options, including a BOK Financial common stock fund and Cavanal Hill funds. Employer contributions, which are invested in accordance with the participant's investment options, vest over five years. Thrift Plan expenses were $22.8 million for 2017, $22.4 million for 2016 and $20.6 million for 2015.

(12) Share-Based Compensation Plans

The shareholders and Board of Directors of BOK Financial have approved various share-based compensation plans. An independent compensation committee of the Board of Directors determines the number of awards granted to the Chief Executive Officer and other senior executives. Share-based compensation is granted to other officers and employees as determined by the Chief Executive Officer.

The following table presents stock options outstanding during 2017, 2016 and 2015 under these plans (in thousands, except for per share data):

	Number	Weighted-Average Exercise Price	Aggregate Intrinsic Value
Options outstanding at December 31, 2014	793,891	$ 49.05	$ 8,725
Options awarded	—	—	
Options exercised	(286,678)	47.86	
Options forfeited	(22,304)	48.90	
Options expired	(4,874)	51.32	
Options outstanding at December 31, 2015	480,035	49.75	4,821
Options awarded	—	—	
Options exercised	(249,404)	47.60	
Options forfeited	(4,098)	55.44	
Options expired	(8,009)	53.43	
Options outstanding at December 31, 2016	218,524	51.95	6,793
Options awarded	—	—	
Options exercised	**(99,556)**	**50.35**	
Options forfeited	**(624)**	**54.95**	
Options expired	**(793)**	**48.75**	
Options outstanding at December 31, 2017	**117,551**	**$ 53.26**	**$ 4,592**
Options vested at:			
December 31, 2015	243,395	$ 48.17	$ 2,829
December 31, 2016	93,117	46.22	3,429
December 31, 2017	**51,286**	**48.62**	**2,241**

At December 31, 2017, the weighted average remaining contractual life of options outstanding was 2.54 years and the weighted average remaining contractual life of vested options was 1.16 years. The aggregate intrinsic value of options exercised was $3.5 million for 2017, $6.2 million for 2016 and $5.1 million for 2015.

The following represents a summary of the non-vested stock awards as of December 31, 2017 (in thousands):

	Shares	Weighted Average Grant Date Fair Value
Non-vested at January 1, 2015	688,611	
Granted	312,755	$57.66
Vested	(114,045)	$50.15
Forfeited	(96,212)	$58.33
Non-vested at December 31, 2015	791,109	
Granted	256,670	$55.35
Vested	(213,941)	$55.87
Forfeited	(47,132)	$57.86
Non-vested at December 31, 2016	786,706	
Granted	177,807	$86.95
Vested	(194,419)	$63.07
Forfeited	(102,991)	$78.70
Non-vested at December 31, 2017	667,103	

Compensation expense recognized on non-vested shares totaled $23.2 million for 2017, $10.2 million for 2016 and $12.0 million for 2015. Unrecognized compensation cost of non-vested shares totaled $15.8 million at December 31, 2017. We expect to recognize compensation expense of $9.9 million in 2018, $5.9 million in 2019, and $82 thousand in 2020.

Compensation cost for 296,518 non-vested shares is variable based on the current fair value of BOK Financial common shares. All non-vested shares are subject to forfeiture for failure to meet service requirements and 297,567 non-vested shares may be increased or decreased based on performance criteria defined in the plan documents.

During January 2018, BOK Financial awarded 150,419 shares of non-vested stock with a fair value per award of $94.77. The aggregate compensation cost of these awards totaled approximately $14.3 million.

(13) Related Parties

In compliance with applicable banking regulations, the Company may extend credit to certain executive officers, directors, principal shareholders and their affiliates (collectively referred to as "related parties") in the ordinary course of business. The Company's loans to related parties do not involve more than the normal credit risk and there are no nonaccruing or impaired related party loans outstanding at December 31, 2017 or 2016.

Activity in loans to related parties is summarized as follows (in thousands):

	Year Ended December 31,	
	2017	**2016**
Beginning balance	**$ 136,945**	$ 594,225
Advances	**1,559,291**	884,511
Payments	**(1,585,865)**	(1,123,747)
Adjustments[1]	**(125)**	(218,044)
Ending balance	**$ 110,246**	$ 136,945

[1] Adjustments generally consist of changes in status as a related party.

As defined by banking regulations, loan commitments and equity investments to a single affiliate may not exceed 10% of unimpaired capital and surplus while loan commitments and equity investments to all affiliates may not exceed 20% of unimpaired capital and surplus. All loans to affiliates must be fully secured by eligible collateral. At December 31, 2017, loan commitments and equity investments were limited to $310 million to a single affiliate and $620 million to all affiliates. The largest loan commitment and equity investment to a single affiliate was $223 million and the aggregate loan commitments and equity investments to all affiliates were $323 million. The largest outstanding amount to a single affiliate at December 31, 2017 was $12 million and the total outstanding amounts to all affiliates were $16 million. At December 31, 2016, total loan commitments and equity investments to all affiliates were $337 million and the total outstanding amounts to all affiliates were $39 million.

Certain related parties are customers of the Company for services other than loans, including consumer banking, corporate banking, risk management, wealth management, brokerage and trading, or fiduciary/trust services. The Company engages in transactions with related parties in the ordinary course of business in compliance with applicable regulations.

The Company rents office space in facilities owned by affiliates of Mr. Kaiser, its Chairman and principal shareholder. Lease payments totaled $1.0 million for 2017, $1.1 million for 2016 and $975 thousand for 2015. During 2017, the Company also invested $580 thousand in QRC Valve Distributors, which is indirectly owned by Mr. Kaiser.

QuikTrip Corporation has entered into a fee sharing agreement with TransFund, BOKF's electronic funds transfer network ("TransFund"), respecting transactions completed at TransFund automated teller machines placed in QuikTrip locations. In 2017, BOKF paid QuikTrip approximately $8.3 million pursuant to this agreement. During 2017, the Company sold $1.2 million of Oklahoma state income tax credits to QuikTrip Corporation. Mr. Cadieux, a BOK Financial director, is Chief Executive Officer, Chairman, and a significant shareholder of QuikTrip Corporation.

Cavanal Hill Investment Management, Inc., a wholly-owned subsidiary of BOKF, NA, is the administrator to and investment advisor for the Cavanal Hill Funds (the "Funds"), a diversified, open-ended investment company established as a business trust under the Investment Company Act of 1940 (the "1940 Act"). BOKF, NA is custodian and Cavanal Hill Distributors, Inc. is distributor for the Funds. The Funds' products are offered to customers, employee benefit plans, trusts and the general public in the ordinary course of business. Approximately 93% of the Funds' assets of $3.7 billion are held for the Company's clients. A Company executive officer serves on the Funds' board of trustees and officers of BOKF, NA serve as president and secretary of the Funds. A majority of the members of the Funds' board of trustees are, however, independent of the Company and the Funds are managed by its board of trustees.

(14) Commitments and Contingent Liabilities

Litigation Contingencies

As a member of Visa, BOK Financial is obligated for a proportionate share of certain covered litigation losses incurred by Visa under a retrospective responsibility plan. A contingent liability was recognized for the Company's share of Visa's covered litigation liabilities. Visa funded an escrow account to cover litigation claims, including covered litigation losses under the retrospective responsibility plan, with proceeds from its initial public offering in 2008 and from available cash.

BOK Financial currently owns 252,233 Visa Class B shares which are convertible into 415,755 shares of Visa Class A shares after the final settlement of all covered litigation. Class B shares may be diluted in the future if the escrow fund is not adequate to cover future covered litigation costs. Therefore, no value has been currently assigned to the Class B shares and no value may be assigned until the Class B shares are converted into a known number of Class A shares.

On June 24, 2015, the Bank 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 the Bank 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 $48 million, less the value of the facilities securing repayment of the bonds), subject to oversight by a court appointed monitor. On September 7, 2016, the Bank agreed, and the SEC entered, a consent order finding that the Bank had violated Section 17(a) of the Securities Act of 1933 and Section 10(b) of the Securities Exchange Act and requiring the Bank to disgorge $1,067,721 of fees and pay a civil penalty of $600,000. The Bank has disgorged the fees and paid the penalty.

On August 26, 2016, the Bank 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 the Bank participated in the fraudulent sale of securities by the principals. On September 14, 2016, the Bank was sued in the District Court of Tulsa County, Oklahoma by 19 bondholders alleging the Bank 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. Management has been advised by counsel that the Bank has valid defenses to the claims.

On September 15, 2017, the principal of the bond issuances filed for protection under Chapter 11 of the United States Bankruptcy Code in the United States Bankruptcy Court for the Northern District of Georgia. The obligation of the principal to pay all principal and interest on the bonds is non-dischargeable in bankruptcy. The Bank expects the Court ordered payment plan will result in the payment of the bonds by the principals. Accordingly, 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 14, 2017, the Bank 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 the Bank also served as indenture trustee. The bondholders allege the Bank failed to disclose that the seller of the purchased facilities had engaged in the conduct complained of in the New Jersey action. The Bank 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 the Bank has valid defenses to the claims of these bondholders. It is the opinion of management that no loss is probable at this time.

The County of Bernalillo, New Mexico, commenced arbitration pursuant to the Arbitration Rules of FINRA seeking recovery of $5.6 million alleging that various municipal bonds purchased by the elected County Treasurer of Bernalillo County, New Mexico, from BOK Financial Securities, Inc. were unsuitable. The arbitration was conducted in July 2017. The arbitration panel found the County of Bernalillo's complaint frivolous and awarded BOK Financial Securities, Inc. attorney fees and costs. The County has sued in the United States District Court for New Mexico to set aside the award of fees and costs to BOK Financial Securities but not the finding that the County's complaint was frivolous.

On March 30, 2017, two deposit customers of the Bank sued the Bank in the District Court of Harris County, Texas. A judgment creditor had served a garnishment summons on the Bank. The deposit customers allege that, because the Bank was unable to produce adequate documentation of ownership of a series of deposit accounts at the Bank owned by them, they were compelled to enter into a settlement agreement with the judgment creditor pursuant to which the Bank paid $4.2 million from the accounts to the judgment creditor. The two deposit customers sought $7 million. The claim was mediated resulting in a settlement in which the Bank paid the plaintiffs $1 million.

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. BOKF, NA was previously sued in a class action in the United States District Court for the Northern District of Oklahoma making the same allegations. Pursuant to a motion to dismiss, the Northern District of Oklahoma Court action was dismissed. Other courts considering the question whether extended overdraft fees are interest have likewise determined such fees are not interest. BOKF, NA has moved to dismiss the action. The Northern District of Texas Action was dismissed upon motion by the Bank with leave granted the plaintiff to file an amended complaint. The plaintiff filed an amended complaint. The Bank has again moved to dismiss the complaint, which motion to dismiss is pending before the Court. 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 determined by the nature of the entity. Variable interest entities are generally defined as entities that either do not have sufficient equity to finance their activities without support from other parties or whose equity investors lack a controlling financial interest. Variable interest entities are consolidated based on the determination that the Company is the primary beneficiary including the power to direct the activities that most significantly impact the variable interest's economic performance and the obligation to absorb losses of the variable interest or the right to receive benefits of the variable interest that could be significant to the variable interest.

