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

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2021

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. 001-37811

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

OK	73-1373454
(State or other jurisdiction of Incorporation or Organization)	**(IRS Employer Identification No.)**
Bank of Oklahoma Tower Boston Avenue at Second Street Tulsa, OK	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 every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or a smaller reporting company, or an emerging growth company. See definitions of "larger accelerated filer," "accelerated filer," and "smaller reporting company," amd "emerging growth 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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

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 $2.6 billion (based on the June 30, 2021 closing price of Common Stock of $86.60 per share). As of January 31, 2022, there were 68,322,916 shares of Common Stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Part III incorporates certain information by reference from the Registrant's Proxy Statement for the 2022 Annual Meeting of Shareholders.

BOK Financial Corporation
Form 10-K
Year Ended December 31, 2021

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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, 2021, the Company reported total consolidated assets of $50 billion.

BOKF, NA is a wholly owned subsidiary bank of BOK Financial. BOKF, NA operates TransFund, Cavanal Hill Investment Management and BOK Financial Asset Management, Inc. BOKF, NA operates banking divisions across eight states: Bank of Albuquerque, Bank of Oklahoma, Bank of Texas and BOK Financial in Arizona, Arkansas, Colorado, Kansas and Missouri; as well as having limited purpose offices in Nebraska, Wisconsin and Connecticut. 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; BOK Financial Private Wealth, Inc., an investment adviser to high net worth clients; and BOK Financial Insurance, Inc., a broker providing insurance services. 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 and insurance 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 also offer products that leverage our energy financing expertise and 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 across a range of economic situations. Wealth management continues to be a strategic focus. We provide liquidity to the mortgage markets through trading of U.S. government agency issued mortgage-backed securities and related derivative contracts and currently service more than $100 billion of assets under management or administration.

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 commodity 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 loan origination and servicing activities. Wealth Management engages in brokerage and trading activities, mainly related to providing liquidity to the mortgage markets through trading of U.S. government agency mortgage-backed securities and related derivative contracts. Wealth Management also provides fiduciary services, private bank services, investment advisory services and insurance services in all markets. Additionally, Wealth Management underwrites state and municipal securities. 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 the Federal Deposit Insurance Corporation ("FDIC") as of June 30, 2021.

We are the largest financial institution in the state of Oklahoma with 15% of the state’s total deposits. We have 37% and 9% 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.

We compete against numerous financial institutions in the state of Texas, including some of the largest in the United States, and have a market share of approximately 1% in the Dallas, Fort Worth area and less than 1% in the Houston area. We have a 10% market share in the Albuquerque area and compete with four large national banks, some regional banks and several locally-owned smaller community banks. Our market share is approximately 3% in the Denver area. We serve Benton and Washington counties in Arkansas with a market share of approximately 2%. Our market share is approximately 2% in the Kansas City, Missouri/Kansas area and approximately 1% in the Phoenix area. The Company’s ability to expand into additional states remains subject to various federal and state laws.

Human Capital Management and Practices

In order to continue leading the industry as a provider of financial solutions to businesses, institutions and individuals across the country, it is crucial that we attract, develop and retain top talent. To facilitate talent attraction and retention, we strive to make BOK Financial an inclusive workplace with opportunities for our employees to grow and develop in their careers. We support our employees with strong compensation, benefits, and wellness programs. We also work to build connections between our employees and our communities. “Actively advancing the communities we serve” is one of our core values. Those familiar with BOK Financial will recognize the generosity of our employees in our communities as one of the hallmarks of our culture, and a source of pride as we live out our purpose statement of “Achieving More Together”.

Our talented workforce is the key to our success. As of December 31, 2021, we had approximately 4,711 full-time and part-time employees, the majority of which are full-time employees. None of the Company’s employees are represented by collective bargaining agreements. Management considers its employee relations to be good. Our employees are primarily distributed over our eight state footprint, to include: Oklahoma, Texas, Arkansas, Kansas, Missouri, Colorado, New Mexico and Arizona.

Diversity and Inclusion Efforts

We believe that our organization should reflect the diversity of the communities we serve. We also recognize that in order for a diverse workforce to thrive, we must prioritize inclusion efforts. The following categories represent areas of focus for D&I: community engagement, senior leader engagement, Communities of Practice, and diverse recruiting practices and education.

As of December 31, 2021, 57% of our overall workforce was female, and 32% of our overall workforce was comprised of people of color. In 2021, BOK Financial was also recognized by ‘Diversity, Inc.’ as one of the ‘Top Regional Companies’ with respect to scoring criteria related to diversity, equity and inclusion organizational practices.

Community Engagement

In 2021, the company and our BOKF Foundation gave a combined $6.1 million to organizations making a difference in our communities. Our employees donated more than 25,844 volunteer hours and more than 307 employees served in 547 leadership roles with 375 nonprofit boards. Over the past ten years, we have committed nearly $581 million in loan funding to support affordable housing projects and nearly $345 million in affordable housing investments.

Senior Leader Engagement

Our Diversity & Inclusion Council is led by our CEO and President, Stacy Kymes, and includes other members of our executive leadership team, as well as senior leaders throughout our footprint. We are members of the ‘CEO Action for Diversity and Inclusion’ Pledge. The pledge outlines our commitment to cultivating a trusting environment where all ideas are welcomed, and employees feel comfortable and empowered to have discussions about diversity and inclusion.

Mentorship Program

Our mentorship program launched late 2020. We believe that mentorship programs are a valuable tool for helping employees successfully shape their long-term career trajectory. Mentor matches are prioritized for females and people of color. Within the past year, we have had 256 mentors/mentees participate in the program. In 2021, 36% of our mentees were people of color and 60% were female.

Communities of Practice (CoP)

In 2020, we introduced a concept from Harvard Business Review called ‘Communities of Practice’ (CoP) as a way for our organization to build inclusive groups to harness the collective power of diverse skills, styles, strengths and experiences – and leverage those strengths into advancing our business. Communities of Practice also provide exposure opportunities for employees to interact with others across the organization at all levels. As of December 31, 2021, we had 16 active Communities of Practice, including: Advancing Minority Owned Businesses, Mentoring, Practicing Inclusion, Diverse Recruiting Practices, Engagement Practices and Culture Ambassadors. Any person from across the organization can join any Community of Practice; these groups highlight our enterprise focus on inclusivity.

Diverse Recruiting Practices

All members of the recruiting team have completed AIRS Certified Diversity Recruiter certification as well as a custom-developed training program for BOK Financial talent and attraction specialists. University recruiting has been a focal point for our diversity efforts. 42% of our 2021 class of interns and early career associates identified as people of color.

Diversity Education

Unconscious bias education was introduced for all managers in order to provide tools to adjust automatic patterns of thinking related to hiring practices. We also partner with a well-known virtual learning vendor to ensure all employees across the company have equal access to development opportunities. The concept of ‘inclusion’ is woven into many of the learning opportunities offered by our Talent and Organizational Development team; examples would include: ‘Communicating Across Generations’ and ‘Crucial Conversations’.

Benefits and Compensation Offerings

BOK Financial is committed to the health and wellness of our employees. We provide our employees and their families with access to a variety of flexible and convenient health and wellness programs. We encourage engagement in healthy behaviors and offer options, where possible, to customize benefits to meet the needs of employees and their families. We provide robust compensation and benefits programs to help meet the needs of our employees. In addition to base salaries, these programs may include incentive compensation, discretionary bonuses, equity, 401(k), health and wellness benefits, health savings and flexible spending accounts, paid time off, family leave, flexible work schedules, employee assistance programs, and tuition reimbursement.

Talent Development

Our talent development programs provide employees with the resources they need to achieve their career goals, build management skills and lead within BOK Financial. We provide 'boot camps' that support professional development. We have programs that prepare high-potential talent for the leadership roles of tomorrow. Our employees are provided many opportunities to advance their careers within our organization. During 2021, 38% of all of our open jobs were filled internally, through promotional opportunities for our employees.

Connecting with Our Employees

In 2021, our employees were engaged in providing feedback - 91% of our workforce participated in our annual engagement survey. Providing feedback is a cultural norm at BOK Financial. We have consistently had employee participation in excess of 80% since the inception of our annual engagement survey.

Connecting with Our Communities

Since our employees are passionate about many causes, our corporate giving and volunteering programs support and encourage employees by engaging with those causes. Our employee-led giving program allows employees to nominate and vote for nonprofit organizations across our footprint to receive financial benefit from our Foundation. This year, over 1,500 employees nominated and voted on 200 nonprofit organizations to receive funding. During 2021, we accelerated resources to underserved minority communities by supporting nonprofit organizations providing programs to help close gaps in four key areas: income inequality, workforce development, education and mentoring, and social justice inequities. We were also an active partner in the 10-day commemoration of the Tulsa Race Massacre centennial, joining in support of the Greenwood Rising: Black Wall Street history center.

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. 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 Company 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.

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 mandated that certain regulatory requirements applicable to systemically important financial institutions be more stringent than those applicable to other financial institutions.

Subsequent legislation raised the threshold for systemically important financial institutions from $50 billion to $250 billion while providing the Federal Reserve with authority to establish incremental prudential standards for banks between $100 billion and $250 billion. Current rules adopted by the Office of the Comptroller of the Currency require heightened standards for financial institutions that report at least $50 billion of average consolidated assets over a four quarter period after an 18-month grace period. These heightened standards require establishing and implementing a risk governance framework to cover the bank's risk-taking activities.

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 BHCA, or to acquire any company engaged in any new activity permitted by the BHCA, 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. BOKF, NA 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 four capital metrics 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. In addition to the risk-based capital ratios, the Company is also subject to the leverage ratio. The leverage ratio is determined by dividing Tier 1 capital by adjusted average total assets.

Additional 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. Several components, which had previously been deferred, were finalized in 2019. These have been implemented with no material capital impact.

Failure to meet minimum capital requirements 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.

Stress Testing

The Regulatory Relief Act eliminated the requirement for periodic company run capital stress tests known as the Dodd-Frank Act Stress Test for banks with assets less than $250 billion. Although the mandate has been lifted, the Company still continues to perform capital stress testing on a regular basis.

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 subsidiary banks 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. Among other things, the Dodd-Frank Act raised the minimum Designated Reserve Ratio ("DRR") from 1.15% to 1.35% of estimated insured deposits. On September 30, 2018 the DRR rose above 1.35%. Accordingly, the surcharge for depository institutions with assets of greater than $10 billion ceased.

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") impose 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.

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. 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. Under CFTC and SEC rules, entities transacting in less than $8 billion in notional value of swaps over any 12 month period are exempt from the definition of and registration as a "swap dealer". The Company currently estimates that the nature and volume of its swaps activity will not require it to register as a swap dealer.

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.

Following a steep downturn in the initial months of the COVID-19 pandemic, the economy has continued to strengthen as businesses have broadly reopened and the healthy positions of households and businesses continue to support demand. In March 2021, Congress passed a $1.9 trillion coronavirus rescue package, the American Rescue Plan Act of 2021, designed to facilitate recovery from the devastating economic and health effects of the pandemic. The package included stimulus checks for qualifying Americans, extended unemployment insurance, small business support, increases in certain tax credits, and lower health insurance premiums.

The December 2021 unemployment rate of 3.9% is considerably lower than the December 2020 unemployment rate of 6.7%. The Federal Open Market Committee ("FOMC") is seeking to achieve maximum employment and inflation at the rate of 2% over the long run. Currently, inflation is running well above 2% as supply chain problems have made it difficult for producers to meet strong demand. While the FOMC has decided to keep the target range for the federal funds rate at zero to a quarter percentage point for the time being, it has stated it soon expects a rise in the target range will be appropriate. The FOMC has decided to reduce the pace of net asset purchases and bring them to an end in March, 2022.

Our base case economic forecast for the fourth quarter of 2021 assumes GDP near 7% for the fourth quarter of 2021 and then ranges from 3% to 4% over the next four quarters. The civilian unemployment rate stabilizes at approximately 4% and WTI ranges between $67.35 and $76.99 per barrel over the next year. See "Summary of Credit Loss Experience" section in Management's Discussion and Analysis for further discussion around our economic forecast.

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:

Strategic, Compliance 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;
- a breach in the security of BOK Financial's systems; and
- 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 acquisition of customers.

Government regulations and political environment 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.

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 recent Federal executive and legislative changes, add additional uncertainty to the implementation, scope and timing of changes in the regulatory environment for the banking industry and for the broader economy.

Our business, financial condition, liquidity and results of operations could be adversely affected by the COVID-19 pandemic or other health crisis.

The Coronavirus Disease 2019 ("COVID-19") pandemic created economic and financial disruptions that have adversely affected BOK Financial's business, financial condition, liquidity and results of operations and may continue to do so in the future. The extent to which the COVID-19 pandemic will continue to affect our business will depend on future developments, which are highly uncertain and cannot be predicted, including the scope and duration of the pandemic, the addition of infectious variants, the continued effectiveness of vaccines and the willingness of the population to get vaccines, the continued effectiveness of our business continuity plan, the direct and indirect impact of the pandemic on our employees, customers, clients, counterparties and service providers, as well as other market participants, and the effectiveness of actions taken by governmental authorities and other third parties in response to the pandemic.

The current pandemic or other health crisis could destabilize the financial markets and the general economy. Forced shutdowns or regulations limiting business could have an adverse effect on our customers, limiting their ability to satisfy obligations and limiting growth or demand for our loans and other services, which could affect our liquidity, financial condition and results of operations.

The effects of climate change and resulting government regulations could adversely affect BOK Financial and BOK Financial customers.

The current and anticipated effects of climate change have resulted in increased political and social attention. Climate changes present physical and transition risks to BOK Financial, both of which are expected to increase over time. Physical risks relate to the harm of people or property arising from acute, climate-related disaster events such as hurricanes or tornadoes, as well as longer-term chronic phenomena such as higher average temperatures. Physical risks specific to BOK Financial include:

- Increases in extreme weather events could damage or destroy the property of BOK Financial or its customers, disrupting operations and causing significant expenditures.
- Significant damages to real properties securing our loans could cause the value of the loan portfolio to contract. Borrowers may be unable to make payments on loans increasing delinquency rates and average loan loss severity.
- Wide-range weather disasters, including but not limited to, long periods of drought and rising sea levels, could result in an economic downturn and a decline in market conditions. Liquidity risks could arise as operational needs change for both BOK Financial and its customers.
- We may not have adequate insurance coverage for some potential natural, catastrophic climate change-related events.

Transition risks relate to stresses arising from the shifts in regulatory policies, consumer or business sentiment, or technologies required to limit climate change. The U.S. Congress, state legislatures and federal and state regulatory agencies have continued to propose and advance numerous legislative and regulatory initiatives seeking to mitigate the effects of climate change. Transition risks specific to BOK Financial include:

- Compliance, operating, maintenance and remediation costs may require a significant amount of capital affecting BOK Financial's liquidity position.
- BOK Financial's credit portfolios include carbon-intensive industries, which could be adversely impacted by the transition to a low-carbon economy. BOK Financial has a long-standing relationship with the energy industry and the local economies within BOK Financial's geographical footprint have a concentration in energy-related industries. The regulatory impacts on the energy industry could lead to sharp changes in the values of certain assets or liabilities, increase costs, hinder financial results and shrink the industry. These changes could have a significant effect on the general economic conditions within our footprint.
- Reputational risk may increase as stakeholders become more focused on climate risk.

Credit Risk Factors

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

At December 31, 2021, loans to businesses and individuals with collateral primarily located in Texas represented approximately 34% of the total loan portfolio, loans to businesses and individuals with collateral primarily located in Oklahoma represented approximately 16% of our total loan portfolio and loans to businesses and individuals with collateral primarily located in Colorado represented approximately 12% of our total loan portfolio. These geographic concentrations subject the loan portfolio to the general economic conditions within these areas. Poor economic conditions in Texas, Oklahoma, Colorado 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, 2021, 15% 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. Legislation affecting reimbursement rates along with the continued transition to managed care in place of fee for service payments could affect their ability to pay.