BOKF Equity, LLC, an indirect wholly-owned subsidiary, is the general partner of two consolidated private equity funds (“the Funds”). The Funds provide alternative investment opportunities to certain customers, some of which are related parties, through unaffiliated limited partnerships. These unaffiliated limited partnerships generally invest in distressed assets, asset buy-outs or venture capital companies. As general partner, BOKF Equity, LLC has the power to direct activities that most significantly affect the Funds' performance and contingent obligations to make additional investments totaling $3.4 million at December 31, 2017. Substantially all of the obligations are offset by limited partner commitments. The Company does not accrue its contingent liability to fund investments. The Volcker Rule in Title VI of the Dodd-Frank Act will limit both the amount and structure of these type of investments.

Consolidated tax credit entities represent the Company's interest in entities earning federal new market tax credits related to qualifying loans for which the Company has the power to direct the activities that most significantly impact the variable interest's economic performance of the entity including being the primary beneficiary of or the obligation to absorb losses of the variable interest that could be significant to the variable interest. The creditors underlying the other borrowings of consolidated tax credit entities do not have recourse to the general credit of BOKF.

The Company also has interests in various unrelated alternative investments generally consisting of unconsolidated limited partnership interests in or loans to entities for which investment return is in the form of tax credits or that invest in distressed real estate loans and properties, energy development, venture capital and other activities. The Company is prohibited by banking regulations from controlling or actively managing the activities of these investments and the Company's maximum exposure to loss is restricted to its investment balance. The Company's obligation to fund alternative investments is included in Other liabilities in the Consolidated Balance Sheets.

A summary of consolidated and unconsolidated alternative investments as of December 31, 2017 and December 31, 2016 is as follows (in thousands):

	December 31, 2017				
	Loans	Other Assets	Other Liabilities	Other Borrowings	Non-controlling Interests
Consolidated:					
Private equity funds	**$ —**	**$ 14,783**	**$ —**	**$ —**	**$ 11,927**
Tax credit entities	**10,000**	**10,964**	**—**	**10,964**	**10,000**
Other	**—**	**1,040**	**—**	**—**	**1,040**
Total consolidated	**$ 10,000**	**$ 26,787**	**$ —**	**$ 10,964**	**$ 22,967**
Unconsolidated:					
Tax credit entities	**$ 52,852**	**$ 153,506**	**$ 47,859**	**$ —**	**$ —**
Other	**—**	**38,397**	**22,968**	**—**	**—**
Total unconsolidated	**$ 52,852**	**$ 191,903**	**$ 70,827**	**$ —**	**$ —**

	December 31, 2016				
	Loans	Other Assets	Other Liabilities	Other Borrowings	Non-controlling Interests
Consolidated:					
Private equity funds	$ —	$ 17,357	$ —	$ —	$ 13,237
Tax credit entities	10,000	11,585	—	10,964	10,000
Other	—	29,783	3,189	1,092	8,266
Total consolidated	$ 10,000	$ 58,725	$ 3,189	$ 12,056	$ 31,503
Unconsolidated:					
Tax credit entities	$ 44,488	$ 143,715	$ 63,329	$ —	$ —
Other	—	31,675	15,028	—	—
Total unconsolidated	$ 44,488	$ 175,390	$ 78,357	$ —	$ —

Other Commitments and Contingencies

Cavanal Hill Funds' assets include U.S. Treasury and government securities money market funds. Assets of these funds consist of highly-rated, short-term obligations of the U.S. Treasury and Agencies. The net asset value of units in these funds was $1.00 at December 31, 2017. An investment in these funds is not insured by the Federal Deposit Insurance Corporation or guaranteed by BOK Financial or any of its subsidiaries. BOK Financial may, but is not obligated to purchase assets from these funds to maintain the net asset value at $1.00. No assets were purchased from the funds in 2017 or 2016.

Total rent expense for BOK Financial was $27.5 million in 2017, $25.8 million in 2016 and $25.2 million in 2015. At December 31, 2017, future minimum lease payments for premises under operating leases were as follows: $18.9 million in 2018, $19.3 million in 2019, $17.1 million in 2020, $15.0 million in 2021, $9.7 million in 2022 and $73.0 million thereafter. BOKF, NA is obligated under a long-term lease for its bank premises in downtown Tulsa. The lease term, which began November 1, 1976, is for fifty-seven years with an option to terminate in 2024 with a two-year prior written notice. Premises leases may include options to renew at then current market rates and may include escalation provisions based upon changes in consumer price index or similar benchmarks.

The Federal Reserve Bank requires member banks to maintain certain minimum average cash balances. Member banks may satisfy reserve balance requirements through holdings of vault cash and balances maintained directly with a Federal Reserve Bank. The combined average balance of vault cash and balances held at the Federal Reserve Bank was $1.9 billion for the year ended December 31, 2017 and $1.9 billion for the year ended December 31, 2016.

(15) Shareholders Equity

Preferred Stock

One billion shares of preferred stock with a par value of $0.00005 per share are authorized. The Series A Preferred Stock has no voting rights except as otherwise provided by Oklahoma corporate law and may be converted into one share of Common Stock for each 36 shares of Series A Preferred Stock at the option of the holder. Dividends are cumulative at an annual rate of ten percent of the $0.06 per share liquidation preference value when declared and are payable in cash. Aggregate liquidation preference is $15 million. No Series A Preferred Stock was outstanding in 2017, 2016 or 2015.

Common Stock

Common stock consists of 2.5 billion authorized shares with a $0.00006 par value. Holders of common shares are entitled to one vote per share at the election of the Board of Directors and on any question arising at any shareholders' meeting and to receive dividends when and as declared. Additionally, regulations restrict the ability of national banks and bank holding companies to pay dividends.

Subsidiary Bank

The amounts of dividends that BOK Financial's subsidiary bank can declare and the amounts of loans the subsidiary bank can extend to affiliates are limited by various federal banking regulations and state corporate law. Generally, dividends declared during a calendar year are limited to net profits, as defined, for the year plus retained profits for the preceding two years. The amounts of dividends are further restricted by minimum capital requirements.

Regulatory Capital

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

New capital rules were effective for BOK Financial on January 1, 2015. Components of these rules will phase in through January 1, 2019. A bank falling below the minimum capital requirements, 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. For a banking institution to qualify as well capitalized, Common Equity Tier 1, Tier I, Total and Leverage capital ratios must be at least 6.5%, 8%, 10% and 5%, respectively. Tier I capital consists primarily of common stockholders' equity, excluding unrealized gains or losses on available for sale securities, less goodwill, core deposit premiums and certain other intangible assets. Total capital consists primarily of Tier I capital plus preferred stock, subordinated debt and allowances for credit losses, subject to certain limitations. The Bank exceeded the regulatory definition of well capitalized as of December 31, 2017 and December 31, 2016.

A summary of regulatory capital minimum requirements and levels follows (dollars in thousands):

	Minimum Capital Requirement	Capital Conservation Buffer[1]	Minimum Capital Requirement Including Capital Conservation Buffer	December 31, 2017		December 31, 2016	
Common Equity Tier 1 Capital (to Risk Weighted Assets):							
Consolidated	**4.50%**	**2.50%**	**7.00%**	**3,074,981**	**12.05%**	$ 2,834,532	11.21 %
BOKF, NA	**4.50%**	**N/A**	**4.50%**	**2,870,694**	**11.34%**	2,609,450	10.65 %
Mobank[2]	**4.50%**	**N/A**	**4.50%**	**N/A**	**N/A**	54,616	10.03 %
Tier I Capital (to Risk Weighted Assets):							
Consolidated	**6.00%**	**2.50%**	**8.50%**	**$ 3,074,981**	**12.05%**	$ 2,834,532	11.21 %
BOKF, NA	**6.00%**	**N/A**	**6.00%**	**2,870,694**	**11.34%**	2,609,450	10.65 %
Mobank[2]	**6.00%**	**N/A**	**6.00%**	**N/A**	**N/A**	54,616	10.03 %
Total Capital (to Risk Weighted Assets):							
Consolidated	**8.00%**	**2.50%**	**10.50%**	**$ 3,455,709**	**13.54%**	$ 3,238,323	12.81 %
BOKF, NA	**8.00%**	**N/A**	**8.00%**	**3,105,117**	**12.27%**	2,866,949	11.70 %
Mobank[2]	**8.00%**	**N/A**	**8.00%**	**N/A**	**N/A**	54,617	10.03 %
Leverage (Tier I Capital to Average Assets):							
Consolidated	**4.00%**	**N/A**	**4.00%**	**$ 3,074,981**	**9.31%**	$ 2,834,532	8.72 %
BOKF, NA	**4.00%**	**N/A**	**4.00%**	**2,870,694**	**8.73%**	2,609,450	8.11 %
Mobank[2]	**4.00%**	**N/A**	**4.00%**	**N/A**	**N/A**	54,616	8.37 %

[1] Capital conservation buffer is effective January 1, 2016 and is phased in through 2019. The phased in capital conservation buffer was 1.25% at December 31, 2017 and 0.625% at December 31, 2016. The fully phased in requirement of 2.50% is included in the table above.

[2] Missouri Bank and Trust Company of Kansas City dba Mobank was acquired by BOK Financial effective December 1, 2016 and was merged into BOKF, NA effective February 17, 2017.

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. AOCI also includes unrealized gains on AFS securities that were transferred from AFS to investment securities in 2011. Such amounts were amortized over the estimated remaining life of the security as an adjustment to yield, offsetting the related amortization of premium on the transferred securities. 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. Accumulated losses on the interest rate lock hedge of the subordinated debt issuance in 2005 were reclassified into income over the ten-year life of the debt. 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	**Investment Securities Transferred from AFS**	**Employee Benefit Plans**	**Loss on Effective Cash Flow Hedges**	**Total**
Balance, December 31, 2014	$ 59,239	$ 376	$ (2,868)	$ (74)	$ 56,673
Net change in unrealized gain (loss)	(48,607)	—	1,804	—	(46,803)
Reclassification adjustments included in earnings:					
Interest revenue, Investment securities, Taxable securities	—	(503)	—	—	(503)
Interest expense, Subordinated debentures	—	—	—	121	121
Net impairment losses recognized in earnings	1,819	—	—	—	1,819
Gain on available for sale securities, net	(12,058)	—	—	—	(12,058)
Other comprehensive income (loss), before income taxes	(58,846)	(503)	1,804	121	(57,424)
Federal and state income tax[1]	(22,891)	(195)	701	47	(22,338)
Other comprehensive income (loss), net of income taxes	(35,955)	(308)	1,103	74	(35,086)
Balance, December 31, 2015	23,284	68	(1,765)	—	21,587
Net change in unrealized gain (loss)	(41,333)	—	(188)	—	(41,521)
Reclassification adjustments included in earnings:					
Interest revenue, Investment securities, Taxable securities	—	(112)	—	—	(112)
Interest expense, Subordinated debentures	—	—	—	—	—
Net impairment losses recognized in earnings	—	—	—	—	—
Gain on available for sale securities, net	(11,675)	—	—	—	(11,675)
Other comprehensive income (loss), before income taxes	(53,008)	(112)	(188)	—	(53,308)
Federal and state income tax[1]	(20,637)	(44)	(73)	—	(20,754)
Other comprehensive income (loss), net of income taxes	(32,371)	(68)	(115)	—	(32,554)
Balance, December 31, 2016	(9,087)	—	(1,880)	—	(10,967)
Net change in unrealized gain (loss)	**(28,170)**	**—**	**2,018**	**—**	**(26,152)**
Reclassification adjustments included in earnings:					
Interest revenue, Investment securities, Taxable securities	—	—	—	—	—
Interest expense, Subordinated debentures	**—**	**—**	**—**	**—**	**—**
Net impairment losses recognized in earnings	—	—	—	—	—
Gain on available for sale securities, net	**(4,428)**	**—**	**—**	**—**	**(4,428)**
Other comprehensive income (loss), before income taxes	**(32,598)**	**—**	**2,018**	**—**	**(30,580)**
Federal and state income tax[1]	**(12,708)**	**—**	**785**	**—**	**(11,923)**
Other comprehensive income (loss), net of income taxes	**(19,890)**	**—**	**1,233**	**—**	**(18,657)**
Reclassification of stranded accumulated other comprehensive loss related to tax reform	**(6,408)**	**—**	**(142)**	**—**	**(6,550)**
Balance, December 31, 2017	**$ (35,385)**	**$ —**	**$ (789)**	**$ —**	**$ (36,174)**

[1] Calculated using 39% effective tax rate.

(16) Earnings Per Share

The following table presents the computation of basic and diluted earnings per share (dollars in thousands, except per share data):

	Year Ended		
	2017	2016	2015
Numerator:			
Net income attributable to BOK Financial Corp. shareholders	**$ 334,644**	$ 232,668	$ 288,565
Less: Earnings allocated to participating securities	**3,561**	2,883	3,383
Numerator for basic earnings per share – income available to common shareholders	**331,083**	229,785	285,182
Effect of reallocating undistributed earnings of participating securities	**2**	1	3
Numerator for diluted earnings per share – income available to common shareholders	**$ 331,085**	$ 229,786	$ 285,185
Denominator:			
Weighted average shares outstanding	**65,440,832**	65,901,110	68,397,215
Less: Participating securities included in weighted average shares outstanding	**695,468**	815,483	802,526
Denominator for basic earnings per common share	**64,745,364**	65,085,627	67,594,689
Dilutive effect of employee stock compensation plans[1]	**60,920**	58,271	96,969
Denominator for diluted earnings per common share	**64,806,284**	65,143,898	67,691,658
Basic earnings per share	**$ 5.11**	$ 3.53	$ 4.22
Diluted earnings per share	**$ 5.11**	$ 3.53	$ 4.21
[1] Excludes employee stock options with exercise prices greater than current market price.	—	—	—

(17) Reportable Segments

BOK Financial operates 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 to 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 the consumer branch network and all mortgage banking activities. Wealth Management provides fiduciary services, private bank 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 its lines of business, BOK Financial has a Funds Management unit. The primary purpose of this unit is to manage 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.

BOK Financial allocates resources and evaluates performance of its lines of business after 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 on statutory rates. The allocation for the prior comparable periods have been revised on a comparable basis.

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 duration. Market rates are generally based on the applicable LIBOR or interest rate swap rates, adjusted for prepayment risk. This method of transfer-pricing funds that support 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 based on rates which approximate the wholesale market rates for funds with similar duration and re-pricing 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 re-pricing characteristics reflected in a combination of the short-term LIBOR rates 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 intermediate swap rates. The expected duration ranges from 30 days for certain rate-sensitive deposits to five years.

Substantially all revenue is from domestic customers. No single external customer accounts for more than 10% of total revenue.

Net loans charged off and provision for credit losses represents net loans charged off as attributed to the lines of business and the provision for credit losses in excess of net charge-offs attributed to Funds Management and Other.

The acquisition of Mobank on December 1, 2016 was allocated to the operating segments on February 21, 2017 when Mobank was mered into BOKF, NA. Operations, assets and liabilities of Mobank were included in Funds Management and Other during this time period.

Reportable segments reconciliation to the Consolidated Financial Statements for the year ended December 31, 2017 is as follows (in thousands):

	Commercial	Consumer	Wealth Management	Funds Management and Other	BOK Financial Consolidated
Net interest and dividend revenue from external sources	$ 588,938	$ 96,360	$ 45,024	$ 111,379	$ 841,701
Net interest revenue (expense) from internal sources	(84,290)	47,218	38,344	(1,272)	—
Net interest and dividend revenue	504,648	143,578	83,368	110,107	841,701
Provision for credit losses	13,881	4,783	(696)	(24,968)	(7,000)
Net interest and dividend revenue after provision for credit losses	490,767	138,795	84,064	135,075	848,701
Other operating revenue	206,110	196,231	301,434	(8,681)	695,094
Other operating expense	226,334	224,323	246,626	328,234	1,025,517
Net direct contribution	470,543	110,703	138,872	(201,840)	518,278
Gain (loss) on financial instruments, net	52	(3,331)	—	3,279	—
Change in fair value of mortgage servicing rights	—	172	—	(172)	—
Gain (loss) on repossessed assets, net	(2,681)	223	387	2,071	—
Corporate expense allocations	33,958	67,761	40,562	(142,281)	—
Net income before taxes	433,956	40,006	98,697	(54,381)	518,278
Federal and state income taxes	168,809	15,562	38,393	(40,171)	182,593
Net income	265,147	24,444	60,304	(14,210)	335,685
Net income attributable to non-controlling interests	—	—	—	1,041	1,041
Net income attributable to BOK Financial Corp. shareholders	$ 265,147	$ 24,444	$ 60,304	$ (15,251)	$ 334,644
Average assets	$ 17,517,217	$ 8,956,713	$ 7,072,622	$ (599,058)	$ 32,947,494

Reportable segments reconciliation to the Consolidated Financial Statements for the year ended December 31, 2016 is as follows (in thousands):

	Commercial	Consumer	Wealth Management	Funds Management and Other	BOK Financial Consolidated
Net interest and dividend revenue from external sources	$ 492,967	$ 85,998	$ 33,006	$ 135,257	$ 747,228
Net interest revenue (expense) from internal sources	(58,781)	37,777	29,043	(8,039)	—
Net interest and dividend revenue	434,186	123,775	62,049	127,218	747,228
Provision for credit losses	32,959	4,927	(801)	27,915	65,000
Net interest and dividend revenue after provision for credit losses	401,227	118,848	62,850	99,303	682,228
Other operating revenue	195,521	224,802	283,222	(29,525)	674,020
Other operating expense	216,451	249,744	250,994	300,401	1,017,590
Net direct contribution	380,297	93,906	95,078	(230,623)	338,658
Gain (loss) on financial instruments, net	10	(26,252)	(42)	26,284	—
Change in fair value of mortgage servicing rights	—	(2,193)	—	2,193	—
Gain on repossessed assets, net	669	979	—	(1,648)	—
Corporate expense allocations	35,760	66,411	42,378	(144,549)	—
Net income before taxes	345,216	29	52,658	(59,245)	338,658
Federal and state income taxes	134,289	11	20,484	(48,407)	106,377
Net income	210,927	18	32,174	(10,838)	232,281
Net loss attributable to non-controlling interests	—	—	—	(387)	(387)
Net income attributable to BOK Financial Corp. shareholders	$ 210,927	$ 18	$ 32,174	$ (10,451)	$ 232,668
Average assets	$ 16,998,626	$ 8,722,372	$ 6,281,127	$ 276,277	$ 32,278,402

Reportable segments reconciliation to the Consolidated Financial Statements for the year ended December 31, 2015 is as follows (in thousands):

	Commercial	Consumer	Wealth Management	Funds Management and Other	BOK Financial Consolidated
Net interest and dividend revenue from external sources	$ 439,751	$ 84,848	$ 24,744	$ 154,011	$ 703,354
Net interest revenue (expense) from internal sources	(52,313)	28,503	24,043	(233)	—
Net interest and dividend revenue	387,438	113,351	48,787	153,778	703,354
Provision for credit losses	(6,748)	6,934	(1,083)	34,897	34,000
Net interest and dividend revenue after provision for credit losses	394,186	106,417	49,870	118,881	669,354
Other operating revenue	177,729	218,095	267,523	(4,867)	658,480
Other operating expense	202,804	203,070	228,664	261,653	896,191
Net direct contribution	369,111	121,442	88,729	(147,639)	431,643
Loss on financial instruments, net	—	(4,712)	(204)	4,916	—
Change in fair value of mortgage servicing rights	—	(4,853)	—	4,853	—
Gain on repossessed assets, net	708	916	—	(1,624)	—
Corporate expense allocations	43,279	74,936	40,357	(158,572)	—
Net income before taxes	326,540	37,857	48,168	19,078	431,643
Federal and state income taxes	127,024	14,726	18,737	(21,103)	139,384
Net income	199,516	23,131	29,431	40,181	292,259
Net income attributable to non-controlling interests	—	—	—	3,694	3,694
Net income attributable to BOK Financial Corp. shareholders	$ 199,516	$ 23,131	$ 29,431	$ 36,487	$ 288,565
Average assets	$ 16,284,527	$ 8,836,327	$ 5,444,483	$ 9,418	$ 30,574,755

(18) 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 year ended December 31, 2017 and 2016, respectively. Transfers between significant other observable inputs and significant unobservable inputs during the year ended December 31, 2017 and 2016 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 December 31, 2017 and 2016.

Assets and Liabilities Measured at Fair Value on a Recurring Basis

The fair value of financial assets and liabilities that are measured on a recurring basis is as follows as of December 31, 2017 (in thousands):

	Total	Quoted Prices in Active Markets for Identical Instruments	Significant Other Observable Inputs	Significant Unobservable Inputs
Assets:				
Trading securities:				
U.S. government agency debentures	$ 21,196	$ —	$ 21,196	$ —
U.S. agency residential mortgage-backed securities	392,673	—	392,673	—
Municipal and other tax-exempt securities	13,559	—	13,559	—
Asset-backed securities	23,885	—	23,885	—
Other trading securities	11,363	—	11,363	—
Total trading securities	462,676	—	462,676	—
Available for sale securities:				
U.S. Treasury securities	1,000	1,000	—	—
Municipal and other tax-exempt securities	27,080	—	22,278	4,802
U.S. government agency residential mortgage-backed securities	5,309,152	—	5,309,152	—
Privately issued residential mortgage-backed securities	93,221	—	93,221	—
Commercial mortgage-backed securities guaranteed by U.S. government agencies	2,834,961	—	2,834,961	—
Other debt securities	25,481	—	25,009	472
Perpetual preferred stock	15,767	—	15,767	—
Equity securities and mutual funds	14,916	—	14,916	—
Total available for sale securities	8,321,578	1,000	8,315,304	5,274
Fair value option securities – U.S. government agency residential mortgage-backed securities	755,054	—	755,054	—
Residential mortgage loans held for sale	221,378	—	209,079	12,299
Mortgage servicing rights, net[1]	252,867	—	—	252,867
Derivative contracts, net of cash margin[2]	220,502	8,179	212,323	—
Liabilities:				
Derivative contracts, net of cash margin[2]	171,963	—	171,963	—

[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 7, Mortgage Banking Activities.