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

Economic conditions globally could impact BOK Financial’s customers and counterparties with which we do business. The ongoing COVID-19 pandemic has affected economies around the world, trade related issues remain between the United States and China, and tension exists amongst the United States and OPEC Plus countries, including Russia and countries in the Middle East, over oil production levels. The current geopolitical environment, including events in Europe, Ukraine, and China, remain a risk to global economic conditions.

BOK Financial, its customers and counterparties may also be negatively affected by global events, such as natural disasters, and other external events beyond our control, including public health issues, terrorist attacks and acts of war. These global events may significantly affect long-term and short-term interest rates, energy prices, the value of financial assets and ultimately economic activity in our primary markets. The adverse effect of these events on the Company may include narrowing of the spread between interest income and interest expense, a reduction in fee income, an increase in credit losses and a decrease in demand for loans and other products and services.

Liquidity, Price, 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 subsidiary banks on interest income;
- changes in depositor behavior; and
- 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. Deposit repricing behavior may also differ from our models or from previous rate increases. 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.

On March 5, 2021, the U.K. Financial Conduct Authority ("FCA") confirmed that the publication of the principal tenors of the U.S. dollar London Interbank Offered Rate ("LIBOR") will cease immediately following a final publication on June 30, 2023. Further, U.S. regulators released a joint inter-agency statement about their expectations that banks cease entering into new contracts that use USD LIBOR as a reference rate as soon as practicable and in any event by December 31, 2021.

In order to be well prepared for the transition, the Company has established formal governance for the LIBOR transition, including a LIBOR Transition Working Group ("the Group") whose purpose is to guide the overall transition process for the Company. The Group is an internal, cross-functional team with representatives from all business lines, support and control functions, and legal counsel. Its responsibilities include, but are not limited to, monitoring industry developments; tracking direct and indirect exposures; developing and implementing remediation plans; and communication with internal and external stakeholders.

The Company has ceased production of new LIBOR-based exposure as of December 31, 2021 and now offers floating rate products in various alternative reference rates with the majority of volume being observed thus far in the Secured Overnight Financing Rate (“SOFR”). Key loan provisions have been modified so that new and renewed loans include LIBOR fallback language designed to ensure the smoothest possible transition from LIBOR to the new benchmark when such transition occurs. All existing financial contracts with direct exposure to LIBOR have been inventoried and are being tracked. Indirect exposures in the form of LIBOR-related systems, models, and processes have been inventoried, evaluated, and prioritized and remediation is underway.

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

BOK Financial derives a substantial amount of revenue from mortgage banking activities, the production and sale of mortgage loans and the servicing of mortgage loans. In addition, as part of BOK Financial's mortgage banking business, BOK Financial has substantial holdings of mortgage servicing rights. Revenue generated from the production and sale of mortgage loans is affected by mortgage interest rates and government policies related to economic stimulus and home ownership. Falling interest rates tend to increase mortgage lending activities and related revenue while rising interest rates have an opposite effect.

Mortgage servicing revenue is a fee earned over the life of the related loan. However, mortgage servicing rights are assets that are carried at fair value, which are very sensitive to numerous factors with the primary factor being changes in market interest rates. Falling interest rates tend to increase loan prepayments, which may lead to a decrease in the value of related servicing rights. We attempt to manage this risk by maintaining an active hedging program. The primary objective of the Company's hedging program is to provide an offset to changes in the fair value of these rights due to hedgeable risks, primarily changes in market interest rates. Due to numerous unhedgeable factors, hedging strategies may not offset all changes in the fair value of the asset. Such unhedgeable factors include, but are not limited to, changes in customer prepayment or delinquency behavior that is inconsistent with historical actual performance in a similar market environment; changes in the long-term or short-term primary/secondary mortgage spreads; and changes in survey-driven assumptions such as the cost of servicing and discount rates.

We also hold a substantial portfolio of residential mortgage-backed securities issued by U.S. government agencies. The fair value of residential mortgage-backed securities is highly 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. We mitigate this risk somewhat by investing principally in shorter duration mortgage products, which are less sensitive to changes in interest rates.

In addition, the Company actively engages in trading activities that provide U.S. government agency residential mortgage-backed securities and related derivative instruments to our customers. Trading activities generate net interest revenue and trading revenue. Trading revenue and customer hedging revenue varies in response to customer demand. The value of trading securities will increase in response to decreases in interest rates or decrease in response to increases in interest rates and other bond market factors. We mitigate the market risk of holding trading securities through appropriate economic hedging techniques.

Models may fail to reasonably predict changes in values caused by changes in interest rates, prepayment speeds, and other relevant stimuli, which could adversely affect our business or results of operations.

We use quantitative models to assist in measuring risk and predicting changes in the value of financial instruments. The outputs of these models are used to determine hedging strategy related to mortgage servicing rights, mortgage production pipeline and trading securities. We also use models to estimate the effects of changing interest rates and other market measures in order to adequately structure assets and liabilities to manage interest rate sensitivity. Inaccurate information obtained from these models could result in poor management decisions that lead to an elevated exposure to interest rates, which could adversely affect our results of operations.

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 and Transaction Risk Factors

Dependence on technology increases cybersecurity, data privacy and technology failure risk.

The Company is dependent on its technological ability to process, record and monitor a large number of customer transactions and store and protect a significant amount of sensitive customer information. Our customers' use of our internet-based services, and our customer and regulatory expectations regarding operational and information security and reliability, have increased over time. We face compliance risks and costs relating to the data privacy laws existing in multiple jurisdictions. Congress and the legislatures of states in which we operate regularly consider legislation that would impose more stringent data privacy requirements, resulting in increased compliance costs.

Cybersecurity risks for financial institutions have increased significantly in recent years in part because of the proliferation of new technologies, the increased use of the internet and mobile technologies to conduct financial transactions, and the increased sophistication and ever changing cyberattack techniques used by organized crime, hackers, terrorists, hostile foreign governments and other external parties to obtain confidential customer information and misappropriate customer funds. Such parties may seek to gain access to our systems directly or use equipment or security passwords belonging to employees, customers, third party services providers or other users of our systems. Accordingly, our operational systems and infrastructure must continue to be safeguarded and monitored for potential failures, disruptions, breakdowns and cyber attacks.

Our business, financial, accounting, data processing systems and other operating systems and facilities may stop operating properly or become disabled as a result of a number of factors that may be wholly or partially beyond our control. In addition to cyber attacks, there could be sudden increases in customer transaction volume, electrical or telecommunications outages, extended disruptions in operations or technology, natural disasters, pandemics, and events arising from political or social matters, including terrorist attacks. Third parties with whom we do business or that facilitate our business activities including exchanges, clearing houses, financial intermediaries or vendors that provide services or security solutions for our operations, could also be sources of operational or information security risk to the Company, including breakdowns or failures of their own systems, capacity constraints or cyber attacks.

Cybersecurity risk management programs are expensive to maintain and will not protect the Company from all risks associated with maintaining the security of customer data from external and internal intrusions, disaster recovery and failures in controls used by our vendors. A material breach of customer data security or operational or system failure may negatively impact our business reputation and cause a loss of customers, result in increased expense to contain the event and/or require that we provide credit monitoring services for or reimburse affected customers, result in regulatory fines, penalties or intervention, or result in litigation, all of which could have a materially adverse effect on our results of operations and financial condition.

Although to date we have not experienced any material losses relating to cyber attacks or other information security breaches or operational failures, there can be no assurance that we will not suffer such losses in the future. Attempts to compromise our cybersecurity are regular and frequent. Our risk and exposure to these matters remains heightened and as a result the continued development and enhancement of our controls, processes and practices designed to protect and facilitate the recovery of our systems, computers, software, data and networks from attack, damage or unauthorized access remains a high priority for us. As an additional layer of protection, we have purchased network and privacy liability risk insurance coverage. Our cybersecurity insurance may not provide sufficient coverage in the event of a breach, or may not be available in the future on acceptable terms.

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.

Our business may be adversely affected if we are unable to hire and retain qualified employees.

An increasing competitive factor in the financial services industry is the ability to attract and retain talented and diverse employees across several lines of business. The transition by many employers to remote work and work-from-home that occurred during the COVID-19 pandemic seems likely to continue. Employers now less constrained by physical geography, particularly those in markets with elevated employee compensation, may increasingly compete for our employees.

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 55% of the outstanding shares of BOK Financial's common stock at December 31, 2021. 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 subsidiary banks 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 $397 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 Note 5 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

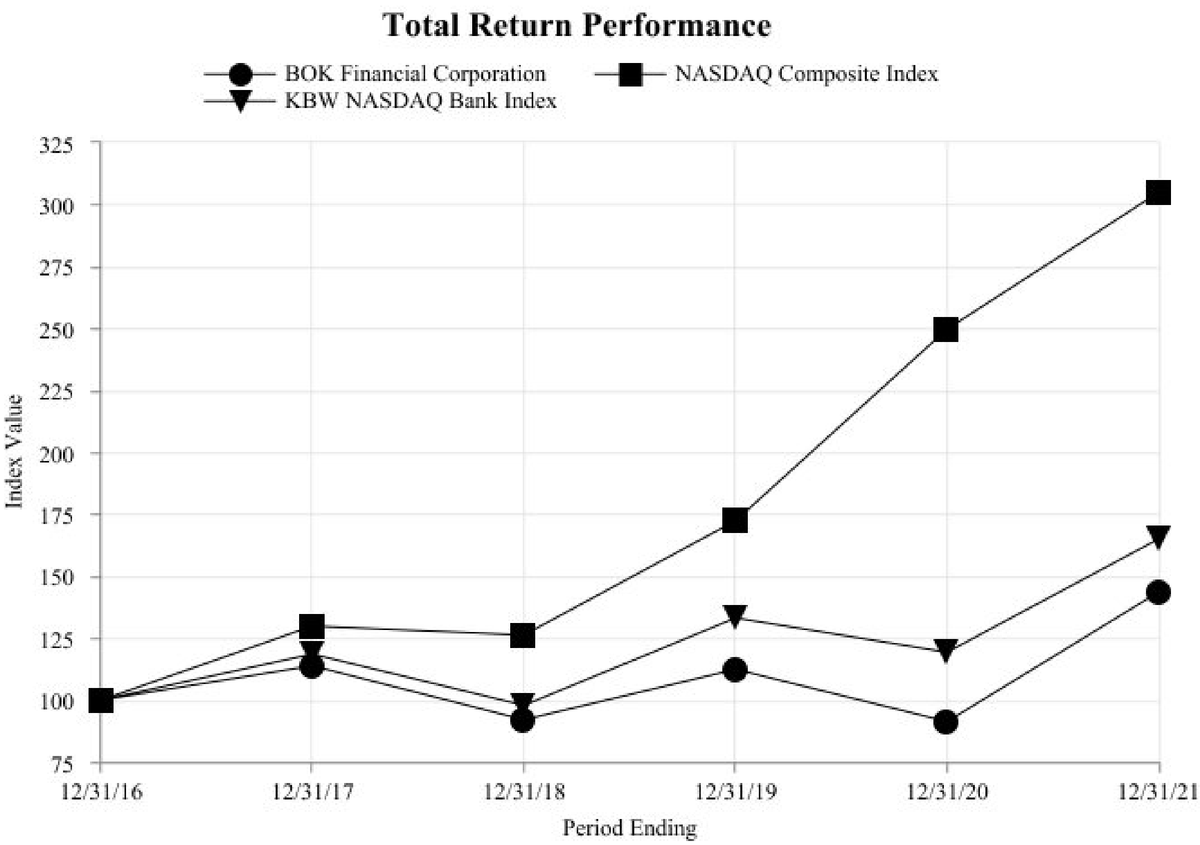
BOK Financial's $0.00006 par value common stock is traded on the NASDAQ Stock Market under the symbol BOKF. As of January 31, 2022, common shareholders of record numbered 724 with 68,322,916 shares outstanding.

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
2021:				
Low	**$ 68.97**	**$ 83.71**	**$ 77.86**	**$ 90.31**
High	**97.60**	**92.25**	**91.80**	**108.91**
Cash dividends declared	**0.52**	**0.52**	**0.52**	**0.53**
2020:				
Low	$ 35.27	$ 40.50	$ 48.94	$ 51.17
High	86.82	67.46	61.55	72.61
Cash dividends declared	0.51	0.51	0.51	0.52

Shareholder Return Performance Graph

Set forth below is a line graph comparing the change in cumulative shareholder return of the NASDAQ Composite Index and the KBW NASDAQ Bank Index for the period commencing December 31, 2016 and ending December 31, 2021.*



	Period Ending December 31,					
Index	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
BOK Financial Corporation	100.00	113.57	92.02	112.34	91.03	143.45
NASDAQ Composite	100.00	129.64	125.96	172.18	249.51	304.85
KBW NASDAQ Bank Index	100.00	118.59	97.58	132.84	119.14	164.80

* Graph assumes value of an investment in the Company's Common Stock for each index was $100 on December 31, 2016. 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, 2021.

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, 2021 to October 31, 2021	155	$ 102.03	—	1,795,052
November 1, 2021 to November 30, 2021	25,154	$ 103.74	25,000	1,770,052
December 1, 2021 to December 31, 2021	103,522	$ 104.65	103,522	1,666,530
Total	128,831		128,522	

[1] On April 30, 2019, 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, 2021, the Company had repurchased 3,333,470 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

	December 31,		
	2021	**2020**	**2019**
Selected Financial Data			
Earnings per share (based on average equivalent shares):			
Basic	**$ 8.95**	$ 6.19	$ 7.03
Diluted	**8.95**	6.19	7.03
Percentages (based on daily averages):			
Return on average assets	**1.23 %**	0.89 %	1.19 %
Return on average shareholders' equity	**11.59 %**	8.55 %	10.73 %
Dividend payout ratio	**23.29 %**	33.04 %	28.56 %
Allowance for loan losses to loans, excluding PPP loans[1]	**1.29 %**	1.82 %	0.97 %
Combined allowance for credit losses to loans, excluding PPP loans[1,2]	**1.45 %**	2.00 %	0.98 %

1 Metric meaningful due to the U.S. government agency guarantee and short-term nature of the Paycheck Protection Program ("PPP") loans.
2 Includes allowance for loan losses and accrual for off-balance sheet credit risk.

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.

Economic conditions across the U.S. have continued to improve throughout 2021 following the initial year of the COVID-19 pandemic. As of December, 2021, the unemployment rate was down to 3.9%, a sharp decline from the levels experienced in 2020. In 2021, real GDP increased 5.7% compared to 3.4% in 2020. Inflation continues to be well above the FOMC's target of 2%. The Federal Reserve has kept the Federal Funds rate at or near zero throughout 2021, but has recently announced that increases may soon be appropriate. In addition, the FOMC has decided to reduce the monthly pace of net asset purchases and bring them to an end in March, 2022. See "Summary of Credit Loss Experience" section of Management's Discussion and Analysis for additional discussion around our economic forecast.

Performance Summary

Net income for the year ended December 31, 2021 totaled $618.1 million or $8.95 per diluted share compared with net income of $435.0 million or $6.19 per diluted share for the year ended December 31, 2020. An improved outlook of economic conditions related to the COVID-19 pandemic and massive government stimulus drove a $100.0 million reversal in 2021 of the $222.6 million provision for credit losses recorded in 2020.

Pre-provision net revenue ("PPNR"), a non-GAAP measure, was $697.9 million for 2021 compared to $786.4 million in the prior year. The decrease in PPNR was due to lower combined net interest revenue and fees and commission revenue. This was largely driven by lower average loan balances due to customer deleveraging during current economic uncertainty, narrowing net interest margin and compressed margins and production volumes from our mortgage-banking activities. The decline was partially offset by gains recognized on the sales of an alternative investment and repossessed assets.
Highlights of 2021 included:

- Net interest revenue totaled $1.1 billion for 2021, consistent with the prior year. Net interest margin was 2.60% for 2021 compared to 2.83% for 2020. The full impact of the reduction of the federal funds rate by the Federal Reserve in 2020 was realized in 2021. The following reduction in other short-term market interest rates reduced the yield on floating-rate assets by more than the amount by which funding costs could be reduced, compressing the margin. Average earning assets were $43.8 billion for 2021, up $3.1 billion over 2020, largely due to increased trading securities.