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

The fair value of financial assets and liabilities that are measured on a recurring basis is as follows as of December 31, 2016 (in thousands):

	Total	Quoted Prices in Active Markets for Identical Instruments	Significant Other Observable Inputs	Significant Unobservable Inputs
Assets:				
Trading securities:				
U.S. government agency debentures	$ 6,234	$ —	$ 6,234	$ —
U.S. government agency residential mortgage-backed securities	310,067	—	310,067	—
Municipal and other tax-exempt securities	14,427	—	14,427	—
Asset-backed securities	—	—	—	—
Other trading securities	6,900	—	6,900	—
Total trading securities	337,628	—	337,628	—
Available for sale securities:				
U.S. Treasury securities	999	999	—	—
Municipal and other tax-exempt securities	40,993	—	35,204	5,789
U.S. government agency residential mortgage-backed securities	5,460,386	—	5,460,386	—
Privately issued residential mortgage-backed securities	115,535	—	115,535	—
Commercial mortgage-backed securities guaranteed by U.S. government agencies	3,017,933	—	3,017,933	—
Other debt securities	4,152	—	—	4,152
Perpetual preferred stock	18,474	—	18,474	—
Equity securities and mutual funds	18,357	3,495	14,862	—
Total available for sale securities	8,676,829	4,494	8,662,394	9,941
Fair value option securities – U.S. government agency residential mortgage-backed securities	77,046	—	77,046	—
Residential mortgage loans held for sale	301,897	—	290,280	11,617
Mortgage servicing rights, net[1]	247,073	—	—	247,073
Derivative contracts, net of cash margin[2]	689,872	7,541	682,331	—
Liabilities:				
Derivative contracts, net of cash margin [2]	664,531	6,972	657,559	—

[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 7, Mortgage Banking Activities.

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

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 reference 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 assess 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 counterparty credit rating or equivalent loan grading, derivative contract notional size, price volatility of the underlying commodity, duration of the derivative contracts and expected loss severity. Expected loss severity is based on historical losses for similarly risk graded commercial loan customers. Decreases in counterparty credit rating or grading and increases in price volatility and expected loss severity all tend to increase the credit quality adjustment which reduces the fair value of asset contracts.

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 conforming residential mortgage loans held for sale are based upon quoted market prices of such loans sold in securitization transactions, including related unfunded loan commitments. The fair value of mortgage loans that are unable to be sold to U.S. government agencies is determined using quoted prices of loans that are sold in securitization transactions with a liquidity discount applied.

The following represents the changes related to assets measured at fair value on a recurring basis using significant unobservable inputs (in thousands):

	Available for Sale Securities		
	Municipal and other tax-exempt securities	Other debt securities	Residential mortgage loans held for sale
Balance, December 31, 2015	$ 9,610	$ 4,151	$ 7,874
Transfer to Level 3 from Level 2[1]	—	—	6,631
Purchases and capital calls	—	—	—
Redemptions and distributions	(3,975)	—	—
Proceeds from sales	—	—	(2,540)
Gain (loss) recognized in earnings:			
Mortgage banking revenue	—	—	(348)
Other comprehensive income (loss):			
Net change in unrealized gain (loss)	154	1	—
Balance, December 31, 2016	**5,789**	**4,152**	**11,617**
Transfer to Level 3 from Level 2[1]	**—**	**—**	**3,507**
Purchases and capital calls	**—**	**—**	**—**
Redemptions and distributions	**(1,100)**	**—**	**—**
Proceeds from sales	**—**	**(3,900)**	**(2,944)**
Gain (loss) recognized in earnings:			
Mortgage banking revenue	**—**	**—**	**119**
Other comprehensive income (loss):			
Net change in unrealized gain (loss)	**113**	**220**	**—**
Balance, December 31, 2017	**$ 4,802**	**$ 472**	**$ 12,299**

[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 December 31, 2017 follows (in thousands):

Quantitative Information about Level 3 Recurring Fair Value Measurements

	Par Value	Amortized Cost/ Unpaid Principal Balance	Fair Value	Valuation Technique(s)	Significant Unobservable Input	Range (Weighted Average)
Available for sale securities:						
Municipal and other tax-exempt securities	$ 5,095	$ 5,068	$ 4,802	Discounted cash flows [1]	Interest rate spread	6.60%-6.60% (6.60%) [2] 92.25%-94.76% (93.75%) [3]
Other debt securities	500	500	472	Discounted cash flows [1]	Interest rate spread	6.85% - 6.85% (6.85%) [4] 94.39% - 94.39% (94.39%) [3]
Residential mortgage loans held for sale	N/A	12,981	12,299	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	94.75%

[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] Interest rate yields used to value investment grade tax-exempt securities represent a spread of 372 to 466 basis points over average yields for comparable tax-exempt securities.
[3] Represents fair value as a percentage of par value.
[4] Interest rate yields used to value investment grade taxable securities based on comparable short-term taxable securities which are generally yielding approximately 3%.

A summary of quantitative information about Recurring Fair Value Measurements based on Significant Unobservable Inputs (Level 3) as of December 31, 2016 follows (in thousands):

Quantitative Information about Level 3 Recurring Fair Value Measurements

	Par Value	Amortized Cost[6]	Fair Value	Valuation Technique(s)	Significant Unobservable Input	Range (Weighted Average)
Available for sale securities:						
Municipal and other tax-exempt securities	$ 6,195	$ 6,163	$ 5,789	Discounted cash flows [1]	Interest rate spread	5.91%-6.21% (6.16%) [2] 90.00%-93.40% (92.20%) [3]
Other debt securities	4,400	4,400	4,152	Discounted cash flows [1]	Interest rate spread	6.01% - 6.26% (6.23%) [4] 94.34% - 94.36% (94.36%) [3]
Residential mortgage loans held for sale	N/A	12,431	11,617	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	93.45%

[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] Interest rate yields used to value investment grade tax-exempt securities represent a spread of 467 to 525 basis points over average yields for comparable tax-exempt securities.
[3] Represents fair value as a percentage of par value.
[4] Interest rate yields used to value investment grade taxable securities based on comparable short-term taxable securities which are generally yielding less than 1%.

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

Assets measured at fair value on a non-recurring basis include pension plan assets, which are based on quoted prices in active markets for identical instruments, 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. See Note 6 for information related to the non-recurring fair value measurement of Mobank.

The following represents the carrying value of assets measured at fair value on a non-recurring basis and related losses recorded during the year. The carrying value represents only those assets with the balance sheet date for which the fair value was adjusted during the year:

	Carrying Value at December 31, 2017			Fair Value Adjustments for the Year Ended December 31, 2017 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	**$ —**	**$ 7,436**	**$ 7,626**	**$ 12,145**	**$ —**
Real estate and other repossessed assets	**—**	**3,483**	**5,481**	**—**	**6,372**

	Carrying Value at December 31, 2016			Fair Value Adjustments for the Year Ended December 31, 2016 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	$ —	$ 539	$ 11,295	$ 7,594	$ —
Real estate and other repossessed assets	—	7,965	2,192	—	2,527

The fair value of collateral-dependent impaired loans 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 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 December 31, 2017 follows (in thousands):

Quantitative Information about Level 3 Non-recurring Fair Value Measurements

	Fair Value	Valuation Technique(s)	Significant Unobservable Input	Range (Weighted Average)
Impaired loans	$ 7,626	Discounted cash flows	Recoverable oil and gas reserves, forward-looking commodity prices and estimated operating costs	40% - 86% (59%)[1]
Real estate and other repossessed assets	5,481	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.

A summary of quantitative information about Non-recurring Fair Value Measurements based on Significant Unobservable Inputs (Level 3) as of December 31, 2016 follows (in thousands):

Quantitative Information about Level 3 Non-recurring Fair Value Measurements

	Fair Value	Valuation Technique(s)	Significant Unobservable Input	Range (Weighted Average)
Impaired loans	$ 11,295	Discounted cash flows	Recoverable oil and gas reserves, forward-looking commodity prices and estimated operating costs	22% - 59% (57%)[1]
Real estate and other repossessed assets	2,192	Appraised value, as adjusted	Marketability adjustments off appraised value[2]	70% - 87% (74%)

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.

The fair value of pension plan assets was approximately $40 million at December 31, 2017 and $42 million at December 31, 2016, determined by significant other observable inputs. Fair value adjustments of pension plan assets along with changes in the projected benefit obligation are recognized in other comprehensive income.

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 (dollars in thousands):

	December 31, 2017				
	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	$ 602,510	602,510	602,510	—	—
Interest-bearing cash and cash equivalents	1,714,544	1,714,544	1,714,544	—	—
Trading securities:					
U.S. government agency debentures	21,196	21,196	—	21,196	—
U.S. government agency residential mortgage-backed securities	392,673	392,673	—	392,673	—
Municipal and other tax-exempt securities	13,559	13,559	—	13,559	—
Asset-backed securities	23,885	23,885	—	23,885	—
Other trading securities	11,363	11,363	—	11,363	—
Total trading securities	462,676	438,791	—	438,791	—
Investment securities:					
Municipal and other tax-exempt securities	228,186	230,349	—	230,349	—
U.S. government agency residential mortgage-backed securities	15,891	16,242	—	16,242	—
Other debt securities	217,716	233,444	—	233,444	—
Total investment securities	461,793	480,035	—	480,035	—
Available for sale securities:					
U.S. Treasury securities	1,000	1,000	1,000	—	—
Municipal and other tax-exempt securities	27,080	27,080	—	22,278	4,802
U.S. government agency residential mortgage-backed securities	5,309,152	5,309,152	—	5,309,152	—
Privately issued residential mortgage-backed securities	93,221	93,221	—	93,221	—
Commercial mortgage-backed securities guaranteed by U.S. government agencies	2,834,961	2,834,961	—	2,834,961	—
Other debt securities	25,481	25,481	—	25,009	472
Perpetual preferred stock	15,767	15,767	—	15,767	—
Equity securities and mutual funds	14,916	14,916	—	14,916	—
Total available for sale securities	8,321,578	8,321,578	1,000	8,315,304	5,274
Fair value option securities – U.S. government agency residential mortgage-backed securities	755,054	755,054	—	755,054	—
Residential mortgage loans held for sale	221,378	221,378	—	208,946	12,432
Loans:					
Commercial	10,733,975	10,524,627	—	—	10,524,627
Commercial real estate	3,479,987	3,428,733	—	—	3,428,733
Residential mortgage	1,973,686	1,977,721	—	—	1,977,721
Personal	965,776	956,706	—	—	956,706
Total loans	17,153,424	16,887,787	—	—	16,887,787
Allowance for loan losses	(230,682)	—	—	—	—
Loans, net of allowance	16,922,742	16,887,787	—	—	16,887,787
Mortgage servicing rights	252,867	252,867	—	—	252,867
Derivative instruments with positive fair value, net of cash margin	220,502	220,502	8,179	212,323	—
Deposits with no stated maturity	19,962,889	19,962,889	—	—	19,962,889
Time deposits	2,098,416	2,064,558	—	—	2,064,558
Other borrowed funds	5,709,860	5,703,121	—	—	5,703,121
Subordinated debentures	144,677	148,207	—	148,207	—
Derivative instruments with negative fair value, net of cash margin	171,963	171,963	—	171,963	—

	December 31, 2016				
	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	$ 620,846	$ 620,846	620,846	—	$ —
Interest-bearing cash and cash equivalents	1,916,651	1,916,651	1,916,651	—	—
Trading securities:					
U.S. government agency debentures	6,234	6,234	—	6,234	—
U.S. government agency residential mortgage-backed securities	310,067	310,067	—	310,067	—
Municipal and other tax-exempt securities	14,427	14,427	—	14,427	—
Asset-backed securities	—	—	—	—	—
Other trading securities	6,900	6,900	—	6,900	—
Total trading securities	337,628	337,628	—	337,628	—
Investment securities:					
Municipal and other tax-exempt securities	320,364	321,225	—	321,225	—
U.S. government agency residential mortgage-backed securities	20,777	21,473	—	21,473	—
Other debt securities	205,004	222,795	—	222,795	—
Total investment securities	546,145	565,493	—	565,493	—
Available for sale securities:					
U.S. Treasury securities	999	999	999	—	—
Municipal and other tax-exempt securities	40,993	40,993	—	35,204	5,789
U.S. government agency residential mortgage-backed securities	5,460,386	5,460,386	—	5,460,386	—
Privately issued residential mortgage-backed securities	115,535	115,535	—	115,535	—
Commercial mortgage-backed securities guaranteed by U.S. government agencies	3,017,933	3,017,933	—	3,017,933	—
Other debt securities	4,152	4,152	—	—	4,152
Perpetual preferred stock	18,474	18,474	—	18,474	—
Equity securities and mutual funds	18,357	18,357	3,495	14,862	—
Total available for sale securities	8,676,829	8,676,829	4,494	8,662,394	9,941
Fair value option securities – U.S. government agency residential mortgage-backed securities	77,046	77,046	—	77,046	—
Residential mortgage loans held for sale	301,897	301,897	—	290,280	11,617
Loans:					
Commercial	10,390,824	10,437,016	—	—	10,437,016
Commercial real estate	3,809,046	3,850,981	—	—	3,850,981
Residential mortgage	1,949,832	2,025,159	—	—	2,025,159
Personal	839,958	864,904	—	—	864,904
Total loans	16,989,660	17,178,060	—	—	17,178,060
Allowance for loan losses	(246,159)	—	—	—	—
Loans, net of allowance	16,743,501	17,178,060	—	—	17,178,060
Mortgage servicing rights	247,073	247,073	—	—	247,073
Derivative instruments with positive fair value, net of cash margin	689,872	689,872	7,541	682,331	—
Deposits with no stated maturity	20,526,295	20,526,295	—	—	20,526,295
Time deposits	2,221,800	2,218,303	—	—	2,218,303
Other borrowed funds	5,572,662	5,556,327	—	—	5,556,327
Subordinated debentures	144,640	128,903	—	128,903	—
Derivative instruments with negative fair value, net of cash margin	664,531	664,531	6,972	657,559	—

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.

The following methods and assumptions were used in estimating the fair value of these financial instruments:

Cash and Cash Equivalents

The book value reported in the Consolidated Balance Sheets for cash and short-term instruments approximates those assets' fair values.

Securities

The fair values of securities are generally based on Significant Other Observable Inputs such as quoted prices for comparable instruments or interest rates and credit spreads, yield curves, volatilities, prepayment speeds and loss severities.

Loans

The fair value of loans, excluding loans held for sale, are based on discounted cash flow analyses using interest rates and credit and liquidity spreads currently being offered for loans with similar remaining terms to maturity and risk, adjusted for the impact of interest rate floors and ceilings which are classified as Significant Unobservable Inputs. The fair values of loans were estimated to approximate their discounted cash flows less loan loss allowances allocated to these loans of $208 million at December 31, 2017 and $218 million at December 31, 2016. A summary of assumptions used in determining the fair value of loans follows:

	Range of Contractual Yields	Average Re-pricing (in years)	Discount Rate
December 31, 2017			
Commercial	**0.38% - 30.00%**	**0.64**	**0.77% - 4.67%**
Commercial real estate	**0.38% - 18.00%**	**0.80**	**1.04% - 4.41%**
Residential mortgage	**1.74% - 18.00%**	**2.27**	**2.11% - 4.09%**
Personal	**1.18% - 21.00%**	**0.23**	**0.56% - 4.81%**
December 31, 2016			
Commercial	0.38% - 30.00%	0.70	0.64% - 4.60%
Commercial real estate	0.38% - 18.00%	0.71	0.94% - 4.27%
Residential mortgage	1.74% - 18.00%	2.27	1.71% - 4.26%
Personal	0.25% - 21.00%	0.40	1.03% - 4.59%

Deposits

The fair values of time deposits are based on discounted cash flow analyses using interest rates currently being offered on similar transactions which are considered Significant Unobservable Inputs. Estimated fair value of deposits with no stated maturity, which includes demand deposits, transaction deposits, money market deposits and savings accounts, is equal to the amount payable on demand. Although market premiums paid reflect an additional value for these low cost deposits, adjusting fair value for the expected benefit of these deposits is prohibited. Accordingly, the positive effect of such deposits is not included in the tables above. A summary of assumptions used in determining the fair value of time deposits follows:

	Range of Contractual Yields	Average Re-pricing (in years)	Discount Rate
December 31, 2017	**0.03% - 9.64%**	**1.91**	**2.18% - 2.36%**
December 31, 2016	0.02% - 9.65%	1.96	1.57% - 2.00%

Other Borrowed Funds and Subordinated Debentures

The fair values of these instruments are based upon discounted cash flow analyses using interest rates currently being offered on similar instruments which are considered Significant Unobservable Inputs. A summary of assumptions used in determining the fair value of other borrowings and subordinated debentures follows:

	Range of Contractual Yields	Average Re-pricing (in years)	Discount Rate
December 31, 2017			
Other borrowed funds	**0.25% - 3.49%**	**0.00**	**1.33% - 4.04%**
Subordinated debentures	**5.38%**	**16.79**	**4.61%**
December 31, 2016			
Other borrowed funds	0.25% - 3.50%	0.00	0.55% - 3.22%
Subordinated debentures	5.38%	16.86	6.11%

Off-Balance Sheet Instruments

The fair values of commercial loan commitments are based on fees currently charged to enter into similar agreements, taking into account the remaining terms of the agreements. The fair values of these off-balance sheet instruments were not significant at December 31, 2017 or December 31, 2016.

Fair Value Election

As more fully disclosed in Note 2 and Note 7 to the Consolidated Financial Statements, the Company has elected to carry all U.S. government agency residential mortgage-backed securities 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.

(19) Parent Company Only Financial Statements

Summarized financial information for BOK Financial – Parent Company Only follows:

Balance Sheets
(In thousands)

	December 31,	
	2017	**2016**
Assets		
Cash and cash equivalents	**$ 205,876**	$ 163,418
Available for sale securities	**16,185**	19,234
Investment in bank subsidiaries	**3,255,912**	3,067,595
Investment in non-bank subsidiaries	**170,966**	177,068
Other assets	**4,065**	4,865
Total assets	**$ 3,653,004**	$ 3,432,180
Liabilities and Shareholders' Equity		
Liabilities:		
Other liabilities	**$ 12,960**	$ 5,469
Other borrowings – Trust preferred debt	**—**	7,217
Subordinated debentures	**144,677**	144,640
Total liabilities	**157,637**	157,326
Shareholders' equity:		
Common stock	**4**	4
Capital surplus	**1,035,895**	1,006,535
Retained earnings	**3,048,487**	2,823,334
Treasury stock	**(552,845)**	(544,052)
Accumulated other comprehensive loss	**(36,174)**	(10,967)
Total shareholders' equity	**3,495,367**	3,274,854
Total liabilities and shareholders' equity	**$ 3,653,004**	$ 3,432,180

Statements of Earnings
(In thousands)

	Year Ended December 31,		
	2017	**2016**	**2015**
Dividends, interest and fees received from bank subsidiaries	**$ 150,149**	$ 15,237	$ 150,308
Dividends, interest and fees received from non-bank subsidiaries	**17,500**	25,923	—
Other revenue	**936**	1,612	1,279
Total revenue	**168,585**	42,772	151,587
Interest expense	**8,239**	4,182	131
Other operating expense	**2,014**	1,978	2,242
Total expense	**10,253**	6,160	2,373
Income before taxes and equity in undistributed income of subsidiaries	**158,332**	36,612	149,214
Federal and state income taxes	**(4,305)**	(1,920)	(375)
Income before equity in undistributed income of subsidiaries	**162,637**	38,532	149,589
Equity in undistributed income of bank subsidiaries	**181,552**	216,120	134,045
Equity in undistributed income of non-bank subsidiaries	**(9,545)**	(21,984)	4,931
Net income attributable to BOK Financial Corp. shareholders	**$ 334,644**	$ 232,668	$ 288,565

Statements of Cash Flows
(In thousands)

	Year Ended December 31,		
	2017	2016	2015
Cash Flows From Operating Activities:			
Net income	**$ 334,644**	$ 232,668	$ 288,565
Adjustments to reconcile net income to net cash provided by operating activities:			
Equity in undistributed income of bank subsidiaries	**(181,552)**	(216,120)	(134,045)
Equity in undistributed income of non-bank subsidiaries	**9,545**	21,984	(4,931)
Change in other assets	**12**	(2,933)	49
Change in other liabilities	**7,457**	(1,285)	(2,818)
Net cash provided by operating activities	**170,106**	34,314	146,820
Cash Flows From Investing Activities:			
Proceeds from sales of available for sale securities	**3,000**	1,632	4,760
Investment in subsidiaries	**(4,355)**	(26,000)	(41,969)
Acquisitions, net of cash acquired	**—**	(105,520)	—
Net cash used in investing activities	**(1,355)**	(129,888)	(37,209)
Cash Flows From Financing Activities:			
Net change in other borrowings	**(7,217)**	—	—
Issuance of subordinated debentures, net of issuance costs	**—**	144,615	—
Issuance of common and treasury stock, net	**4,368**	12,455	6,711
Dividends paid	**(116,041)**	(113,455)	(115,281)
Repurchase of common stock	**(7,403)**	(66,792)	(229,540)
Net cash used in financing activities	**(126,293)**	(23,177)	(338,110)
Net increase (decrease) in cash and cash equivalents	**42,458**	(118,751)	(228,499)
Cash and cash equivalents at beginning of period	**163,418**	282,169	510,668
Cash and cash equivalents at end of period	**$ 205,876**	$ 163,418	$ 282,169
Cash paid for interest	**$ 6,211**	$ 4,127	$ 131

(20) Subsequent Events

The Company evaluated events from the date of the Consolidated Financial Statements on December 31, 2017 through the issuance of those consolidated financial statements included in this Annual Report on Form 10-K. No events were identified requiring recognition in and/or disclosure in the Consolidated Financial Statements.