- Fees and commissions revenue was $668.3 million for 2021, a decrease of $142.0 million compared to 2020. Brokerage and trading revenues decreased $108.8 million due to a shift from fee revenue to net interest revenue, combined with narrowing margins. Mortgage banking revenue decreased $76.5 million due to a decrease in mortgage production volume combined with a reduction in production revenue as a percentage of production volume. Other revenue increased $18.3 million, primarily due to higher production revenue on repossessed oil and gas properties, which was largely offset by related operating expenses.

- Other gains, net increased $57.7 million to $63.7 million due to sales of an alternative investment and repossessed assets.

- Other operating expense totaled $1.2 billion, a $13.4 million increase compared to 2020. Personnel expense increased $6.9 million. Non-personnel expense increased $6.5 million, including an increase of $10.8 million of operating expenses on repossessed assets.

- The net economic benefit of the changes in the fair value of mortgage servicing rights and related economic hedges was $21.0 million during 2021 compared to an economic benefit of $24.9 million during 2020.

- The combined allowance for credit losses totaled $289 million or 1.45% of outstanding loans, excluding Paycheck Protection Program ("PPP") loans, at December 31, 2021. The combined allowance for credit losses was $426 million or 2.00% of outstanding loans, excluding PPP loans, at December 31, 2020.

- Nonperforming assets not guaranteed by U.S. government agencies decreased $173 million compared to December 31, 2020. Potential problem loans decreased $255 million and other loans especially mentioned decreased $212 million. Net charge-offs were $37.0 million or 0.17% of average loans, excluding PPP loans, in 2021. Net loans charged-off were $70.4 million or 0.32% of average loans, excluding PPP loans, in 2020.

- Period-end outstanding loan balances decreased $2.8 billion to $20.2 billion at December 31, 2021. Period-end PPP loans decreased $1.4 billion to $276.3 million. Commercial real estate loans decreased $867 million and commercial loans decreased $571 million. Average loans were $21.5 billion, a $1.9 billion decrease compared to 2020.

- Average deposits increased $5.2 billion to $37.9 billion and period-end deposits increased $5.1 billion to $41.2 billion at December 31, 2021, as customers maintained higher deposit balances during this time of economic uncertainty. Average interest bearing deposits increased $2.9 billion and average demand deposits grew by $2.3 billion.

- Common equity Tier 1 capital ratio was 12.24% at December 31, 2021. In addition, the Tier 1 capital ratio was 12.25%, total capital ratio was 13.29% and leverage ratio was 8.55% at December 31, 2021. At December 31, 2020, the Tier 1 capital ratio was 11.95%, the total capital ratio was 13.82% and the leverage ratio was 8.28%.

- The Company repurchased 1,359,657 common shares at an average price of $86.74 per share during 2021 and 1,107,100 common shares at an average price of $68.49 during 2020.
- The Company paid cash dividends of $2.09 per common share during 2021 and $2.05 per common share in 2020.

Net income for the fourth quarter of 2021 totaled $117.3 million or $1.71 per diluted share, compared to $188.3 million or $2.74 per diluted share for the third quarter of 2021.

Highlights of the fourth quarter of 2021 included:

- Net interest revenue totaled $277.1 million for the fourth quarter of 2021, a decrease of $3.2 million compared to the third quarter of 2021. Net interest margin was 2.52% for the fourth quarter of 2021 and 2.66% for the third quarter of 2021. PPP loan fees of $7.7 million were recognized in the fourth quarter of 2021 compared to $12.7 million in the previous quarter.
- Operating revenue totaled $157.4 million for the fourth quarter of 2021, a $72.4 million decrease compared to the third quarter of 2021. Brokerage and trading revenue decreased $33.1 million as uncertainty in the markets led to reduced transaction activity and tighter margins compared to elevated volumes in the third quarter. Lower mortgage loan production volume and smaller margins also reduced mortgage banking revenue by $5.0 million. The prior quarter also included a $31.1 million pre-tax gain on the sale of an alternative investment.
- Operating expenses in the fourth quarter totaled $299.5 million, an $8.2 million increase compared to the third quarter of 2021. The fourth quarter of 2021 included a $5.0 million charitable donation to the BOKF Foundation. Increases in business promotion costs, professional fees, and other expenses were partially offset by lower personnel expense.
- Continued strength in commodity prices coupled with an outlook for moderate growth in gross domestic product and the labor markets, improving credit quality metrics and lower loan balances resulted in a $17.0 million negative provision for expected credit losses in the fourth quarter of 2021. A $23.0 million negative provision for expected credit losses was recorded in the third quarter of 2021.

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 from Loan Commitments

The allowance for loan losses and accrual for off-balance sheet credit risk from unfunded loan commitments represent the portion of amortized cost basis of loans and related unfunded commitments we do not expect to collect over the asset's contractual life, considering past events, current conditions, as well as reasonable and supportable forecasts of future economic conditions. Appropriateness of the allowance for loan losses and accrual for off-balance sheet credit risk from unfunded loan commitments is determined by a senior management Allowance Committee which requires judgment about effects of uncertain matters, resulting in a subjective calculation which is inherently imprecise. Because of the subjective forward-looking nature of the calculation, changes in these measures may not directly correlate with actual economic events. In future periods, management judgment may consider new or changed information which may cause significant changes in these allowances in those future periods.

On January 1, 2020 BOK Financial's accounting policies changed significantly with the adoption of Financial Accounting Standards Board ("FASB") Accounting Standards Update No. 2016-13 *Financial Instruments - Credit Losses (Topic 326): Assets Measured at Amortized Cost* ("ASU 2016-13" or "CECL"). Prior years were not restated. Prior to January 1, 2020, general allowances and nonspecific allowances were based on incurred credit losses. See Note 4 to the Consolidated Financial Statements for the description of the expected credit losses calculation of the allowance for loan losses and accrual for off-balance sheet credit risk from unfunded loan commitments.

For the majority of risk-graded loans, the accruing loan's expected credit loss estimate is sensitive to management judgment, particularly probability of default and loss given default assumptions, changes in specific macroeconomic factor forecasts and the probability weight assigned to each economic scenario, and appropriate adjustments.

Significant assumptions and estimates affecting the allowance for loan losses and accrual for off-balance sheet credit risk include:

- Probability of default and loss given default measurements are based on historical data that may not be a good predictor of future performance or actual losses.
- Probability of default is based on risk grades, a subjective measurement of the risk of a loan. This subjective assessment of risk may not reflect actual risk of loss.
- The forecast for each relevant economic loss driver and the probability weighting of economic scenarios are overseen by a senior management Economic Forecast Committee which includes members independent of the allowance process.
- The Allowance Committee may increase or decrease the allowance to reflect risks not captured in the quantitative component. Examples of circumstances that may result in adjustments include, but are not limited to, new lines of business, market conditions that have not been previously encountered, observed changes in credit risk that are not yet reflected in macroeconomic factors, or economic conditions that impact loss given default assumptions.

Although the resulting expected credit loss estimate represents management's best estimates at the time, actual credit losses will differ from management's estimate. Portfolio composition will change over time, actual economic conditions will differ from probability-weighted assumptions, borrower-specific circumstances will change, as well as other factors. Differences between actual losses and management's estimates may materially affect the Company's results of operations.

We describe critical elements affecting our estimate of expected credit loss in the "Summary of Credit Loss Experience" section of Management's Discussion and Analysis. While it is challenging to evaluate the allowance impact for a change in a particular input, results of such an analysis demonstrate how the quantitative element of the allowance behaves under different conditions. The sensitivity to management's economic scenario weighting may be quantified by comparing the results of weighting each economic scenario at 100%. For example, compared to a 100% Base Case scenario, a 100% Downside case would result in an additional $85 million in quantitative reserve, while a 100% Upside Case would result in $8 million less in quantitative reserve at December 31, 2021. Such sensitivity calculations do not necessarily reflect the nature and extent of future changes in the related allowance for a number of reasons including (1) management's weighting of multiple forecasted economic scenarios in estimating expected credit losses; (2) management's predictions of future economic trends and relationships among the scenarios may differ from actual events; and (3) management's application of subjective measures to modeled results when appropriate.

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. Fair value measurements of significant assets or liabilities that are based on unobservable inputs (Level 3) are considered Critical Accounting Policies and Estimates. Additional discussion of fair value measurement and disclosure is included in Notes 7 and 19 of 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 $32 million. We expect a $42 million decrease in the fair value of our mortgage servicing rights from a 50 basis point decrease in primary mortgage interest rates.

Results of Operations

Net Interest Revenue and Net Interest Margin

2021 Net Interest Revenue

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 $1.1 billion for 2021, consistent with the prior year. This includes $42.7 million of PPP loan fees for 2021 and $35.5 million for 2020. At December 31, 2021, $7.5 million of PPP loan fees remain to be recognized. Also included in 2021 was $16.1 million of net purchase discount accretion compared to $26.0 million in 2020. Approximately $31 million of purchase accounting discount remains to be accreted. Net interest revenue decreased $64.0 million due to changes in interest rates and increased $72.4 million from growth in earning assets. 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.

Net interest margin was 2.60% for 2021 and 2.83% for 2020. The tax-equivalent yield on earning assets was 2.74% for 2021 compared to 3.24% in 2020. The full impact of the reduction of the federal funds rate by the Federal Reserve in 2020 was realized in 2021. A reduction in other short-term market interest rates followed, which reduced the yield on floating-rate assets by more than funding costs could be reduced, compressing the margin. Loan yields decreased 22 basis points to 3.62%. The available for sale securities portfolio yield decreased 41 basis points to 1.80%. The yield on trading securities fell 77 basis points to 1.98%. The yield on interest-bearing cash and cash equivalents decreased 32 basis points to 0.13%.

Funding costs decreased 32 basis points compared to 2020. The cost of interest-bearing deposits decreased 28 basis points. The cost of other short-term borrowings decreased 31 basis points. The benefit to net interest margin from earning assets funded by non-interest bearing liabilities was 7 basis points for 2021, down from 12 basis points for 2020.

Average earning assets for 2021 increased $3.1 billion or 8% over 2020, largely due to an increase in our trading of U.S. government agency residential mortgage-backed securities, partially offset by a reduction in the loan portfolio. Average trading securities balances increased $4.7 billion due to increased customer demand. Average loans, net of allowance for loan losses, decreased $1.9 billion, largely due to purposeful deleveraging by our customers as borrowers continue to pay down during this time of economic uncertainty. The average balance of available for sale securities, which consists largely of residential and commercial mortgage-backed securities guaranteed by U.S. government agencies, increased $922 million. Fair value option securities that we hold as an economic hedge against changes in the fair value of mortgage servicing rights decreased $702 million.

Total average deposits grew by $5.2 billion over the prior year. This increase is largely due to customers retaining elevated balances in the current economic environment combined with government stimulus-related deposits. Average interest-bearing transaction account balances increased $3.0 billion. Average demand deposit balances increased $2.3 billion. Average short-term borrowings decreased $3.5 billion.

Our overall objective is to manage the Company’s balance sheet for changes in interest rates as is further described in the Market Risk section of this report. Approximately 76% 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 2021 Net Interest Revenue

Tax-equivalent net interest revenue totaled $279.2 million for the fourth quarter of 2021, a decrease of $3.3 million compared to the third quarter of 2021.

Net interest margin was 2.52% for the fourth quarter of 2021 compared to 2.66% for the third quarter of 2021. PPP loan fees of $7.7 million were recognized in the fourth quarter of 2021 compared to $12.7 million in the previous quarter. The tax-equivalent yield on earning assets was 2.66% for the fourth quarter of 2021, a decrease of 12 basis points compared to the third quarter of 2021. Loan yields increased 2 basis points to 3.70%. Excluding PPP loan fees, the loan portfolio yield increased 11 basis points, primarily due to the timing of loan fees. Yield on available for sale securities decreased 8 basis points to 1.72%. Yield on trading securities was down 15 basis points to 1.89%.

Funding costs increased 2 basis points compared to the third quarter of 2021. The cost of other short-term borrowings increased 37 basis points while the cost of interest-bearing deposits decreased 1 basis point. The cost of subordinated debentures decreased 61 basis points due to the redemption of $150 million in the third quarter of 2021. The benefit to net interest margin from earning assets funded by non-interest bearing liabilities was 7 basis points in the fourth quarter of 2021 and third quarter of 2021.

Average earning assets for the fourth quarter of 2021 increased $1.3 billion over the third quarter of 2021. Average loans, net of allowance for loan losses, decreased $572 million, largely due to paydowns of PPP and commercial real estate loans, partially offset by growth in commercial loans. Trading securities balances increased $1.6 billion as we increased our trading of U.S. government agency residential mortgage-backed securities. Average interest bearing cash and cash equivalents grew by $526 million. Available for sale securities decreased $198 million.

Average deposits increased $2.0 billion over the third quarter of 2021, as customers choose to retain elevated balances in the current environment. Average demand deposit balances increased $1.1 billion and average interest-bearing transaction accounts increased $891 million. Other borrowings decreased $1.7 billion while funds purchased and repurchase agreements increased $1.4 billion.

2020 Net Interest Revenue

Tax-equivalent net interest revenue for 2020 was $1.1 billion, consistent with 2019. This included $26.0 million of net purchase discount accretion for 2020 and $37.8 million for 2019. Also included for 2020 was $35.5 million of PPP loan fees, which were not present in 2019. Net interest revenue decreased $108.7 million due to rates and increased $102.8 million from growth in earning assets.

Net interest margin was 2.83% for 2020 compared to 3.11% for 2019. The tax-equivalent yield on average earning assets decreased 103 basis points compared to 2019. In response to the anticipated impact to the economy from the COVID-19 pandemic, the Federal Reserve reduced the federal funds rate to near zero in March, 2020. The resulting impact on market interest rates compressed the net interest margin. Loan yields decreased 129 basis points. The available for sale securities portfolio yield decreased 37 basis points. The yield on interest-bearing cash and cash equivalents decreased 183 basis points. The yield on trading securities fell 80 basis points. The cost of interest-bearing deposits decreased 69 basis points and the cost of other short-term borrowings decreased 161 basis points. The benefit to net interest margin from earning assets funded by non-interest bearing liabilities was 12 basis points for 2020, down from 45 basis points for 2019.

Average earning assets increased $4.3 billion or 12% over 2019, largely due to the expansion of the available for sale securities portfolio, loans originated as part of the PPP, and an increase in trading of U.S. government agency residential mortgage-backed securities. Average loans, net of allowance for loan losses, increased $1.1 billion, primarily related to $1.4 billion in average PPP loans. The average balance of available for sale securities increased $2.3 billion in order to reduce our exposure to falling short-term interest rates. The average balance of trading securities increased $1.3 billion. Total average deposits grew by $7.1 billion over 2019. This increase was largely due to the combination of focused deposit gathering initiatives, stimulus-related deposits, and customers retaining elevated balances in the current economic environment. Average interest-bearing transaction deposits increased $5.6 billion. Average short-term borrowings decreased $1.7 billion.

Table 2 – Volume/Rate Analysis
(In thousands)

	Year Ended December 31, 2021 / 2020			Year Ended December 31, 2020 / 2019		
		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	**$ (1,770)**	**$ 540**	**$ (2,310)**	$ (9,384)	$ 1,332	$ (10,716)
Trading securities	**88,272**	**128,039**	**(39,767)**	5,982	22,824	(16,842)
Investment securities	**(1,695)**	**(2,018)**	**323**	(1,657)	(2,270)	613
Available for sale securities	**(30,706)**	**20,115**	**(50,821)**	7,303	47,992	(40,689)
Fair value option securities	**(16,933)**	**(16,899)**	**(34)**	(14,461)	(9,178)	(5,283)
Restricted equity securities	**(5,260)**	**(3,286)**	**(1,974)**	(15,897)	(10,782)	(5,115)
Residential mortgage loans held for sale	**(932)**	**(694)**	**(238)**	(708)	822	(1,530)
Loans	**(121,321)**	**(71,533)**	**(49,788)**	(235,592)	58,016	(293,608)
Total tax-equivalent interest revenue	**(90,345)**	**54,264**	**(144,609)**	(264,414)	108,756	(373,170)
Interest expense:						
Transaction deposits	**(38,463)**	**6,108**	**(44,571)**	(72,430)	38,117	(110,547)
Savings deposits	**(11)**	**121**	**(132)**	(292)	88	(380)
Time deposits	**(18,038)**	**(3,277)**	**(14,761)**	(12,820)	176	(12,996)
Funds purchased and repurchase agreements	**(7,521)**	**(5,491)**	**(2,030)**	(37,398)	9,191	(46,589)
Other borrowings	**(31,218)**	**(13,023)**	**(18,195)**	(134,414)	(41,577)	(92,837)
Subordinated debentures	**(3,409)**	**(2,532)**	**(877)**	(1,169)	(8)	(1,161)
Total interest expense	**(98,660)**	**(18,094)**	**(80,566)**	(258,523)	5,987	(264,510)
Tax-equivalent net interest revenue	**8,315**	**72,358**	**(64,043)**	(5,891)	102,769	(108,660)
Change in tax-equivalent adjustment	**(1,274)**			(1,456)		
Net interest revenue	**$ 9,589**			$ (4,435)		

[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 Dec. 31, 2021 / Sep. 30, 2021		
		Change Due To[1]	
	Change	Volume	Yield / Rate
Tax-equivalent interest revenue:			
Interest-bearing cash and cash equivalents	$ 238	$ 195	$ 43
Trading securities	5,531	8,876	(3,345)
Investment securities	(79)	(58)	(21)
Available for sale securities	(1,753)	750	(2,503)
Fair value option securities	(40)	(51)	11
Restricted equity securities	(537)	(705)	168
Residential mortgage loans held for sale	(32)	(33)	1
Loans	(4,570)	(5,621)	1,051
Total tax-equivalent interest revenue	(1,242)	3,353	(4,595)
Interest expense:			
Transaction deposits	95	149	(54)
Savings deposits	—	1	(1)
Time deposits	(216)	(126)	(90)
Funds purchased and repurchase agreements	4,570	1,681	2,889
Other borrowings	(1,253)	(1,788)	535
Subordinated debentures	(1,175)	(909)	(266)
Total interest expense	2,021	(992)	3,013
Tax-equivalent net interest revenue	(3,263)	4,345	(7,608)
Change in tax-equivalent adjustment	(113)		
Net interest revenue	$ (3,150)		

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

Other Operating Revenue

2021 Other Operating Revenue

Other operating revenue was $755.8 million for 2021, a decrease of $86.5 million or 10% compared to 2020. Brokerage and trading revenue decreased largely due to a shift from fee revenue to net interest revenue and narrowing margins. Mortgage production revenue was negatively impacted by a decline in mortgage production volumes and margin compression. Other gains, net increased $57.7 million due to sales of an alternative investment and repossessed assets.

Table 3 – Other Operating Revenue
(Dollars in thousands)

	Year Ended December 31,		2021 vs. 2020	2021 vs. 2020	Year Ended December 31,	2020 vs. 2019	2020 vs. 2019
	2021	2020	Increase (Decrease)	% Increase (Decrease)	2019	Increase (Decrease)	% Increase (Decrease)
Brokerage and trading revenue	**$ 112,989**	$ 221,833	$ (108,844)	(49) %	$ 159,826	$ 62,007	39 %
Transaction card revenue	**96,983**	90,182	6,801	8 %	87,216	2,966	3 %
Fiduciary and asset management revenue	**178,274**	167,445	10,829	6 %	177,025	(9,580)	(5) %
Deposit service charges and fees	**104,217**	96,805	7,412	8 %	112,485	(15,680)	(14) %
Mortgage banking revenue	**105,896**	182,360	(76,464)	(42) %	107,541	74,819	70 %
Other revenue	**69,950**	51,695	18,255	35 %	58,108	(6,413)	(11) %
Total fees and commissions revenue	**668,309**	810,320	(142,011)	(18) %	702,201	108,119	15 %
Other gains, net	**63,742**	6,046	57,696	N/A	10,214	(4,168)	N/A
Gain (loss) on derivatives, net	**(19,378)**	42,320	(61,698)	N/A	14,951	27,369	N/A
Gain (loss) on fair value option securities, net	**(2,239)**	53,248	(55,487)	N/A	15,787	37,461	N/A
Change in fair value of mortgage servicing rights	**41,637**	(79,524)	121,161	N/A	(53,517)	(26,007)	N/A
Gain on available for sale securities, net	**3,704**	9,910	(6,206)	N/A	5,597	4,313	N/A
Total other operating revenue	**$ 755,775**	$ 842,320	(86,545)	(10) %	$ 695,233	$ 147,087	21 %

Fees and commissions revenue

Diversified sources of fees and commissions revenue are a significant part of our business strategy and represented 37% of total revenue for 2021, excluding provision for credit losses, gains and losses on securities and derivatives, other gains and losses 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 and related trading. 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, including the impact of the COVID-19 pandemic, 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 brokerage and investment banking, decreased $108.8 million or 49% compared to the prior year.

Trading revenue includes net realized and unrealized gains and losses primarily related to sales of residential mortgage-backed securities guaranteed by U.S. government agencies and related derivative instruments that enable our mortgage-banking customers to manage their production risk. Trading revenue also includes net realized and unrealized gains and losses on municipal securities, asset-backed securities and other financial instruments that we sell to institutional customers, along with changes in the fair value of financial instruments we hold as economic hedges against market risk of our trading securities. Trading revenue was $27.6 million for 2021, a decrease of $116.7 million compared to 2020, due to a shift from fee revenue to net interest revenue on trading securities, combined with increased market volatility. See additional discussion in "Lines of Business" section of Management's Discussion and Analysis.

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 $20.4 million for 2021, a decrease of $2.3 million or 10% compared to 2020, primarily attributed to our energy customers.

Revenue earned from retail brokerage transactions totaled $18.8 million for 2021, an increase of $3.1 million or 20% over 2020. 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.

Insurance brokerage fees were $11.8 million for 2021, consistent with the prior year.

Investment banking, which includes fees earned upon completion of underwriting, financial advisory services and loan syndication fees, totaled $34.4 million for 2021, an increase of $8.0 million or 30% compared to 2020, related to the timing and volume of commercial loan syndication fees.

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 $97.0 million for 2021, a $6.8 million or 8% increase over 2020. Revenues from the processing of transactions on behalf of the members of our TransFund electronic funds transfer ("EFT") network totaled $80.1 million, up $1.8 million or 2% over 2020. The number of TransFund ATM locations totaled 2,593 at December 31, 2021 compared to 2,599 at December 31, 2020. Corporate card revenue totaled $5.0 million, up $2.4 million or 93% over 2020 due to increased transactions from the broader reopening of the economy. Merchant services fees paid by customers for account management and electronic processing of card transactions totaled $11.9 million, an increase of $2.6 million or 28% 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 90% 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 increased $10.8 million or 6% compared to 2020. An increase in trust and managed account fees from higher client asset balances was partially offset by a decrease in mutual fund fees as the low rate environment has put pressure on our mutual fund revenue streams. We also had approximately $11.7 million in fee waivers during 2021 compared to approximately $5.6 million in fee waivers during 2020. We have voluntarily waived certain administration fees on the Cavanal Hill money market funds in order to maintain positive yields on these funds in the current low short-term interest rate environment.

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

Table 4 -- Assets Under Management or Administration
(Dollars in thousands)

	Year Ended December 31,								
	2021			2020			2019		
	Balance	**Revenue[1]**	**Margin[2]**	**Balance**	**Revenue[1]**	**Margin[2]**	**Balance**	**Revenue[1]**	**Margin[2]**
Managed fiduciary assets:									
Personal	**$ 12,739,289**	**$ 110,052**	**0.86 %**	$ 11,172,457	$ 96,094	0.86 %	$ 10,441,048	$ 99,850	0.96 %
Institutional	**17,477,280**	**29,286**	**0.17 %**	15,364,387	26,555	0.17 %	13,485,300	21,143	0.16 %
Total managed fiduciary assets	**30,216,569**	**139,338**	**0.46 %**	26,536,844	122,649	0.46 %	23,926,348	120,993	0.51 %
Non-managed assets:									
Fiduciary	**34,320,264**	**28,645**	**0.08 %**	28,949,648	38,899	0.13 %	24,923,807	47,272	0.19 %
Non-fiduciary	**20,253,072**	**10,291**	**0.05 %**	18,599,156	5,897	0.03 %	17,752,566	8,760	0.05 %
Safekeeping and brokerage assets under administration	**20,127,816**	**—**	**— %**	17,506,599	—	— %	16,138,240	—	— %
Total non-managed assets	**74,701,152**	**38,936**	**0.05 %**	65,055,403	44,796	0.07 %	58,814,613	56,032	0.10 %
Total assets under management or administration	**$ 104,917,721**	**$ 178,274**	**0.17 %**	$ 91,592,247	$ 167,445	0.18 %	$ 82,740,961	$ 177,025	0.21 %

[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, 2021, 2020, and 2019 follows:

Table 5 -- Changes in Assets Under Management or Administration
(In thousands)

	Year Ended December 31,		
	2021	**2020**	**2019**
Beginning balance	**$ 91,592,247**	$ 82,740,961	$ 76,279,777
Net inflows (outflows)	**4,786,237**	1,859,868	(257,531)
Net change in fair value	**8,539,237**	6,991,418	6,718,715
Ending balance	**$ 104,917,721**	$ 91,592,247	$ 82,740,961

Assets under management as of December 31, 2021 consist of 41% fixed income, 38% equities, 14% cash and 7% alternative investments. Net inflows to assets under management increased during 2021 as new financial institution client relationships were gained and existing clients added to their asset balances.

Deposit service charges and fees totaled $104.2 million for 2021, a $7.4 million or 8% increase over 2020. Service charges earned primarily on commercial deposit accounts totaled $54.4 million, a $5.9 million or 12% increase over the previous year. Decreases in the earnings credit rates caused by the low interest rate environment resulted in higher service charges. Check card revenue totaled $23.7 million, up $2.4 million or 11% over 2020 due to increased volume. Overdraft fees earned primarily on consumer deposit accounts totaled $21.6 million for 2021, unchanged from 2020.

Mortgage banking revenue totaled $105.9 million for 2021, a $76.5 million or 42% decrease compared to 2020. Mortgage production revenue decreased $65.1 million. Production volume was down $1.4 billion and production revenue as a percentage of production volume also decreased 83 basis points to 2.33%. Mortgage servicing revenue was $45.2 million, an $11.3 million decrease compared to the prior year. The average outstanding principal balance of mortgage loans serviced for others totaled $15.4 billion at December 31, 2021, a $3.0 billion decrease compared to December 31, 2020, largely due to a decline in mortgage loan production attributable to industry-wide housing inventory constraints and overall market conditions. During the fourth quarter of 2021, we completed an acquisition of mortgage servicing rights with an unpaid principal balance of $2.0 billion.

Table 6 – Mortgage Banking Revenue
(Dollars in thousands)

	Year Ended December 31,		
	2021	**2020**	**2019**
Mortgage production revenue	**$ 60,712**	$ 125,848	$ 42,720
Mortgage loans funded for sale	**$ 2,818,789**	$ 3,764,112	$ 2,973,291
Add: Current year end outstanding commitments	**171,412**	380,637	158,460
Less: Prior year end outstanding commitments	**380,637**	158,460	160,848
Total mortgage production volume	**2,609,564**	3,986,289	2,970,903
Production revenue as a percentage of production volume	**2.33 %**	3.16 %	1.44 %
Realized margin on funded mortgage loans	**2.15 %**	3.34 %	1.44 %
Mortgage loan refinances to mortgage loans funded for sale	**58 %**	58 %	44 %
Primary mortgage interest rates:			
Average	**2.96 %**	3.10 %	3.94 %
Period end	**3.11 %**	2.67 %	3.74 %
Mortgage servicing revenue	**$ 45,184**	$ 56,512	$ 64,821
Average outstanding principal balance of mortgage loans serviced for others	**15,404,548**	18,422,210	21,257,462
Average mortgage servicing fee rates	**0.29 %**	0.31 %	0.30 %

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

Other revenue totaled $70.0 million for 2021, an increase of $18.3 million or 35% over 2020, primarily due to higher production revenue from repossessed oil and gas properties; however, this was partially offset by increased operating expenses on these properties.

Other gains, net and net gains on securities and derivatives

Other gains, net increased $57.7 million compared to 2020. The sale of an alternative investment resulted in a $31.1 million gain, net of non-controlling interest. A $14.1 million gain realized on the sale of an equity interest received as part of the workout of a defaulted energy loan was partially offset by a $5.2 million loss on the extinguishment of subordinated debentures.

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

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

	Year Ended December 31,		
	2021	2020	2019
Gain (loss) on mortgage hedge derivative contracts, net	**$ (19,632)**	$ 42,096	$ 14,589
Gain (loss) on fair value option securities, net	**(2,239)**	53,248	15,787
Gain (loss) on economic hedge of mortgage servicing rights	**(21,871)**	95,344	30,376
Gain (loss) on change in fair value of mortgage servicing rights	**41,637**	(79,524)	(53,517)
Gain (loss) on changes in fair value of mortgage servicing rights, net of economic hedges included in other operating revenue	**19,766**	15,820	(23,141)
Net interest revenue on fair value option securities[1]	**1,279**	9,085	5,214
Total economic benefit (cost) of changes in the fair value of mortgage servicing rights, net of economic hedges	**$ 21,045**	$ 24,905	$ (17,927)

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

Fourth Quarter 2021 Other Operating Revenue

Table 8 ─ Fourth Quarter 2021 Other Operating Revenue
(Dollars in thousands)

	Three Months Ended			
	Dec. 31, 2021	**Sep. 30, 2021**	**Increase (Decrease)**	**% Increase (Decrease)**
Brokerage and trading revenue	**$ 14,869**	$ 47,930	$ (33,061)	(69) %
Transaction card revenue	**24,998**	24,632	366	1 %
Fiduciary and asset management revenue	**46,872**	45,248	1,624	4 %
Deposit service charges and fees	**26,718**	27,429	(711)	(3) %
Mortgage banking revenue	**21,278**	26,286	(5,008)	(19) %
Other revenue	**11,586**	18,896	(7,310)	(39) %
Total fees and commissions revenue	**146,321**	190,421	(44,100)	(23) %
Other gains, net	**6,081**	31,091	(25,010)	N/A
Loss on derivatives, net	**(4,788)**	(5,760)	972	N/A
Gain (loss) on fair value option securities, net	**1,418**	(120)	1,538	N/A
Change in fair value of mortgage servicing rights	**7,859**	12,945	(5,086)	N/A
Gain on available for sale securities, net	**552**	1,255	(703)	N/A
Total other operating revenue	**157,443**	229,832	(72,389)	(31) %

Other operating revenue was $157.4 million for the fourth quarter of 2021, a $72.4 million or 31% decrease compared to the third quarter of 2021.

Brokerage and trading revenue decreased $33.1 million to $14.9 million. Uncertainty around tapering by the Federal Reserve combined with year-end balance sheet management and concerns over yield curve steepening, resulted in decreased transaction activity and tighter margins for trading activities in the market. These factors combined to decrease trading revenue by $37.3 million. Customer hedging revenue increased $2.2 million, primarily attributed to energy customers. Investment banking revenue increased $2.6 million, largely due to the timing and increase of syndication activity.

Mortgage banking revenue was $21.3 million for the fourth quarter of 2021, a decrease of $5.0 million compared to the third quarter of 2021 due to lower production volume combined with narrowing margins. Mortgage loan production volumes were $501 million for the fourth quarter of 2021, compared to $615 million in the third quarter of 2021. Production revenue as a percentage of production volume, which includes unrealized gains and losses on our mortgage commitment pipeline and related hedges, decreased 50 basis points to 2.00%.

Other revenue decreased $7.3 million as a result of lower operating revenue from repossessed oil and gas assets due to the sale of a property, which was largely offset by a reduction of expenses on the same property.