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

(Dollars in Thousands, Except Per Share Data)	Year Ended December 31, 2017		
	Average Balance	Revenue/ Expense	Yield/ Rate
Assets			
Interest-bearing cash and cash equivalents	$ 2,009,011	$ 22,128	1.10%
Trading securities	521,742	17,637	3.51%
Investment securities			
Taxable	222,782	11,915	5.35%
Tax-exempt	269,207	6,877	2.55%
Total investment securities	491,989	18,792	3.82%
Available for sale securities			
Taxable	8,403,592	175,504	2.12%
Tax-exempt	49,823	2,564	5.55%
Total available for sale securities	8,453,415	178,068	2.13%
Fair value option securities	593,744	16,755	2.81%
Restricted equity securities	318,744	18,490	5.80%
Residential mortgage loans held for sale	245,133	8,706	3.59%
Loans	17,176,102	709,378	4.13%
Allowance for loan losses	(249,430)		
Loans, net of allowance	16,926,672	709,378	4.19%
Total earning assets	29,560,450	989,954	3.36%
Receivable on unsettled securities sales	66,922		
Cash and other assets	3,320,122		
Total assets	$ 32,947,494		
Liabilities and equity			
Interest-bearing deposits:			
Transaction	$ 10,220,068	$ 28,627	0.28%
Savings	458,451	359	0.08%
Time	2,193,273	24,817	1.13%
Total interest-bearing deposits	12,871,792	53,803	0.42%
Funds purchased	58,064	421	0.73%
Repurchase agreements	433,791	435	0.10%
Other borrowings	5,922,588	68,268	1.15%
Subordinated debentures	144,658	8,123	5.62%
Total interest-bearing liabilities	19,430,893	131,050	0.67%
Non-interest bearing demand deposits	9,312,989		
Due on unsettled securities purchases	153,528		
Other liabilities	615,217		
Total equity	3,434,867		
Total liabilities and equity	$ 32,947,494		
Tax-equivalent Net Interest Revenue		$ 858,904	2.69%
Tax-equivalent Net Interest Revenue to Earning Assets			2.92%
Less tax-equivalent adjustment		17,203	
Net Interest Revenue		841,701	
Provision for credit losses		(7,000)	
Other operating revenue		695,094	
Other operating expense		1,025,517	
Net income before taxes		518,278	
Federal and state income taxes		182,593	
Net income		335,685	
Net income attributable to non-controlling interests		1,041	
Net income attributable to BOK Financial Corporation shareholders		$ 334,644	
Earnings Per Average Common Share Equivalent:			
Net income:			
Basic		$ 5.11	
Diluted		$ 5.11	

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 include 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.

Annual Financial Summary – Unaudited (continued)
Consolidated Daily Average Balances, Average Yields and Rates

(Dollars in Thousands, Except Per Share Data)	Year Ended					
	December 31, 2016			December 31, 2015		
	Average Balance	Revenue/ Expense	Yield/ Rate	Average Balance	Revenue/ Expense	Yield/ Rate
Assets						
Interest-bearing cash and cash equivalents	$ 2,038,919	$ 10,726	0.53%	$ 2,031,403	$ 5,580	0.27%
Trading securities	317,808	9,213	3.43%	149,572	3,055	2.49%
Investment securities						
Taxable	226,442	12,268	5.42%	236,193	12,932	5.48%
Tax-exempt	334,812	7,567	2.26%	386,122	5,971	1.55%
Total investment securities	561,254	19,835	3.54%	622,315	18,903	3.04%
Available for sale securities						
Taxable	8,799,716	173,272	2.01%	8,937,418	172,582	1.97%
Tax-exempt	67,667	3,353	5.18%	81,469	3,341	4.25%
Total available for sale securities	8,867,383	176,625	2.03%	9,018,887	175,923	1.99%
Fair value option securities	323,695	6,723	1.93%	426,461	9,264	2.26%
Restricted equity securities	320,975	17,238	5.37%	230,140	13,532	5.88%
Residential mortgage loans held for sale	370,600	12,658	3.45%	380,979	13,602	3.59%
Loans	16,357,867	593,700	3.63%	15,063,002	539,426	3.58%
Allowance for loan losses	(243,631)			(200,872)		
Loans, net of allowance	16,114,236	593,700	3.68%	14,862,130	539,426	3.63%
Total earning assets	28,914,870	846,718	2.95%	27,721,887	779,285	2.84%
Receivable on unsettled securities sales	114,773			80,079		
Cash and other assets	3,248,759			2,772,789		
Total assets	$ 32,278,402			$ 30,574,755		
Liabilities and equity						
Interest-bearing deposits:						
Transaction	$ 9,744,998	$ 13,906	0.14%	$ 9,919,913	$ 8,821	0.09%
Savings	414,103	386	0.09%	377,497	383	0.10%
Time	2,259,242	26,202	1.16%	2,587,367	34,966	1.35%
Total interest-bearing deposits	12,418,343	40,494	0.33%	12,884,777	44,170	0.34%
Funds purchased	78,222	186	0.24%	69,149	65	0.09%
Repurchase agreements	589,145	248	0.04%	766,410	282	0.04%
Other borrowings	6,019,647	34,902	0.58%	4,212,417	13,857	0.33%
Subordinated debentures	214,842	6,059	2.82%	276,662	5,100	1.84%
Total interest-bearing liabilities	19,320,199	81,889	0.42%	18,209,415	63,474	0.35%
Non-interest bearing demand deposits	8,474,230			8,048,469		
Due on unsettled securities purchases	132,539			173,743		
Other liabilities	1,002,017			769,823		
Total equity	3,349,417			3,373,305		
Total liabilities and equity	$ 32,278,402			$ 30,574,755		
Tax-equivalent Net Interest Revenue		$ 764,829	2.53%		$ 715,811	2.49%
Tax-equivalent Net Interest Revenue to Earning Assets			2.66%			2.60%
Less tax-equivalent adjustment		17,601			12,457	
Net Interest Revenue		747,228			703,354	
Provision for credit losses		65,000			34,000	
Other operating revenue		674,020			658,480	
Other operating expense		1,017,590			896,191	
Net income before taxes		338,658			431,643	
Federal and state income taxes		106,377			139,384	
Net income		232,281			292,259	
Net income attributable to non-controlling interests		(387)			3,694	
Net income attributable to BOK Financial Corporation shareholders		$ 232,668			$ 288,565	
Earnings Per Average Common Share Equivalent:						
Net income:						
Basic		$ 3.53			$ 4.22	
Diluted		$ 3.53			$ 4.21	

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

(In Thousands, Except Per Share Data)	Three Months Ended					
	December 31, 2017			September 30, 2017		
	Average Balance	**Revenue/ Expense**	**Yield/ Rate**	**Average Balance**	**Revenue/ Expense**	**Yield/ Rate**
Assets						
Interest-bearing cash and cash equivalents	**$ 1,976,395**	**$ 6,311**	**1.27%**	$ 1,965,645	$ 6,375	1.29%
Trading securities	**560,321**	**4,629**	**3.38%**	491,613	4,122	3.47%
Investment securities						
Taxable	**228,388**	**3,029**	**5.31%**	221,609	2,942	5.31%
Tax-exempt	**234,481**	**1,577**	**2.69%**	254,096	1,650	2.60%
Total investment securities	**462,869**	**4,606**	**3.98%**	475,705	4,592	3.86%
Available for sale securities						
Taxable	**8,392,231**	**45,078**	**2.19%**	8,381,536	44,579	2.16%
Tax-exempt	**43,685**	**545**	**5.41%**	46,817	566	5.27%
Total available for sale securities	**8,435,916**	**45,623**	**2.21%**	8,428,353	45,145	2.17%
Fair value option securities	**792,647**	**5,770**	**2.90%**	684,571	5,066	2.97%
Restricted equity securities	**337,673**	**4,956**	**5.87%**	328,677	4,826	5.87%
Residential mortgage loans held for sale	**257,927**	**2,389**	**3.72%**	256,343	2,095	3.36%
Loans	**17,181,007**	**185,614**	**4.29%**	17,256,663	187,506	4.31%
Allowance for loan losses	**(246,143)**			(250,590)		
Loans, net of allowance	**16,934,864**	**185,614**	**4.35%**	17,006,073	187,506	4.38%
Total earning assets	**29,758,612**	**259,898**	**3.49%**	29,636,980	259,727	3.50%
Receivable on unsettled securities sales	**49,219**			76,622		
Cash and other assets	**3,644,284**			3,294,568		
Total assets	**$ 33,452,115**			$ 33,008,170		
Liabilities and equity						
Interest-bearing deposits:						
Transaction	**$ 10,142,744**	**$ 8,914**	**0.35%**	$ 10,088,522	$ 8,062	0.32%
Savings	**466,496**	**87**	**0.07%**	464,130	90	0.08%
Time	**2,134,469**	**6,296**	**1.17%**	2,176,820	6,378	1.16%
Total interest-bearing deposits	**12,743,709**	**15,297**	**0.48%**	12,729,472	14,530	0.45%
Funds purchased	**63,713**	**145**	**0.90%**	49,774	116	0.92%
Repurchase agreements	**424,617**	**195**	**0.18%**	361,512	140	0.15%
Other borrowings	**6,209,903**	**21,242**	**1.36%**	6,162,641	20,105	1.29%
Subordinated debentures	**144,673**	**2,025**	**5.55%**	144,663	2,070	5.68%
Total interest-bearing liabilities	**19,586,615**	**38,904**	**0.79%**	19,448,062	36,961	0.75%
Non-interest bearing demand deposits	**9,417,351**			9,389,849		
Due on unsettled securities purchases	**218,684**			145,155		
Other liabilities	**714,075**			540,463		
Total equity	**3,515,390**			3,484,641		
Total liabilities and equity	**$ 33,452,115**			$ 33,008,170		
Tax-equivalent Net Interest Revenue		**$ 220,994**	**2.70%**		$ 222,766	2.75%
Tax-equivalent Net Interest Revenue to Earning Assets			**2.97%**			3.01%
Less tax-equivalent adjustment		**4,131**			4,314	
Net Interest Revenue		**216,863**			218,452	
Provision for credit losses		**(7,000)**			—	
Other operating revenue		**166,836**			175,710	
Other operating expense		**263,987**			265,934	
Net income before taxes		**126,712**			128,228	
Federal and state income taxes		**54,347**			42,438	
Net income		**72,365**			85,790	
Net income attributable to non-controlling interests		**(127)**			141	
Net income attributable to BOK Financial Corp. shareholders		**$ 72,492**			$ 85,649	
Earnings Per Average Common Share Equivalent:						
Net income:						
Basic		**$ 1.11**			$ 1.31	
Diluted		**$ 1.11**			$ 1.31	