Other gains, net, decreased $25.0 million compared to the prior quarter. The third quarter of 2021 included a $31.1 million gain on the sale of an alternative investment, which was partially offset by a $5.2 million loss on the extinguishment of subordinated debentures and a $3.9 million loss on the sale of a repossessed oil and gas asset.

2020 Other Operating Revenue

Other operating revenue totaled $842.3 million for 2020, an increase of $147.1 million or 21% compared to 2019. Lower mortgage interest rates during 2020 increased both mortgage loan production and related trading activities.

Brokerage and trading revenue for 2020 increased $62.0 million compared to 2019. Trading revenue increased $55.7 million over 2019. Customer hedging revenue increased $3.8 million compared to 2019 as energy customers increased hedging activity in the volatile commodity price environment. Insurance brokerage fees decreased $1.2 million compared to 2019. Investment banking revenue increased $4.1 million related to the timing and volume of completed transactions.

Transaction card revenue grew by $3.0 million over 2019, primarily due to growth in transaction volumes. Fiduciary and asset management revenue decreased $9.6 million compared to 2019. The low rate environment put pressure on our mutual fund revenue streams, partially offset by increased trust and managed account fees from higher client asset balances. Deposits service charges and fees decreased $15.7 million due to lower overdraft fee volumes.

Mortgage banking revenue increased by $74.8 million over 2019. Lower mortgage interest rates led to an increase in mortgage loan production.

Other Operating Expense

2021 Other Operating Expense

Other operating expense for 2021 totaled $1.2 billion, a $13.4 million or 1% increase over the prior year. Personnel expense increased $6.9 million or 1%. Non-personnel expense increased $6.5 million or 1%.

Table 9 – Other Operating Expense
(Dollars in thousands)

	Year Ended December 31, 2021	Year Ended December 31, 2020	2021 vs. 2020 Increase (Decrease)	2021 vs. 2020 % Increase (Decrease)	Year Ended December 31, 2019	2020 vs. 2019 Increase (Decrease)	2020 vs. 2019 % Increase (Decrease)
Regular compensation	**$ 384,808**	$ 390,282	$ (5,474)	(1) %	$ 395,902	$ (5,620)	(1) %
Incentive compensation:							
Cash-based compensation	**187,974**	183,868	4,106	2 %	143,317	40,551	28 %
Share-based compensation	**13,246**	18,228	(4,982)	(27) %	16,753	1,475	9 %
Deferred compensation	**9,789**	8,401	1,388	17 %	8,711	(310)	(4) %
Total incentive compensation	**211,009**	210,497	512	— %	168,781	41,716	25 %
Employee benefits	**99,565**	87,695	11,870	14 %	95,882	(8,187)	(9) %
Total personnel expense	**695,382**	688,474	6,908	1 %	660,565	27,909	4 %
Business promotion	**16,289**	14,511	1,778	12 %	35,662	(21,151)	(59) %
Charitable contributions to BOKF Foundation	**9,000**	9,000	—	— %	3,000	6,000	200 %
Professional fees and services	**50,906**	53,437	(2,531)	(5) %	54,861	(1,424)	(3) %
Net occupancy and equipment	**108,587**	112,722	(4,135)	(4) %	110,275	2,447	2 %
Insurance	**15,881**	19,990	(4,109)	(21) %	20,906	(916)	(4) %
Data processing & communications	**151,614**	135,497	16,117	12 %	124,983	10,514	8 %
Printing, postage and supplies	**14,218**	15,061	(843)	(6) %	16,517	(1,456)	(9) %
Amortization of intangible assets	**18,311**	20,443	(2,132)	(10) %	20,618	(175)	(1) %
Mortgage banking costs	**42,698**	56,711	(14,013)	(25) %	50,685	6,026	12 %
Other expense	**54,822**	38,462	16,360	43 %	35,172	3,290	9 %
Total other operating expense	**$ 1,177,708**	$ 1,164,308	$ 13,400	1 %	$ 1,133,244	$ 31,064	3 %
Average number of employees (full-time equivalent)	**4,816**	5,011	(195)	(4) %	5,155	(144)	(3) %

Personnel expense

Personnel expense increased $6.9 million in 2021. Employee benefits expense increased $11.9 million or 14%, largely due to increased employee healthcare costs. Healthcare costs in 2020 were unusually low due to limitations placed on non-essential procedures as a result of the COVID-19 pandemic. Cash-based incentive compensation plans, which 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, grew $4.1 million or 2% over 2020, primarily related to incentives on trading activity. These increases were partially offset by a decrease of $5.5 million or 1% in regular compensation expense and lower share-based compensation expense which decreased $5.0 million or 27% based on changes in assumptions of certain performance-based equity awards.

Non-personnel expense

Non-personnel expense increased $6.5 million or 1% over the prior year.

Other expense increased $16.4 million or 43%, primarily due to increased operating expense on repossessed assets; however, this was offset by increased operating revenue on these properties. Data processing and communications expense increased $16.1 million or 12%, largely due to technology project costs. These expense increases were partially offset by a decrease of $14.0 million or 25% in mortgage banking costs, primarily due to lower accruals related to default servicing and loss mitigation costs on loans serviced for others, combined with a decrease in prepayments. Occupancy and equipment expense decreased $4.1 million or 4%, as the prior year included impairment of two leases. Expense associated with FDIC insurance decreased $4.1 million or 21% as the Company's risk profile and liquidity improved.

Fourth Quarter 2021 Operating Expenses

Table 10 – Fourth Quarter 2021 Other Operating Expense
(Dollars in thousands)

	Three Months Ended			
	Dec. 31, 2021	**Sep. 30, 2021**	**Increase (Decrease)**	**% Increase (Decrease)**
Regular compensation	**$ 95,708**	$ 95,808	$ (100)	— %
Incentive compensation:				
Cash-based compensation	**45,610**	54,437	(8,827)	(16) %
Share-based compensation	**7,153**	1,272	5,881	462 %
Deferred compensation	**2,071**	1,549	522	34 %
Total incentive compensation	**54,834**	57,258	(2,424)	(4) %
Employee benefits	**23,932**	22,797	1,135	5 %
Total personnel expense	**174,474**	175,863	(1,389)	(1) %
Business promotion	**6,452**	4,939	1,513	31 %
Charitable contributions to BOKF Foundation	**5,000**	—	5,000	N/A
Professional fees and services	**14,129**	12,436	1,693	14 %
Net occupancy and equipment	**26,897**	28,395	(1,498)	(5) %
Insurance	**3,889**	3,712	177	5 %
Data processing & communications	**39,358**	38,371	987	3 %
Printing, postage and supplies	**2,935**	3,558	(623)	(18) %
Amortization of intangible assets	**4,438**	4,488	(50)	(1) %
Mortgage banking costs	**8,667**	8,962	(295)	(3) %
Other expense	**13,256**	10,553	2,703	26 %
Total other operating expense	**299,495**	291,277	8,218	3 %

Other operating expense for the fourth quarter of 2021 totaled $299.5 million, an increase of $8.2 million or 3% over the third quarter of 2021.

Personnel expense decreased $1.4 million or 1% compared to the third quarter of 2021. Cash-based incentive compensation plans, which 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, decreased $8.8 million or 16%, primarily due to reduced trading volumes. Share-based compensation expense, which represents expense for equity awards based on the grant date fair value, increased $5.9 million or 462% due to changes in vesting assumptions related to performance-based share awards.

Non-personnel expense increased $9.6 million or 8% compared to the third quarter of 2021. The fourth quarter of 2021 included a $5.0 million charitable donation to the BOKF Foundation as we continue to focus on the communities we serve and the extreme need created by the pandemic. Smaller increases in business promotion costs, professional fees and services expense, and other expense supplemented the overall increase in non-personnel expense.

2020 Operating Expenses

Other operating expense totaled $1.2 billion for 2020, a $31.1 million or 3% increase over 2019. CoBiz added $17.2 million in integration costs in 2019. The fluctuation discussion below excludes these costs.

Personnel expense increased $30.8 million in 2020. Cash based incentive compensation grew $41.6 million over 2019, largely related to growth in mortgage-backed securities trading activities. This increase was partially offset by lower employee benefits costs of $7.2 million, largely related to decreased employee healthcare costs.

Non-personnel expense increased $17.5 million or 4% over 2019. Data processing and communications expense increased $12.5 million due to technology project costs. Occupancy and equipment expense increased $6.4 million, largely due to increased cleaning costs related to the COVID-19 pandemic as well as increased depreciation costs. Mortgage banking costs increased $6.0 million, primarily due to an increase in prepayments and accruals related to default servicing and loss mitigation costs on loans serviced for others. Charitable contributions to the BOKF Foundation increased $6.0 million as we focus on the communities we serve and the extreme need created by the pandemic. Professional fees increased $5.0 million. Business promotion costs, consisting largely of travel and entertainment and advertising costs, were down $19.5 million, primarily due to the effects of the COVID-19 pandemic.

Income Taxes

Income tax expense was $179.8 million or 22.6% of net income before taxes for 2021, $128.8 million or 22.8% of net income before taxes for 2020 and $130.2 million or 20.6% of net income before taxes for 2019.

Net deferred tax assets totaled $34.5 million at December 31, 2021 compared to net deferred tax liabilities of $9.5 million at December 31, 2020. 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 2021 or 2020.

Income tax expense was $34.8 million or 22.9% of net income before taxes for the fourth quarter of 2021 compared to $54.1 million or 22.4% of net income before taxes for the third quarter of 2021.

Lines of Business

We operate three principal lines of business: Commercial Banking, Consumer Banking and Wealth Management. Commercial Banking includes lending, treasury and cash management services and customer risk management products for small businesses, middle market and larger commercial customers. Commercial Banking also includes the TransFund EFT network. Consumer Banking includes retail lending and deposit services, lending and deposit services to small business customers served through our consumer branch network and all mortgage loan origination and servicing activities. Wealth Management provides fiduciary services, private bank services, insurance 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 and capital costs. Credit costs are attributed to the lines of business based on net loans charged off or recovered. The difference between credit costs attributed to the lines of business and the consolidated provision for credit losses is attributed to Funds Management. In addition, we measure the performance of our business lines after allocations of certain indirect expenses and taxes based on statutory rates.

The cost of funds borrowed from the Funds Management unit by the operating lines of business is transfer priced at rates that approximate market rates for funds with similar repricing and cash flow characteristics. Market rates are generally based on the applicable wholesale borrowing rates or interest rate swap rates, adjusted for prepayment risk and liquidity 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 that approximate wholesale market rates for funds with similar repricing and cash flow characteristics. Market rates are generally based on a proxy of wholesale borrowing rates or interest rate swap rates. The funds credit formula applied to deposit products with indeterminate maturities is established based on their repricing characteristics reflected in a combination of the short-term wholesale funding 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 wholesale funding rates 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. In order to appropriately reflect the organizational value of these deposits to the lines of business, methodology adjustments are made each January that attribute more or less deposit credit value to the business lines dependent upon historical and forward-looking interest rate expectations, with the offset to Funds Management and other. During 2019, short-term rates moved down materially, which was reflected in the funding credit to the business lines beginning in January, 2020. Those funding credits continued their downward trend in 2021 as a result of the sustained low-rate environment.

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

As shown in Table 11 following, net income attributable to our lines of business decreased $49.9 million or 10% compared to the prior year. Net interest revenue was consistent with the prior year as increased interest revenue from trading activities was offset by a decrease resulting from reduced average loan balances in 2021. Net charge-offs decreased $37.2 million compared to the prior year. Other operating revenue decreased $95.2 million largely due to a shift from fee revenue to net interest revenue and a decrease in mortgage banking revenues. An increase in other gains (losses), net, primarily from the $31.1 million gain recognized on the sale of an alternative investment, positively impacted other operating revenue. Other operating expense decreased $3.9 million compared to prior year, largely due to decreased compensation costs. The increase in net income attributed to Funds Management and other is largely due to release of provision during 2021 for expected credit losses over net charge-offs.

Table 11 – Net Income by Line of Business
(In thousands)

	Year Ended December 31,		
	2021	2020	2019
Commercial Banking	**$ 328,516**	$ 306,005	$ 374,806
Consumer Banking	**27,643**	97,974	60,193
Wealth Management	**113,550**	115,614	95,331
Subtotal	**469,709**	519,593	530,330
Funds Management and other	**148,412**	(84,563)	(29,572)
Total	**$ 618,121**	$ 435,030	$ 500,758

2021 Commercial Banking

Commercial Banking contributed $328.5 million to consolidated net income in 2021, an increase of $22.5 million or 7% compared to prior year. Other gains, net increased $35.1 million, primarily from the gain recognized on the sale of a merchant banking alternative investment in the third quarter of 2021.

Table 12 – Commercial Banking
(In thousands)

	Year Ended December 31,		
	2021	2020	2019
Net interest revenue from external sources	**$ 606,902**	$ 714,932	$ 919,148
Net interest expense from internal sources	**(71,167)**	(126,444)	(242,907)
Total net interest revenue	**535,735**	588,488	676,241
Net loans charged off	**31,128**	69,475	39,011
Net interest revenue after net loans charged off	**504,607**	519,013	637,230
Fees and commissions revenue	**227,081**	187,119	168,667
Other gains, net	**35,321**	242	1,745
Other operating revenue	**262,402**	187,361	170,412
Personnel expense	**168,285**	159,165	163,106
Non-personnel expense	**112,804**	99,738	89,353
Other operating expense	**281,089**	258,903	252,459
Net direct contribution	**485,920**	447,471	555,183
Gain on financial instruments, net	**154**	193	106
Gain (loss) on repossessed assets, net	**13,001**	(2,677)	331
Corporate expense allocations	**49,941**	24,862	43,055
Income before taxes	**449,134**	420,125	512,565
Federal and state income taxes	**120,618**	114,120	137,759
Net income	**$ 328,516**	$ 306,005	$ 374,806
Average assets	**$ 28,536,881**	$ 26,994,075	$ 22,807,589
Average loans	**16,853,006**	18,711,372	18,090,224
Average deposits	**17,659,695**	14,319,729	10,319,677
Average invested capital	**2,082,488**	2,220,177	2,218,013

Net interest revenue decreased $52.8 million or 9% compared to the prior year, primarily due to reduced loan balances and lower yields on deposits sold to our Funds Management unit as the value of deposits was impacted by falling interest rates. Net loans charged-off decreased $38.3 million.

Fees and commissions revenue increased $40.0 million or 21%. Production revenue from repossessed oil and gas properties increased $17.1 million. Syndication fees increased $7.7 million due to the timing and volume of completed transactions during the year. The remaining increase was due to growth in revenues from the processing of transactions on behalf of the members of our TransFund EFT network and deposit service charges and fees.

Operating expense increased $22.2 million or 9% over 2020. Personnel expense increased $9.1 million or 6%, primarily due to incentive compensation costs. Non-personnel expense increased $13.1 million or 13%, primarily due to increased operating expenses on repossessed oil and gas properties. Corporate expense allocations increased $25.1 million or 101% compared to the prior year, largely due to credits received in 2020 related to PPP loan originations.

The average outstanding balance of loans attributed to Commercial Banking decreased $1.9 billion or 10% compared to 2020 to $16.9 billion, primarily due to purposeful deleveraging by our customers. See the Loans section of Management's Discussion and Analysis of Financial Condition following for additional discussion of changes in commercial and commercial real estate loans, which are primarily attributed to the Commercial Banking segment.

Average deposits attributed to Commercial Banking were $17.7 billion for 2021, a $3.3 billion or 23% increase over the prior year. See Management's Discussion and Analysis of Financial Condition and Results of Operations - Liquidity and Capital for further discussion of change.

Fourth Quarter 2021 Commercial Banking

Table 13 - Commercial Banking - Fourth Quarter 2021
(Dollars in thousands)

	Three Months Ended			
	Dec. 31, 2021	**Sep. 30, 2021**	**Increase (Decrease)**	**% Increase (Decrease)**
Net interest revenue from external sources	**$ 148,948**	$ 150,211	$ (1,263)	(1) %
Net interest expense from internal sources	**(8,225)**	(16,107)	7,882	(49) %
Total net interest revenue	**140,723**	134,104	6,619	5 %
Net loans charged off (recovered)	**(1,933)**	2,807	(4,740)	(169) %
Net interest revenue after net loans charged off (recovered)	**142,656**	131,297	11,359	9 %
Fees and commissions revenue	**57,414**	56,452	962	2 %
Other gains, net	**629**	36,059	(35,430)	N/A
Other operating revenue	**58,043**	92,511	(34,468)	(37) %
Personnel expense	**47,242**	41,942	5,300	13 %
Non-personnel expense	**27,217**	26,359	858	3 %
Other operating expense	**74,459**	68,301	6,158	9 %
Net direct contribution	**126,240**	155,507	(29,267)	(19) %
Gain on financial instruments, net	**43**	44	(1)	N/A
Gain (loss) on repossessed assets, net	**646**	(3,945)	4,591	N/A
Corporate expense allocations	**12,926**	11,769	1,157	10 %
Income before taxes	**114,003**	139,837	(25,834)	(18) %
Federal and state income taxes	**30,489**	37,143	(6,654)	(18) %
Net income	**$ 83,514**	$ 102,694	$ (19,180)	(19) %
Average assets	**$ 29,451,007**	$ 28,474,132	$ 976,875	3 %
Average loans	**16,334,695**	16,588,875	(254,180)	(2) %
Average deposits	**19,537,285**	17,881,673	1,655,612	9 %
Average invested capital	**2,021,214**	2,038,519	(17,305)	(1) %

Commercial Banking contributed $83.5 million to consolidated net income in the fourth quarter of 2021, a decrease of $19.2 million compared to the third quarter of 2021. The prior quarter included a pre-tax gain of $31.1 million from the sale of an alternative investment. Net interest revenue increased $6.6 million over the third quarter of 2021, largely driven by increased deposit balances and improved spreads, partially offset by a $5.3 million increase in personnel expense.

2020 Commercial Banking

Commercial Banking contributed $306.0 million to consolidated net income in 2020, a decrease of $68.8 million or 18% compared to 2019. Net interest revenue decreased $87.8 million or 13% as yields on deposits sold to the Funds Management unit decreased as the value of deposits was impacted by falling interest rates. Net loans charged-off increased $30.5 million.

Fees and commissions revenue increased $18.5 million or 11% due to growth in customer energy hedging revenue and an increase in revenues from processing transactions on behalf of the members of our TransFund EFT network.

Operating expense increased $6.4 million or 3%, over 2019. Non-personnel expense increased $10.4 million or 12%. Increases in data processing and communications expense, occupancy and equipment expense, intangible amortization and deposit insurance costs were partially offset by a decrease in business promotion expense. Personnel expense decreased $3.9 million or 2%. A decrease in incentive compensation costs was partially offset by an increase in regular compensation. Corporate expense allocations decreased $18.2 million or 42% compared to the prior year.

2021 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.

Net income attributed to Consumer Banking totaled $27.6 million for 2021, compared to $98.0 million in the prior year, largely due to lower mortgage loan production volumes and compression of margins.

Table 14 – Consumer Banking
(In thousands)

	Year Ended December 31,		
	2021	**2020**	**2019**
Net interest revenue from external sources	**$ 67,856**	$ 78,004	$ 99,679
Net interest revenue from internal sources	**35,671**	69,000	95,775
Total net interest revenue	**103,527**	147,004	195,454
Net loans charged off	**4,009**	2,805	6,271
Net interest revenue after net loans charged off	**99,518**	144,199	189,183
Fees and commissions revenue	**173,364**	245,554	187,996
Other losses, net	**(23)**	(1,835)	(496)
Other operating revenue	**173,341**	243,719	187,500
Personnel expense	**85,989**	91,903	93,006
Other non-personnel expense	**123,607**	138,499	133,340
Total other operating expense	**209,596**	230,402	226,346
Net direct contribution	**63,263**	157,516	150,337
Gain (loss) on financial instruments, net	**(21,871)**	95,344	30,375
Change in fair value of mortgage servicing rights	**41,637**	(79,524)	(53,517)
Gain on repossessed assets, net	**85**	276	496
Corporate expense allocations	**46,010**	42,155	46,926
Net income before taxes	**37,104**	131,457	80,765
Federal and state income taxes	**9,461**	33,483	20,572
Net income	**$ 27,643**	$ 97,974	$ 60,193
Average assets	**$ 10,029,687**	$ 9,842,114	$ 9,301,341
Average loans	**1,769,384**	1,764,682	1,762,915
Average deposits	**8,439,577**	7,599,937	6,876,676
Average invested capital	**250,554**	259,333	294,923

Net interest revenue from Consumer Banking activities decreased by $43.5 million or 30% compared to 2020, primarily due to a decrease in the yield on deposits sold to our Funds Management unit. Average consumer deposits grew $840 million with interest-bearing transaction deposit balances increasing $429 million or 13% and demand deposit balances up by $390 million or 15%.

Fees and commissions revenue decreased $72.2 million or 29% compared to the prior year due to lower mortgage loan production volume combined with narrowing margins. Mortgage production volume decreased $1.4 billion or 35% and production revenue as a percentage of production volume, which includes unrealized gains and losses on our mortgage commitment pipeline and related hedges, decreased 83 basis points to 2.33%. Operating expense decreased $20.8 million or 9% compared to 2020, due to lower mortgage banking costs and compensation expense. Corporate expense allocations increased $3.9 million or 9% compared to the prior year.

Changes in the fair value of our mortgage servicing rights, net of economic hedges, as more fully presented in Table 7, resulted in a $19.8 million increase to pre-tax net income for 2021 compared to a $15.8 million increase to pre-tax net income in 2020.

Fourth Quarter 2021 Consumer Banking

Table 15 - Consumer Banking - Fourth Quarter 2021
(Dollars in thousands)

	Three Months Ended			
	Dec. 31, 2021	**Sep. 30, 2021**	**Increase (Decrease)**	**% Increase (Decrease)**
Net interest revenue from external sources	**$ 16,650**	$ 16,967	$ (317)	(2) %
Net interest expense from internal sources	**13,735**	10,255	3,480	34 %
Total net interest revenue	**30,385**	27,222	3,163	12 %
Net loans charged off	**1,198**	928	270	29 %
Net interest revenue after net loans charged off	**29,187**	26,294	2,893	11 %
Fees and commissions revenue	**38,944**	44,405	(5,461)	(12) %
Other losses, net	**—**	(4)	4	N/A
Other operating revenue	**38,944**	44,401	(5,457)	(12) %
Personnel expense	**21,689**	21,284	405	2 %
Non-personnel expense	**30,347**	28,199	2,148	8 %
Other operating expense	**52,036**	49,483	2,553	5 %
Net direct contribution	**16,095**	21,212	(5,117)	(24) %
Loss on financial instruments, net	**(3,444)**	(5,949)	2,505	N/A
Change in fair value of mortgage servicing rights	**7,859**	12,945	(5,086)	N/A
Gain on repossessed assets, net	**44**	—	44	N/A
Corporate expense allocations	**11,420**	11,516	(96)	(1) %
Income before taxes	**9,134**	**16,692**	(7,558)	(45) %
Federal and state income taxes	**2,324**	4,260	(1,936)	(45) %
Net income	**$ 6,810**	$ 12,432	$ (5,622)	(45) %
Average assets	**$ 9,898,751**	$ 9,813,757	$ 84,994	1 %
Average loans	**10,186,797**	10,083,593	103,204	1 %
Average deposits	**8,682,437**	8,516,942	165,495	2 %
Average invested capital	**249,446**	242,319	7,127	3 %

Consumer Banking contributed $6.8 million to net income in the fourth quarter of 2021, a decrease of $5.6 million compared to the third quarter of 2021. Net interest revenue increased $3.2 million mainly due to increased deposit balances and improved spreads. Fees and commissions revenue decreased $5.5 million primarily due to normal seasonality in mortgage loan production volume and margin compression. Other operating expense increased $2.6 million over the third quarter of 2021, due to increases in professional fees and other expenses.

2020 Consumer Banking

Net income attributed to Consumer Banking totaled $98.0 million for 2020, compared to $60.2 million in 2019. Net interest revenue decreased $48.5 million or 25%, primarily due to a decrease in the yield on deposits sold to our Funds Management unit. Fees and commissions revenue increased $57.6 million or 31% over 2019. Lower mortgage interest rates increased mortgage loan origination volumes by $1.0 billion or 34% and production revenue as a percentage of production volume increased 172 basis points due to industry-wide capacity constraints. Deposit service charges decreased $15.4 million or 24% as we proactively waived certain fees and the pandemic resulted in customers retaining cash and not maintaining the usual level of spending. Operating expense increased $4.1 million or 2% over 2019 as an increase in mortgage banking costs was largely offset by lower business promotion expenses.

2021 Wealth Management

Wealth Management contributed $113.6 million to consolidated net income in 2021, a decrease of $2.1 million or 2% compared to record earnings in the prior year.

Table 16 – Wealth Management
(In thousands)

	Year Ended December 31,		
	2021	**2020**	**2019**
Net interest revenue from external sources	**$ 214,458**	$ 130,818	$ 61,277
Net interest revenue from internal sources	**(386)**	(13,528)	38,815
Total net interest revenue	**214,072**	117,290	100,092
Net loans recovered	**(223)**	(209)	(308)
Net interest revenue after net loans recovered	**214,295**	117,499	100,400
Fees and commissions revenue	**298,765**	399,229	341,333
Other gains (losses), net	**197**	(395)	56
Other operating revenue	**298,962**	398,834	341,389
Personnel expense	**233,808**	243,461	201,368
Other non-personnel expense	**86,549**	82,166	75,899
Other operating expense	**320,357**	325,627	277,267
Net direct contribution	**192,900**	190,706	164,522
Gain on financial instruments, net	**—**	4	2
Corporate expense allocations	**40,301**	35,331	36,239
Net income before taxes	**152,599**	155,379	128,285
Federal and state income tax	**39,049**	39,765	32,954
Net income	**$ 113,550**	$ 115,614	$ 95,331
Average assets	**$ 19,425,475**	$ 15,695,646	$ 10,204,426
Average loans	**1,981,159**	1,758,226	1,609,464
Average deposits	**9,426,771**	8,676,047	6,447,987
Average invested capital	**310,627**	300,860	274,599

Combined net interest revenue and fees and commission revenue attributed to the Wealth Management segment totaled $512.8 million for 2021, largely unchanged from the previous year. Revenue, primarily from U.S. government agency residential mortgage-backed securities trading activity, decreased $10.8 million due to narrowing margins, which was completely offset by increased fiduciary and asset management revenue. Growth in trust fees and managed account fees as a result of growth in assets under management and administration was partially offset by lower mutual fund fees and increased waivers.

Average Wealth Management loans grew by $223 million or 13% to $2.0 billion. Average deposits attributed to Wealth Management increased $751 million or 9% to $9.4 billion in 2021, led by growth in interest-bearing transaction deposits.

Operating expense decreased $5.3 million or 2% compared to the prior year. Personnel expense decreased $9.7 million or 4% primarily related to incentive compensation as a result of lower trading revenue. Non-personnel expense increased $4.4 million or 5% over 2020 largely due to technology project costs. Corporate expense allocations increased $5.0 million or 14% over the prior year.

Fourth Quarter 2021 Wealth Management

Table 17 - Wealth Management - Fourth Quarter 2021
(Dollars in thousands)

	Three Months Ended			
	Dec. 31, 2021	**Sep. 30, 2021**	**Increase (Decrease)**	**% Increase (Decrease)**
Net interest revenue from external sources	**$ 57,239**	$ 55,697	$ 1,542	3 %
Net interest expense from internal sources	**990**	(501)	1,491	(298) %
Total net interest revenue	**58,229**	55,196	3,033	5 %
Net loans recovered	**(71)**	(70)	(1)	1 %
Net interest revenue after net loans recovered	**58,300**	55,266	3,034	5 %
Fees and commissions revenue	**56,275**	97,966	(41,691)	(43) %
Other losses, net	**(472)**	(78)	(394)	505 %
Other operating revenue	**55,803**	97,888	(42,085)	(43) %
Personnel expense	**51,871**	65,802	(13,931)	(21) %
Non-personnel expense	**23,076**	21,615	1,461	7 %
Other operating expense	**74,947**	87,417	(12,470)	(14) %
Net direct contribution	**39,156**	65,737	(26,581)	(40) %
Corporate expense allocations	**9,971**	10,101	(130)	(1) %
Income before taxes	**29,185**	55,636	(26,451)	(48) %
Federal and state income taxes	**7,485**	14,230	(6,745)	(47) %
Net income	**$ 21,700**	$ 41,406	$ (19,706)	(48) %
Average assets	**$ 20,725,903**	$ 19,109,704	$ 1,616,199	8 %
Average loans	**2,065,261**	1,971,380	93,881	5 %
Average deposits	**9,194,019**	9,120,446	73,573	1 %
Average invested capital	**309,038**	310,414	(1,376)	— %

Wealth Management contributed $21.7 million to net income in the fourth quarter of 2021, a decrease of $19.7 million compared to the third quarter of 2021. Combined net interest and fee revenue totaled $114.5 million, a decrease of $38.7 million compared to prior quarter. Uncertainty around tapering by the Federal Reserve combined with year-end balance sheet management and concerns over yield curve steepening, resulted in decreased transaction activity and tighter margins. Operating expense decreased $12.5 million, primarily due to incentive compensation costs related to reduced trading activity.

2020 Wealth Management

Wealth Management contributed $115.6 million to consolidated net income in 2020, up $20.3 million or 21% over 2019. Revenue attributed to the Wealth Management segment totaled $516.5 million for 2020, a $75.1 million or 17% increase over the previous year. Demand for mortgage loans and related derivative contracts increased significantly due to a decrease in mortgage interest rates that began in early 2020 and continued throughout the year. We expanded trading activities that provide liquidity to our mortgage banking customers and enable them to manage their market risk. Growth in transaction volumes resulted in an $89.7 million increase in combined net interest revenue and trading revenue.

Growth in total revenue from expanded trading activities was partially offset by decreased net interest revenue generated by deposits sold to our Funds Management unit and loans attributed to the Wealth Management segment, and fiduciary and asset management fees. Both were negatively affected by the low short-term interest rate environment.

Operating expense increased $48.4 million or 17% over 2019. Personnel expense increased $42.1 million or 21%, primarily related to incentive compensation as a result of higher trading activity. Non-personnel expense increased $6.3 million or 8% over 2019.

Financial Condition

Securities

We maintain a securities portfolio to enhance profitability, manage interest rate risk, provide liquidity and comply with regulatory requirements. Securities are classified as trading, held for investment, or available for sale. See Note 2 to the Consolidated Financial Statements for the composition of the securities portfolio as of December 31, 2021 and December 31, 2020.

We hold an inventory of trading securities in support of sales to a variety of customers, including banks, corporations, insurance companies, money managers and others. Trading securities totaled $9.1 billion at December 31, 2021, an increase of $4.4 billion compared to December 31, 2020. Our trading portfolio expanded during 2021 in order to provide greater liquidity in the housing market during a time of record mortgage loan production volumes and to meet demand of our growing institutional customer base. Inventory levels were elevated at December 31, 2021 as many investors moved to the sidelines on the news of the upcoming taper by the Federal Reserve, year-end balance sheet management and concerns over yield curve steepening. 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 value-at-risk limits through the use of derivative contracts, short-sales and other techniques. These limits remain relatively 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.

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 $13.1 billion at December 31, 2021, an increase of $455 million compared to December 31, 2020. 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, 2021, residential mortgage-backed securities represented 61% 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 effective duration of the combined residential mortgage-backed securities portfolio held in investment and available for sale securities portfolios at December 31, 2021 is 3.1 years. Management estimates the combined portfolios' duration extends to 4.2 years assuming an immediate 200 basis point upward shock. The estimated duration contracts to 2.1 years assuming a 100 basis point decline in the current low rate environment.

The aggregate gross amount of unrealized losses on available for sale securities totaled $114 million at December 31, 2021, a $105 million increase compared to December 31, 2020. On a quarterly basis, we perform an evaluation on debt securities to determine if the unrealized losses are temporary as more fully described in Note 2 of the Consolidated Financial Statements. No credit impairment of available for sale securities was identified in 2021.