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 include 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

Quarterly Financial Summary – Unaudited (continued)

Consolidated Daily Average Balances, Average Yields and Rates

Three Months Ended								
June 30, 2017			Mar. 31, 2017			December 31, 2016		
Average Balance	Revenue / Expense	Yield / Rate	Average Balance	Revenue / Expense	Yield / Rate	Average Balance	Revenue / Expense	Yield / Rate
$ 2,007,746	$ 5,198	1.04%	$ 2,087,964	$ 4,244	0.82%	$ 2,032,785	$ 2,800	0.55%
456,028	3,517	3.23%	579,549	5,369	3.87%	476,498	4,554	3.91%
219,385	2,931	5.34%	221,684	3,013	5.44%	224,376	3,024	5.39%
279,987	1,757	2.51%	309,252	1,893	2.45%	318,493	1,854	2.33%
499,372	4,688	3.76%	530,936	4,906	3.70%	542,869	4,878	3.60%
8,332,709	42,920	2.09%	8,509,423	42,927	2.02%	8,706,449	42,482	1.98%
51,348	725	6.09%	57,626	728	5.37%	60,106	748	5.27%
8,384,057	43,645	2.11%	8,567,049	43,655	2.05%	8,766,555	43,230	2.00%
476,102	3,539	2.92%	416,524	2,380	2.27%	210,733	541	0.99%
295,743	4,399	5.95%	312,498	4,309	5.52%	334,114	4,554	5.45%
245,401	2,386	3.92%	220,325	1,836	3.35%	345,066	2,835	3.31%
17,129,533	172,139	4.03%	17,135,825	164,119	3.88%	16,723,588	156,734	3.67%
(251,632)			(249,379)			(246,977)		
16,877,901	172,139	4.09%	16,886,446	164,119	3.94%	16,476,611	156,734	3.72%
29,242,350	239,511	3.30%	29,601,291	230,818	3.15%	29,185,231	220,126	2.98%
79,248			62,641			33,813		
3,046,973			3,291,057			3,742,032		
$ 32,368,571			$ 32,954,989			$ 32,961,076		
$ 10,087,640	$ 6,437	0.26%	$ 10,567,475	$ 5,214	0.20%	$ 9,980,132	$ 3,912	0.16%
461,586	95	0.08%	441,254	87	0.08%	421,654	91	0.09%
2,204,422	6,090	1.11%	2,258,930	6,053	1.09%	2,177,035	6,140	1.12%
12,753,648	12,622	0.40%	13,267,659	11,354	0.35%	12,578,821	10,143	0.32%
63,263	96	0.61%	55,508	64	0.47%	62,004	44	0.28%
427,353	68	0.06%	523,561	32	0.02%	560,891	34	0.02%
5,572,031	15,188	1.09%	5,737,955	11,733	0.83%	6,072,150	9,315	0.61%
144,654	2,003	5.55%	144,644	2,025	5.68%	144,635	2,003	5.51%
18,960,949	29,977	0.63%	19,729,327	25,208	0.52%	19,418,501	21,539	0.44%
9,338,683			9,101,763			9,124,595		
157,438			91,529			77,575		
502,068			704,978			1,004,212		
3,409,433			3,327,392			3,336,193		
$ 32,368,571			$ 32,954,989			$ 32,961,076		
	$ 209,534	2.67%		$ 205,610	2.63%		$ 198,587	2.54%
		2.89%			2.81%			2.69%
	4,330			4,428			4,389	
	205,204			201,182			194,198	
	—			—			—	
	182,252			170,296			143,754	
	250,885			244,711			265,547	
	136,571			126,767			72,405	
	47,705			38,103			22,496	
	88,866			88,664			49,909	
	719			308			(117)	
	$ 88,147			$ 88,356			$ 50,026	
	$ 1.35			$ 1.35			$ 0.76	
	$ 1.35			$ 1.35			$ 0.76	

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

As of the end of the period covered by this report and pursuant to Rule 13a-15 of the Securities Exchange Act of 1934 (the "Exchange Act"), the Company's management, including the Chief Executive Officer and Chief Financial Officer, conducted an evaluation of the effectiveness and design of the Company's disclosure controls and procedures (as that term is defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act). Based upon that evaluation, the Company's Chief Executive Officer and Chief Financial Officer concluded, as of the end of the period covered by this report, that the Company's disclosure controls and procedures were effective in recording, processing, summarizing and reporting information required to be disclosed by the Company, within the time periods specified in the Securities and Exchange Commission's rules and forms.

In addition and as of the end of the period covered by this report, there have been no changes in internal control over financial reporting (as defined in Rule 13a-15(f) and 15d-15(f), as amended, of the Exchange Act) during the Company's fourth fiscal quarter that have materially affected, or are reasonably likely to materially affect, the internal control over financial reporting.

Management's Report on Internal Control over Financial Reporting appears within Item 8, "Financial Statements and Supplementary Data." The independent registered public accounting firm, Ernst & Young LLP, has audited the financial statements included in Item 8 and has issued an audit report on the Company's internal control over financial reporting, which appears therein.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information set forth under the headings "Election of Directors," "Executive Officers, "Insider Reporting," "Director Nominations," and "Report of the Audit Committee" in BOK Financial's 2018 Annual Proxy Statement is incorporated herein by reference.

The Company has a Code of Ethics which is applicable to all Directors, officers and employees of the Company, including the Chief Executive Officer and the Chief Financial Officer, the principal executive officer and principal financial and accounting officer, respectively. A copy of the Code of Ethics will be provided without charge to any person who requests it by writing to the Company's headquarters at Bank of Oklahoma Tower, P.O. Box 2300, Tulsa, Oklahoma 74192 or telephoning the Chief Risk Officer at (918) 588-6000. The Company will also make available amendments to or waivers from its Code of Ethics applicable to Directors or executive officers, including the Chief Executive Officer and the Chief Financial Officer, in accordance with all applicable laws and regulations.

There are no material changes to the procedures by which security holders may recommend nominees to the Company's board of directors since the Company's 2017 Annual Proxy Statement to Shareholders.

ITEM 11. EXECUTIVE COMPENSATION

The information set forth under the heading "Compensation Discussion and Analysis," "Compensation Committee Interlocks and Insider Participation, "Compensation Committee Report," "Executive Compensation Tables," and "Director Compensation" in BOK Financial's 2018 Annual Proxy Statement is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information set forth under the headings “Security Ownership of Certain Beneficial Owners and Management” and “Election of Directors” in BOK Financial's 2018 Annual Proxy Statement is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

Information regarding related parties is set forth in Note 13 of the Company's Notes to Consolidated Financial Statements, which appears elsewhere herein. Additionally, the information set forth under the headings “Certain Transactions,” “Director Independence” and “Related Party Transaction Review and Approval Process” in BOK Financial's 2018 Annual Proxy Statement is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information set forth under the heading “Principal Accountant Fees and Services” in BOK Financial's 2018 Annual Proxy Statement is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) (1) Financial Statements

The following financial statements of BOK Financial Corporation are filed as part of this Form 10-K in Item 8:

Consolidated Statements of Earnings for the years ended December 31, 2017, 2016 and 2015
Consolidated Statements of Comprehensive Income for the years ended December 31, 2017, 2016 and 2015
Consolidated Balance Sheets as of December 31, 2017 and 2016
Consolidated Statements of Cash Flows for the years ended December 31, 2017, 2016 and 2015
Consolidated Statements of Changes in Equity for the years ended December 31, 2017, 2016 and 2015
Notes to Consolidated Financial Statements
Annual Financial Summary - Unaudited
Quarterly Financial Summary - Unaudited
Reports of Independent Registered Public Accounting Firm

(a) (2) Financial Statement Schedules

The schedules to the Consolidated Financial Statements required by Regulation S-X are not required under the related instructions or are inapplicable and are therefore omitted.

(a) (3) Exhibits

Exhibit Number	Description of Exhibit
3.0	The Articles of Incorporation of BOK Financial, incorporated by reference to (i) Amended and Restated Certificate of Incorporation of BOK Financial filed with the Oklahoma Secretary of State on May 28, 1991, filed as Exhibit 3.0 to S-1 Registration Statement No. 33-90450, and (ii) Amendment attached as Exhibit A to Information Statement and Prospectus Supplement filed November 20, 1991.
3.1	Bylaws of BOK Financial, incorporated by reference to Exhibit 3.1 of S-1 Registration Statement No. 33-90450.
3.1(a)	Bylaws of BOK Financial, as amended and restated as of October 30, 2007, incorporated by reference to Exhibit 3.1 of Form 8-K filed on November 5, 2007.
4.0	The rights of the holders of the Common Stock and Preferred Stock of BOK Financial are set forth in its Certificate of Incorporation.
4.2	Subordinated Notes Indenture, dated as of June 27, 2016, between the Company and U.S. Bank National Association, as trustee (incorporated by reference to Exhibit 4.1 to the Company's filing on Form 8-K filed June 27, 2016).
4.3	Form of 5.375% Subordinated Notes due 2056 Global Security (incorporated by reference to Exhibit 4.2 to the Company's Registration Statement on Form 8-A filed on June 24, 2016).
10.0	Purchase and Sale Agreement dated October 25, 1990, among BOK Financial, Kaiser, and the FDIC, incorporated by reference to Exhibit 2.0 of S-1 Registration Statement No. 33-90450.
10.1	Amendment to Purchase and Sale Agreement effective March 29, 1991, among BOK Financial, Kaiser, and the FDIC, incorporated by reference to Exhibit 2.2 of S-1 Registration Statement No. 33-90450.
10.2	Letter agreement dated April 12, 1991, among BOK Financial, Kaiser, and the FDIC, incorporated by reference to Exhibit 2.3 of S-1 Registration Statement No. 33-90450.
10.3	Second Amendment to Purchase and Sale Agreement effective April 15, 1991, among BOK Financial, Kaiser, and the FDIC, incorporated by reference to Exhibit 2.4 of S-1 Registration Statement No. 33-90450.
10.4	Employment and Compensation Agreements.
10.4.2	Amended and Restated Deferred Compensation Agreement (Amended as of December 1, 2003) between Steven G. Bradshaw and BOK Financial Corporation, incorporated by reference to Exhibit 10.4.2 of Form 10-K for the fiscal year ended December 31, 2003.
10.4.2 (a)	409A Deferred Compensation Agreement between Steven G. Bradshaw and BOK Financial Corporation dated December 31, 2004, incorporated by reference to Exhibit 10.4.2 (a) of Form 8-K filed on January 5, 2005.
10.4.2 (b)	Amended and Restated Employment Agreement (amended as of June 30, 2013) between BOK Financial and Steven G. Bradshaw, incorporated by reference to Exhibit 99.A of Form 8-K filed August 20, 2013.
10.4.7	Amended and Restated Employment Agreement (amended June 15, 2013) between BOK Financial and Steven Nell incorporated by reference to Exhibit 99.B of Form 8-K filed September 4, 2013.
10.4.9	Amended and Restated Employment Agreement (amended as of June 15, 2013) between BOK Financial and Norman Bagwell, incorporated by reference to Exhibit 99.A of Form 8-K filed September 4, 2013.
10.4.10	Amended and Restated Employment Agreement (amended as of June 15, 2013) between BOK Financial and Stacy C. Kymes incorporated by reference to Exhibit 10.4.10 of Form 10-K for the fiscal year ended December 31, 2015.
10.6	Capitalization and Stock Purchase Agreement dated May 20, 1991, between BOK Financial and Kaiser, incorporated by reference to Exhibit 10.6 of S-1 Registration Statement No. 33-90450.
10.7.7	BOK Financial Corporation 2001 Stock Option Plan, incorporated by reference to Exhibit 4.0 of S-8 Registration Statement No. 333-62578.