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. Fair value option securities totaled $44 million, a decrease of $71 million. See Market Risk section for further details.

Bank-Owned Life Insurance

We have approximately $406 million of bank-owned life insurance at December 31, 2021. This investment is expected to provide a long-term source of earnings to support existing employee benefit programs. Approximately $313 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. As of December 31, 2021, the fair value of investments held in separate accounts was approximately $323 million. As the underlying fair value of the investments held in a separate account at December 31, 2021 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 $93 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 $20.2 billion at December 31, 2021, a decrease of $2.8 billion compared to December 31, 2020, primarily due to a decrease in PPP loan balances and paydowns of energy and commercial real estate loans.

Table 18 – Loans
(In thousands)

	December 31,	
	2021	**2020**
Commercial:		
Healthcare	**$ 3,414,940**	$ 3,305,990
Services	**3,367,193**	3,508,583
Energy	**3,006,884**	3,469,194
General business	**2,717,448**	2,793,768
Total commercial	**12,506,465**	13,077,535
Commercial real estate:		
Office	**1,040,963**	1,085,257
Multifamily	**786,404**	1,328,045
Industrial	**766,125**	810,510
Retail	**679,917**	796,223
Residential construction and land development	**120,016**	119,394
Other commercial real estate	**437,900**	559,109
Total commercial real estate	**3,831,325**	4,698,538
Paycheck protection program	**276,341**	1,682,310
Loans to individuals:		
Residential mortgage	**1,722,170**	1,863,003
Residential mortgage guaranteed by U.S. government agencies	**354,173**	408,687
Personal	**1,515,206**	1,277,447
Total loans to individuals	**3,591,549**	3,549,137
Total	**$ 20,205,680**	$ 23,007,520

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 $12.5 billion or 62% of the loan portfolio at December 31, 2021, decreasing $571 million or 4% compared to December 31, 2020 primarily related to paydowns of energy loan balances. Services and general business loans also decreased, partially offset by growth in healthcare sector loans.

Approximately 77% of loans in this segment are located within our geographic footprint, based on collateral location. Loans for which the collateral location is less relevant, such as unsecured loans and reserve-based energy loans are categorized by the borrower's primary operating location. The largest concentration of loans in this segment outside of our footprint is California, totaling 4% of the segment.

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 used as the basis for developing the expected cash flows supporting the loan amount. The projected cash flows are discounted according to risk characteristics of the underlying oil and gas properties. Loans are evaluated to demonstrate with reasonable certainty that crude oil, natural gas and natural gas liquids can be recovered from known oil and gas reservoirs under existing economic and operating conditions at current pricing levels and with existing conventional equipment and operating methods and costs. As part of our evaluation of credit quality, we analyze rigorous stress tests over a range of commodity prices and take proactive steps to mitigate risk when appropriate.

Outstanding energy loans totaled $3.0 billion or 15% of total loans at December 31, 2021. Approximately $2.2 billion or 73% of energy loans were to oil and gas producers, a $435 million decrease compared to December 31, 2020. 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 67% of the committed production loans are secured by properties primarily producing oil and 33% of the committed production loans are secured by properties primarily producing natural gas.

Loans to midstream oil and gas companies totaled $646 million or 21% of energy loans, a decrease of $54 million compared to the prior year. Loans to borrowers that provide services to the energy industry totaled $142 million or 5% of energy loans, a $33 million increase during 2021. Loans to other energy borrowers, including those engaged in wholesale or retail energy sales totaled $30 million or 1% of energy loans, a $5.7 million decrease from the prior year.

Unfunded energy loan commitments were $3.0 billion at December 31, 2021, up $569 million over December 31, 2020. While utilization levels remain low, this provides ample capacity for growth from our current customer base.

The healthcare sector of the loan portfolio totaled $3.4 billion or 17% of total loans. Healthcare loans increased $109 million over December 31, 2020, primarily due to growth in loans to senior housing and care facilities. Healthcare sector loans consist primarily of loans for the development and operation of senior housing and care facilities, including independent living, assisted living and skilled nursing. Generally we loan to borrowers with a portfolio of multiple facilities that serves to help diversify risks specific to a single facility.

The services sector of the loan portfolio decreased $141 million to $3.4 billion or 17% of total loans. Service sector loans consist of a large number of loans to a variety of businesses, including Native American tribal and state and local governments, Native American tribal casino operations, foundations and not-for-profit organizations, educational services and specialty trade contractors. Approximately $1.7 billion of the services category is made up of loans with individual balances of less than $10 million. Service sector loans are generally secured by the assets of the borrower with repayment coming from the cash flows of ongoing operations of the customer’s business.

General business loans decreased $76 million to $2.7 billion or 13% of total loans. General business loans primarily consist of $1.4 billion of wholesale/retail loans and $1.3 billion of loans from other commercial industries.

We participate in shared national credits when appropriate to obtain or maintain business relationships with local customers. Shared national credits are defined by banking regulators as credits of more than $100 million and with three or more non-affiliated banks as participants. At December 31, 2021, the outstanding principal balance of these loans totaled $3.8 billion, including $1.7 billion in the energy sector. Approximately 84% of shared national credits are to borrowers with local market relationships. We serve as the agent lender in approximately 24% of our shared national credits, based on dollars committed. We hold shared national credits to the same standard of analysis and perform the same level of review as internally originated credits. Our lending policies generally avoid loans in which we do not have the opportunity to maintain or achieve other business relationships with the customer. In addition to management’s quarterly assessment of credit risk, banking regulators annually review a sample of shared national credits for proper risk grading.

Commercial Real Estate

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

The commercial real estate loan balance as a percentage of our total loan portfolio has historically ranged from 20% to 25%. The outstanding balance of commercial real estate loans decreased $867 million compared to 2020. Borrowers continued to refinance to long-term, non-recourse markets in this low interest rate environment as markets became more open in 2021. Loans secured by multifamily real estate decreased $542 million or 41%. Other real estate loans decreased $121 million or 22%. Loans secured by retail facilities decreased $116 million or 15%. Loans secured by office buildings decreased $44 million or 4% and loans secured by industrial facilities decreased $44 million or 5%.

Approximately 71% of loans in this segment are in our geographic footprint based on collateral location. The largest concentration of loans in this segment outside our footprint is Utah, totaling 9% of the segment. All other states represent less than 5% individually.

Paycheck Protection Program

We participated in programs initiated by the Coronavirus Aid, Relief and Economic Security Act ("CARES Act"), including the Small Business Administration's ("SBA") Paycheck Protection Program ("PPP") that began on April 3, 2020. PPP provided fully forgivable loans when utilized for qualified expenditures, including to help small business maintain payrolls during the COVID-19 pandemic. These loans generally have a contractual term of two years, though most are expected to be forgiven prior to maturity after completion of a compliance period. Loans are guaranteed and amounts forgiven will be reimbursed to the Company by the SBA. The loans carry a rate of 1%. Interest plus loan fees, which vary depending on loan size, are accrued over the contractual life of the loan. Any unaccreted origination fees will be recognized when the loan is paid. The pace of forgiveness activity for the initial rounds of PPP loans was slower than initially anticipated. At December 31, 2021, approximately $39 million of PPP loans from the initial rounds remain outstanding, with an insignificant unaccreted origination fee balance remaining.

The Company also participated in the most recent round of PPP in 2021. Approximately $237 million of PPP loans from this round remain outstanding. The newest round of loans have a fixed interest rate of 1% and a contractual term of five years, but are expected to be forgiven prior to maturity. Unaccreted origination fees related to the 2021 vintage of PPP loans totaled $7.5 million at December 31, 2021.

Loans to Individuals

Loans to individuals include residential mortgage and personal loans. Residential mortgage loans provide funds for our customers to purchase or refinance their primary residence or to borrow against the equity in their home. These loans are secured by a first or second mortgage on the customer's primary residence. These loans are made in accordance with underwriting policies we believe to be conservative and are fully documented. Loans may be individually underwritten or credit scored based on size and other criteria. Credit scoring is assessed based on significant credit characteristics including credit history, residential and employment stability.

In general, we sell the majority of our conforming fixed rate loan originations in the secondary market and retain the majority of our non-conforming and adjustable-rate mortgage loans. 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. Home equity loans are primarily first-lien and fully amortizing.

Residential mortgage, which includes home equity loans, and personal loans are made in accordance with underwriting policies we believe to be conservative and are fully documented. Loans may be individually underwritten or credit scored based on size and other criteria. Credit scoring is assessed based on significant credit characteristics including credit history, residential and employment stability.

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. Personal loans grew by $238 million or 19%.

Approximately 91% of the loans in this segment are secured by collateral located within our geographical footprint. Loans for which the collateral location is less relevant, such as unsecured loans are categorized by the borrower's primary operating location.

Residential mortgage loans guaranteed by U.S. government agencies have limited credit exposure because of the agency guarantee. This amount includes residential mortgage loans previously sold into GNMA mortgage pools that the Company may repurchase when certain defined delinquency criteria are met. Because of this repurchase right, the Company is deemed to have regained effective control over these loans and must include them on the Consolidated Balance Sheet. Residential mortgage loans guaranteed by U.S. government agencies decreased $55 million compared to December 31, 2020. As loans exited forbearance and delinquencies cured, many of these loan met GNMA requirements to be resold into GNMA mortgage pools.

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

Table 19 – Loans Managed by Primary Geographical Market
(In thousands)

	December 31,	
	2021	2020
Texas:		
Commercial	**$ 6,068,700**	$ 5,926,534
Commercial real estate	**1,253,439**	1,519,217
Paycheck protection program	**81,654**	501,079
Loans to individuals	**942,982**	855,410
Total Texas	**8,346,775**	8,802,240
Oklahoma:		
Commercial	**2,633,014**	3,144,782
Commercial real estate	**546,021**	597,733
Paycheck protection program	**69,817**	413,108
Loans to individuals	**2,024,404**	2,052,784
Total Oklahoma	**5,273,256**	6,208,407
Colorado:		
Commercial	**1,936,149**	1,929,320
Commercial real estate	**470,937**	879,648
Paycheck protection program	**82,781**	377,111
Loans to individuals	**256,533**	264,295
Total Colorado	**2,746,400**	3,450,374
Arizona:		
Commercial	**1,130,798**	1,219,072
Commercial real estate	**674,309**	726,111
Paycheck protection program	**21,594**	211,725
Loans to individuals	**186,528**	177,948
Total Arizona	**2,013,229**	2,334,856
Kansas/Missouri:		
Commercial	**338,697**	455,914
Commercial real estate	**382,761**	366,821
Paycheck protection program	**4,718**	56,011
Loans to individuals	**110,889**	105,995
Total Kansas/Missouri	**837,065**	984,741
New Mexico:		
Commercial	**306,964**	303,833
Commercial real estate	**442,128**	473,204
Paycheck protection program	**13,510**	109,881
Loans to individuals	**63,930**	75,665
Total New Mexico	**826,532**	962,583
Arkansas:		
Commercial	**92,143**	98,080
Commercial real estate	**61,730**	135,804
Paycheck protection program	**2,267**	13,395
Loans to individuals	**6,283**	17,040
Total Arkansas	**162,423**	264,319
Total BOK Financial loans	**$ 20,205,680**	$ 23,007,520

Table 20 – Loan Maturity and Interest Rate Sensitivity at December 31, 2021
(In thousands)

	Total	Remaining Maturities of Selected Loans			
		Within 1 Year	1-5 Years	5 - 15 Years	After 15 Years
Loan maturity:					
Commercial	$ 12,506,465	$ 2,308,134	$ 8,180,566	$ 1,924,275	$ 93,490
Commercial real estate	3,831,325	1,187,686	2,314,303	307,062	22,274
Paycheck protection program	276,341	35,989	240,352	—	—
Loans to individuals	3,591,549	543,644	912,965	771,208	1,363,732
Total	$ 20,205,680	$ 4,075,453	$ 11,648,186	$ 3,002,545	$ 1,479,496
Interest rate sensitivity for selected loans with:					
Predetermined interest rates	$ 6,507,283	$ 263,902	$ 2,674,422	$ 2,418,355	$ 1,150,604
Floating or adjustable interest rates	13,698,397	3,811,551	8,973,764	584,190	328,892
Total	$ 20,205,680	$ 4,075,453	$ 11,648,186	$ 3,002,545	$ 1,479,496

Off-Balance Sheet Commitments

We enter into certain off-balance sheet arrangements in the normal course of business as shown in Table 21. 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.

We have off-balance sheet commitments related to certain residential mortgage loans sold into mortgage-backed securities as part of our mortgage banking activities. We retain off-balance sheet credit risk related to losses in excess of amounts guaranteed by the U.S. Department of Veteran's Affairs ("VA").

We also have off-balance sheet credit risk related to certain residential mortgage loans primarily originated under community development loan programs that were sold to a U.S. government agency with full recourse prior to 2007. 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. The majority of our conforming fixed rate loan originations are sold in the secondary market and we only retain repurchase obligations under standard underwriting representations and warranties.

Table 21 – Off-Balance Sheet Credit Commitments
(In thousands)

	December 31,	
	2021	2020
Loan commitments	**$ 12,471,482**	$ 10,967,546
Standby letters of credit	**699,743**	764,886
Unpaid principal balance of residential mortgage loans sold with recourse	**54,619**	73,055
Unpaid principal balance of residential mortgage loans transferred into mortgage-backed securities guaranteed by U.S. Dept. of Veteran's Affairs	**1,095,877**	1,442,504

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 counterparties to these contracts may result in BOK Financial recognizing a loss as the fair value of the affected contracts may no longer move in tandem with the offsetting contracts. This occurs if the credit standing of the customer or counterparty deteriorated such that either the fair value of underlying collateral no longer 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, 2021, the net fair values of derivative contracts, before consideration of cash margin, reported as assets under these programs totaled $1.1 billion compared to $625 million at December 31, 2020. Derivative contracts carried as assets include energy contracts with fair values of $793 million, foreign exchange contracts with fair values of $215 million and interest rate swaps primarily sold to loan customers with fair values of $44 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 $1.1 billion.

At December 31, 2021, total derivative assets were reduced by $242 thousand of cash collateral received from counterparties and total derivative liabilities were reduced by $837 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, 2021 follows in Table 22.

Table 22 – Fair Value of Derivative Contracts
(In thousands)

Customers	$ 917,987
Banks and other financial institutions	134,193
Fair value of customer hedge asset derivative contracts, net	$ 1,052,180

The largest exposure to a single counterparty was to a customer for an energy swap which totaled $61 million at December 31, 2021.

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 equal to the equivalent of $33.38 per barrel of oil would decrease the fair value of derivative assets by $388 million, with dealer counterparties comprising the bulk of the assets. An increase in prices equal to the equivalent of $91.03 per barrel of oil would increase the fair value of derivative assets by $447 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, 2021, changes in interest rates would not materially impact regulatory capital or liquidity needed to support this portion of our customer derivative program.