Exhibit Number	Description of Exhibit
10.7.8	BOK Financial Corporation Directors' Stock Compensation Plan, incorporated by reference to Exhibit 4.0 of S-8 Registration Statement No. 33-79836.
10.7.9	Bank of Oklahoma Thrift Plan (Amended and Restated Effective as of January 1, 1995), incorporated by reference to Exhibit 10.7.6 of Form 10-K for the year ended December 31, 1994.
10.7.10	Trust Agreement for the Bank of Oklahoma Thrift Plan (December 30, 1994), incorporated by reference to Exhibit 10.7.7 of Form 10-K for the year ended December 31, 1994.
10.7.11	BOK Financial Corporation 2003 Stock Option Plan, incorporated by reference to Exhibit 4.0 of S-8 Registration Statement No. 333-106531.
10.7.12	BOK Financial Corporation 2003 Executive Incentive Plan, incorporated by reference to Exhibit 4.0 of S-8 Registration Statement No. 333-106530.
10.7.13	10b5-1 Repurchase Plan between BOK Financial Corporation and BOSC, Inc. dated May 27, 2008, incorporated by reference to Exhibit 10.1 of Form 8-K filed May 30, 2008.
10.7.14	BOK Financial Corporation 2003 Executive Incentive Plan, as amended and restated, for the Chief Executive Officer and for Direct Reports to the Chief Executive Officer, incorporated by reference to the Schedule 14 A Definitive Proxy Statement filed on March 15, 2011.
10.7.16	BOK Financial Corporation 2009 Omnibus Incentive Plan, Amended and Restated effective April 30, 2013, incorporated by reference to the Schedule 14A Definitive Proxy Statement filed on March 20, 2013.
10.8	Lease Agreement between One Williams Center Co. and National Bank of Tulsa (predecessor to BOk) dated June 18, 1974, incorporated by reference to Exhibit 10.9 of S-1 Registration Statement No. 33-90450.
10.9	Lease Agreement between Security Capital Real Estate Fund and BOk dated January 1, 1988, incorporated by reference to Exhibit 10.10 of S-1 Registration Statement No. 33-90450.
21	Subsidiaries of BOK Financial, filed herewith.
23	Consent of independent registered public accounting firm - Ernst & Young LLP, filed herewith.
31.1	Certification of Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, filed herewith.
31.2	Certification of Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, filed herewith.
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, filed herewith.
99	Additional Exhibits.
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 the Consolidated Financial Statements, filed herewith.

(b) Exhibits

See Item 15 (a) (3) above.

(c) Financial Statement Schedules

See Item 15 (a) (2) above.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

BOK FINANCIAL CORPORATION

DATE: February 27, 2018

BY: /s/ George B. Kaiser
George B. Kaiser
Chairman of the Board of Directors

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below on February 27, 2018, by the following persons on behalf of the registrant and in the capacities indicated.

OFFICERS

/s/ George B. Kaiser
George B. Kaiser
Chairman of the Board of Directors

/s/ Steven G. Bradshaw
Steven G. Bradshaw
Director, President and Chief Executive Officer

/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

DIRECTORS

	/s/ Kimberley D. Henry
Alan S. Armstrong	Kimberley D. Henry
	/s/ E. Cary Joullian, IV
C. Frederick Ball, Jr.	E. Carey Joullian, IV
/s/ Peter C. Boylan III	/s/ Robert J. LaFortune
Peter C. Boylan III	Robert J. LaFortune
/s/ Chester E. Cadieux, III	
Chester E. Cadieux, III	Stanley A. Lybarger
	/s/ Steven J. Malcolm
Jack E. Finley	Steven J. Malcolm
/s/ Joseph W. Craft, III	/s/ Emmet C. Richards
Joseph W. Craft, III	Emmet C. Richards
David F. Griffin	Michael C. Turpen
/s/ V. Burns Hargis	
V. Burns Hargis	R.A. Walker
Douglas D. Hawthorne	

Exhibit 21

BOK FINANCIAL CORPORATION

SUBSIDIARIES OF THE REGISTRANT

Banking Subsidiaries

BOKF, National Association (1)

Other subsidiaries of BOK Financial Corporation

BOK Capital Service Corporation

BOKC Real Estate Corporation (6)

BOKF Capital Corporation

BOKF-CC (FSE), LLC

BOKF-CC (Collision Works), LLC

BOKF-CC (Heartland), LLC

BOKF-CC (O2 Concepts), LLC

BOKF Equity, LLC

BOKF Private Equity Limited Partnership

BOKF Private Equity Limited Partnership II

BOK Financial Securities, Inc.

Cavanal Hill Distributors, Inc.

HFP II, LLC

The Milestone Group, Inc. (5)

Subsidiaries of BOKF, National Association (1)

Affiliated BancServices, Inc.

Affiliated Financial Holding Co.

Affiliated Financial Insurance Agency, Inc.

BancOklahoma Agri-Service Corporation

BancOklahoma Mortgage Corporation

BOK Delaware, Inc. (3)

BOK Financial Asset Management, Inc. (2)

BOK Financial Equipment Finance, Inc.

BOK Funding Trust (3)

BOKFCDF Fund I, LLC

BOKF Community Development Fund, LLC

BOKF Community Development Corporation

BOKF Petro Holding, LLC

BOKF Special Assets I, LLC

BOSC Agency, Inc. (Oklahoma)

BOSC Agency, Inc. (New Mexico) (4)

BOSC Agency, Inc.. (Texas) (2)

Calicotte Ranch HOA, LLC

Cavanal Hill Investment Management, Inc.

Cottonwood Valley Ventures, Inc.

CVV Management, Inc.

CVV Partnership, an Oklahoma General Partnership

Oklahoma New Markets Fund I, LLC

Oklahoma New Markets Fund II, LLC

Oklahoma New Markets Fund III, LLC

Oklahoma New Markets Fund IV, LLC

Ottawa Land Partners, LLC (6)

Pacesetter Leasing Company

All Subsidiaries listed above were incorporated in Oklahoma, except as noted.

(1) Chartered by the United States Government
(2) Incorporated in Texas
(3) Incorporated in Delaware
(4) Incorporated in New Mexico
(5) Incorporated in Colorado
(6) Incorporated in Kansas

Exhibit 23

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

- Registration Statement (Form S-8, No. 33-44121) pertaining to the Reoffer Prospectus of the Bank of Oklahoma Master Thrift Plan and Trust Agreement as amended October 6, 2008.
- Registration Statement (Form S-8, No. 333-40280) pertaining to the Reoffer Prospectus of the BOK Financial Corporation Master Thrift Plan for Hourly Employees as amended October 6, 2008.
- Registration Statement (Form S-8, No. 33-79836) pertaining to the Reoffer Prospectus of the BOK Financial Corporation Directors' Stock Compensation Plan.
- Registration Statement (Form S-8, No. 333-32649) pertaining to the Reoffer Prospectus of the BOK Financial Corporation 1997 Stock Option Plan.
- Registration Statement (Form S-8, No. 333-93957) pertaining to the Reoffer Prospectus of the BOK Financial Corporation 2000 Stock Option Plan.
- Registration Statement (Form S-8, No. 333-62578) pertaining to the Reoffer Prospectus of the BOK Financial Corporation 2001 Stock Option Plan.
- Registration Statement (Form S-8, No. 333-106530) pertaining to the Reoffer Prospectus of the BOK Financial Corporation 2003 Executive Incentive Plan.
- Registration Statement (Form S-8, No. 333-106531) pertaining to the Reoffer Prospectus of the BOK Financial Corporation 2003 Stock Option Plan.
- Registration Statement (Form S-8, No. 333-135224) pertaining to the Reoffer Prospectus of the BOK Financial Corporation 2003 Stock Option Plan.
- Registration Statement (Form S-8, No. 333-158846) pertaining to the Reoffer Prospectus of the BOK Financial Corporation 2009 Omnibus Incentive Plan.
- Registration Statement (Form S-3, (No. 333-212120) pertaining to the Reoffer Prospectus of the BOK Financial Corporation 2016 Subordinated Note Issuance.

of our reports dated February 27, 2018, with respect to the consolidated financial statements of BOK Financial Corporation and the effectiveness of internal control over financial reporting of BOK Financial Corporation included in this Annual Report (10-K) of BOK Financial Corporation for the year ended December 31, 2017.

/s/ Ernst & Young LLP
Tulsa, Oklahoma

February 27, 2018

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 Annual Report on Form 10-K 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: February 27, 2018

/s/ Steven G. Bradshaw
Steven G. Bradshaw
President
Chief Executive Officer
BOK Financial Corporation

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 Annual Report on Form 10-K 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. 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;

5. 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

6. 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: February 27, 2018

/s/ Steven E. Nell
Steven E. Nell
Executive Vice President and Chief Financial Officer
BOK Financial Corporation

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 Annual Report of BOK Financial Corporation ("BOK Financial") on Form 10-K for the fiscal year ending December 31, 2017 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.

February 27, 2018

/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

RETAIL AND COMMERCIAL BANKING:

BANK OF ALBUQUERQUE

BANK OF ARIZONA

BANK OF ARKANSAS

BANK OF OKLAHOMA

BANK OF TEXAS

COLORADO STATE BANK AND TRUST

mobank

WEALTH MANAGEMENT:

E-SPECTRUM ADVISORS

BOK FINANCIAL ASSET MANAGEMENT

CAVANAL HILL®

TRANSACTION AND PAYMENT PROCESSING:

TransFund®

MORTGAGE BANKING:

CORPORATE HEADQUARTERS:

Bank of Oklahoma Tower
P.O. Box 2300
Tulsa, Oklahoma 74192
918.588.6000

www.bokf.com

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