Summary of Credit Loss Experience

Table 23 – Summary of Loan Loss Experience
(In thousands)

	Year Ended December 31, 2021					
	Commercial	**Commercial Real Estate**	**PPP**	**Individual**	**Nonspecific Allowance**	**Total**
Allowance for loan losses:						
Beginning balance	$ 254,934	$ 86,558	$ —	$ 47,148	$ —	$ 388,640
Provision for loan losses	(59,326)	(26,522)	—	(9,354)	—	(95,202)
Loans charged off	(43,956)	(2,485)	—	(4,910)	—	(51,351)
Recoveries of loans previously charged off	10,404	1,002	—	2,928	—	14,334
Ending balance	$ 162,056	$ 58,553	$ —	$ 35,812	$ —	$ 256,421
Allowance for off-balance sheet credit risk from unfunded loan commitments:						
Beginning balance	$ 14,422	$ 20,571	$ —	$ 1,928	$ —	$ 36,921
Provision for off-balance sheet credit risk	(610)	(3,129)	—	(205)	—	(3,944)
Ending balance	$ 13,812	$ 17,442	$ —	$ 1,723	$ —	$ 32,977
Outstanding loans	$ 12,506,465	$ 3,831,325	$ 276,341	$ 3,591,549	$ —	$ 20,205,680
% of outstanding loans[1]	61.90 %	18.96 %	1.37 %	17.77 %	— %	100.00 %
Average loans	$ 13,304,596	$ 4,075,831	$ 293,976	$ 3,820,753	$ —	$ 21,495,156
Provision for loan losses to average loans	(0.45)%	(0.65)%	— %	(0.24)%	— %	(0.44)%
Net charge-offs (recoveries) to average loans	0.25 %	0.04 %	— %	0.05 %	— %	0.17 %
Recoveries to gross charge-offs	23.67 %	40.32 %	— %	59.63 %	— %	27.91 %
Accrual for unfunded loan commitments to loan commitments	0.15 %	0.92 %	— %	0.12 %	— %	0.26 %
Allowance for loan losses to loans outstanding at period-end	1.30 %	1.53 %	— %	1.00 %	— %	1.27 %
Combined allowance for loan losses and accrual for off-balance sheet credit risk from unfunded loan commitments to loans outstanding at period-end	1.41 %	1.98 %	— %	1.05 %	— %	1.43 %

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

Table 23 – Summary of Loan Loss Experience (continued)
(In thousands)

	Year Ended December 31, 2020					
	Commercial	**Commercial Real Estate**	**PPP**	**Individual**	**Nonspecific Allowance**	**Total**
Allowance for loan losses:						
Beginning balance	$ 118,187	$ 51,805	$ —	$ 23,572	$ 17,195	$ 210,759
CECL transition adjustment[1]	33,681	(4,620)	—	13,943	(17,195)	25,809
Beginning balance, adjusted	151,868	47,185	—	37,515	—	236,568
Provision for loan losses	171,800	40,407	—	10,253	—	222,460
Loans charged off	(73,370)	(1,300)	—	(4,729)	—	(79,399)
Recoveries of loans previously charged off	4,636	266	—	4,109	—	9,011
Ending balance	$ 254,934	$ 86,558	$ —	$ 47,148	$ —	$ 388,640
Allowance for off-balance sheet credit risk from unfunded loan commitments:						
Beginning balance	$ 1,434	$ 107	$ —	$ 44	$ —	$ 1,585
Transition adjustment	10,144	11,660	—	1,748	—	23,552
Beginning balance, adjusted	11,578	11,767	—	1,792	—	25,137
Provision for off-balance sheet credit risk	2,844	8,804	—	136	—	11,784
Ending balance	$ 14,422	$ 20,571	$ —	$ 1,928	$ —	$ 36,921
Outstanding loans	$ 13,077,535	$ 4,698,538	$ 1,682,310	$ 3,549,137	$ —	$ 23,007,520
% of outstanding loans[2]	56.84 %	20.42 %	7.31 %	15.43 %	— %	100.00 %
Average loans	$ 13,301,869	$ 4,779,138	$ 1,711,169	$ 3,610,019	$ —	$ 23,402,195
Provision for loan losses to average loans	1.29 %	0.85 %	— %	0.28 %	— %	0.95 %
Net charge-offs (recoveries) to average loans	0.52 %	0.02 %	— %	0.02 %	— %	0.30 %
Recoveries to gross charge-offs	6.32 %	20.46 %	— %	86.89 %	— %	11.35 %
Accrual for unfunded loan commitments to loan commitments	0.17 %	1.46 %	— %	0.15 %	— %	0.34 %
Allowance for loan losses to loans outstanding at period-end	1.95 %	1.84 %	— %	1.33 %	— %	1.69 %
Combined allowance for loan losses and accrual for off-balance sheet credit risk from unfunded loan commitments to loans outstanding at period-end	2.06 %	2.28 %	— %	1.38 %	— %	1.85 %

[1] The Company adopted FASB Accounting Standards Update No. 2016-13, *Financial Instruments – Credit Losses (Topic 326): Assets Measured at Amortized Cost* ("CECL") on January 1, 2020. The transition adjustment included $1.3 million related to measurement changes to the allowance attributed to outstanding loan balances and $24.5 million related to recognition of expected credit losses on acquired loans.

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

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

Expected credit losses on assets carried at amortized cost are recognized over their expected lives based on models that measure the probability of default and loss given default over a 12-month reasonable and supportable forecast period. Models incorporate base case, downside, and upside macroeconomic variables such as real gross domestic product ("GDP") growth, civilian unemployment rate and West Texas Intermediate ("WTI") oil prices on a probability weighted basis. See Note 4 to the Consolidated Financial Statements for additional discussion of methodology of allowance for loan losses.

A $100.0 million negative provision for credit losses was recorded for the year ended December 31, 2021, primarily related to a $90.1 million decrease in the allowance for credit losses related to lending activities from improvements in our reasonable and supportable forecasts of macroeconomic variables influenced by the anticipated impact of the COVID-19 pandemic developments. Throughout 2021, energy commodity prices strengthened and stabilized and the outlook of growth in GDP and the labor markets improved. Changes in the loan portfolio characteristics, primarily from net recoveries and changes in specific impairment, improving credit quality metrics and lower loan balances resulted in a $9.0 million decrease in the allowance for credit losses related to lending activities during the year.

We recorded a $17.0 million negative provision for credit losses in the fourth quarter of 2021. Changes in our reasonable and supportable forecasts of macroeconomic variables, primarily due to continued strength in commodity prices and an outlook for moderate growth in GDP and the labor markets resulted in a $12.6 million decrease in the allowance for credit losses related to lending activities. Changes in the loan portfolio characteristics, primarily from net recoveries and changes in specific impairment, improving credit quality metrics and lower loan balances resulted in a $4.7 million decrease in the allowance for credit losses related to lending activities.

Our reasonable and supportable forecast of macroeconomic variables is significantly influenced by the COVID-19 pandemic developments and related government stimulus policies, which remain highly uncertain. A summary of macroeconomic variables considered in developing our estimate of expected credit losses at December 31, 2021 follows:

	Base	**Downside**	**Upside**
Scenario probability weighting	65%	25%	10%
COVID-19 trajectory	COVID-19 case levels increase due to the Omicron and Delta variants during the winter months, though global virus immunity continues to become more widespread and remains effective against severe virus outcomes.	New COVID-19 variants such as the Omicron and Delta variants continue to emerge and spread rapidly in areas of the country with lower vaccination rates as the U.S. enters the winter months. The severity of the situation is compounded by uncertainty around vaccine durability and many states/regions are forced to reinstate restrictions.	COVID-19 case levels increase due to the Omicron and Delta variants during the winter months, though global virus immunity continues to become more widespread and remains effective against severe virus outcomes.
Economic recovery (driven by COVID-19 trajectory)	Elevated consumer consumption and the need for inventory restocking is expected to result in GDP growth consistent with pre-pandemic levels. Labor force participants will continue to re-enter the job market to help meet record job openings. This increase in employment helps maintain household income above its pre-pandemic trend and prevents a sharp drop-off in spending.	Monetary policy remains accommodative, though there is a lack of Congressional support for additional fiscal stimulus. This results in a relatively mild recession with conditions beginning to improve in the late summer of 2022.	Elevated consumer consumption and the need for inventory restocking is expected to result in GDP growth consistent with pre-pandemic levels. Labor force participants will continue to re-enter the job market to help meet record job openings. This increase in employment helps maintain household income above its pre-pandemic trend and prevents a sharp drop-off in spending.
Macro-economic factors	– GDP is forecasted to grow by 2.9% over the next 12 months. – Civilian unemployment rate of 4.0% in the first quarter of 2022 improving to 3.7% by the fourth quarter of 2022. – The Federal Reserve completes the tapering of their bond purchases in March 2022 and one federal funds rate increase in 2022. – WTI oil prices are projected to generally follow the NYMEX forward curve that existed at the end of December 2021 and are expected to average $68.75 per barrel over the next 12 months.	– GDP is forecasted to slow to 1.0% in the first quarter of 2022, contract in the second and third quarters of 2022 and return to 1.0% growth in the fourth quarter of 2022. – Civilian unemployment rate of 5.0% in the first quarter of 2022 worsens to 6.0% by the fourth quarter of 2022. – WTI oil prices are projected to fall modestly in the first through third quarters of 2022, then recover in the fourth quarter of 2022. WTI oil prices average $54.23 per barrel over the next 12 months.	– GDP is forecasted to grow by 4.0% over the next 12 months. – Civilian unemployment rate of 4.0% in the first quarter of 2022 improving to 3.4% by the fourth quarter of 2022. – The Federal Reserve completes the tapering of their bond purchases in March 2022 and there are two federal funds rate increases in 2022. – WTI oil prices are projected to average $75.40 per barrel over the next 12 months.

Net charge-offs and changes in specific impairments attributed to certain credits required a $20.9 million provision during 2021 while improvements in risk grading during the year resulted in a $10.9 million decrease in allowance for credit losses related to lending activities. Changes in outstanding loan balances resulted in a $20.9 million decrease in the allowance for credit losses. A summary of outstanding loan balances by risk grade is included in Note 4 to the Consolidated Financial Statements. Non-pass grade loans include other loans especially mentioned, defined by regulatory guidelines as loans that are currently performing in compliance with original terms but may have a potential weakness that deserves management’s close attention, accruing substandard loans, and nonaccruing loans. Non-pass grade loans totaled $456 million at December 31, 2021, composed primarily of $144 million or 5% of energy loans, $79 million or 2% of commercial healthcare loans, $73 million or 2% of commercial services loans, $67 million or 2% of commercial real estate loans and $46 million or 2% of commercial general business loans. Non-pass grade loans totaled $1.0 billion at December 31, 2020.

The allowance for loan losses totaled $256 million or 1.27% of outstanding loans and 213% of nonaccruing loans at December 31, 2021, excluding residential mortgage loans guaranteed by U.S. government agencies. The combined allowance for loan losses and accrual for off-balance sheet credit risk from unfunded loan commitments was $289 million or 1.43% of outstanding loans and 241% of nonaccruing loans at December 31, 2021. Excluding PPP loans, the allowance for loan losses was 1.29% of outstanding loans and the combined allowance for loan losses and accrual for off-balance sheet credit risk from unfunded loan commitments was 1.45%.

The allowance for credit losses attributed to energy was 1.74% of outstanding energy loans at December 31, 2021. Our most recent semi-annual borrowing base redetermination was completed during the fourth quarter of 2021 based on forward pricing curves that existed at that time. The pricing environment remains sensitive and tied to the continued economic recovery from the impact of the COVID-19 pandemic and other factors such as geopolitical tensions, etc.

We also conduct quarterly stress tests of our energy borrowers with more than 50% funding on their lines of credit and all non-pass graded loans using a current price deck discounted at 30%. This stress test helps us identify potential issues, although the most recent test corroborated the risk grading of energy borrowers evaluated once hedging was taken into consideration. Of all the energy customers that we stress test, which makes up 98% of production loans outstanding, 97% of our customers have some level of hedging in the 12-month range and many of them carry into the 24-month range.

The provision for credit losses was $222.6 million for the year ended December 31, 2020. Changes in our reasonable and supportable forecasts of macroeconomic variables during 2020 resulted in a $99.1 million provision for credit losses related to lending activities. Volatility in economic conditions experienced in the first half of 2020 began to moderate in the latter half of the year. Changes in the loan portfolio characteristics, including specific impairment and losses, loan balances and risk grading resulted in a $135.1 million provision for credit losses related to lending activities. This was partially offset by an $11.3 million decrease in the accrual for expected credit loses from mortgage banking activities related to the sale of certain mortgage servicing rights.

The allowance for loan losses was $389 million or 1.69% of outstanding loans and 171% of nonaccruing loans, excluding loans guaranteed by U.S. government agencies at December 31, 2020. The combined allowance for loan losses and accrual for off-balance sheet credit risk from unfunded loan commitments was $426 million or 1.85% of outstanding loans and 188% of nonaccruing loans. Excluding PPP loans, the allowance for loan losses was 1.82% of outstanding loans and the combined allowance for loan losses and accrual for off-balance sheet credit risk from unfunded loan commitments was 2.00%.

Net Loans Charged Off

Net loans charged off totaled $37 million or 0.17% of average loans, excluding PPP loans, in 2021. Net loans charged off were $70 million or 0.32% of average loans, excluding PPP loans, in 2020.

In 2021, net charge-offs of commercial loans were $34 million, primarily related to energy borrowers. Net commercial real estate loan charge-offs were $1.5 million and net loan charge-offs of loans to individuals were $2.0 million. Net charge-offs of loans to individuals include deposit account overdraft losses.

Nonperforming Assets

As more fully described in Note 1 to the Consolidated Financial Statements, loans are generally classified as nonaccruing when it becomes probable that we will not collect the full contractual principal and interest. Accruing renegotiated loans guaranteed by U.S. government agencies represent residential mortgage loans that have been modified in troubled debt restructurings. Interest continues to accrue based on the modified terms of the loan and loans may be sold once they become eligible according to U.S. government agency guidelines. Real estate and other repossessed assets are assets acquired in partial or total forgiveness of loans. The assets are carried at the lower of cost as determined by fair value at the date of foreclosure or current fair value, less estimated selling costs. A summary of nonperforming assets follows in Table 24:

Table 24 - Nonperforming Assets
(Dollars in Thousands)

	December 31,	
	2021	**2020**
Nonaccruing loans:		
Commercial		
Energy	**$ 31,091**	$ 125,059
Healthcare	**15,762**	3,645
Services	**17,170**	25,598
General business	**10,081**	12,857
Total commercial	**74,104**	167,159
Commercial real estate	**14,262**	27,246
Paycheck protection program	**—**	—
Loans to individuals		
Residential mortgage	**31,574**	32,228
Residential mortgage guaranteed by U.S. government agencies	**13,861**	7,741
Personal	**258**	319
Total loans to individuals	**45,693**	40,288
Total nonaccruing loans	**$ 134,059**	$ 234,693
Accruing renegotiated loans guaranteed by U.S. government agencies	**210,618**	151,775
Real estate and other repossessed assets	**24,589**	90,526
Total nonperforming assets	**$ 369,266**	$ 476,994
Total nonperforming assets excluding those guaranteed by U.S. government agencies	**$ 144,787**	$ 317,478
Allowance for loan losses to nonaccruing loans[1]	**213.33 %**	171.24 %
Nonperforming assets to outstanding loans and repossessed assets[1]	**0.74 %**	1.51 %
Nonaccruing loans to outstanding loans	**0.66 %**	1.02 %
Nonaccruing commercial loans to outstanding commercial loans	**0.59 %**	1.28 %
Nonaccruing commercial real estate loans to outstanding commercial real estate loans	**0.37 %**	0.58 %
Nonaccruing loans to individuals to outstanding loans to individuals[1]	**0.98 %**	1.04 %
Accruing loans 90 days or more past due[1]	**$ 313**	$ 10,369

[1] Excludes residential mortgage and PPP loans guaranteed by U.S. government agencies.

Excluding assets guaranteed by U.S. government agencies, nonperforming assets decreased $173 million compared to December 31, 2020, primarily due to a $94 million decrease in nonaccruing energy loans, a $66 million decrease in real estate and other repossessed assets and a $13 million decrease in nonaccruing commercial real estate loans. These decreases were partially offset by a $12 million increase in nonaccruing healthcare sector loans. Newly identified nonaccruing loans totaled $87 million, offset by $131 million in payments, $51 million of charge-offs and $8.3 million of foreclosures. The Company generally retains nonperforming assets to maximize potential recovery, which may cause future nonperforming assets to decrease more slowly.

A rollforward of nonperforming assets for the years ended December 31, 2021 and December 31, 2020 follows in Table 25.

Table 25 – Rollforward of Nonperforming Assets
(In thousands)

	Year Ended December 31, 2021						
	Nonaccruing Loans						
	Commercial	Commercial Real Estate	Loan to Individuals	Total	Renegotiated Loans	Real Estate and Other Repossessed Assets	Total Nonperforming Assets
Balance, December 31, 2020	$ 167,159	$ 27,246	$ 40,288	$ 234,693	$ 151,775	$ 90,526	$ 476,994
Additions	61,129	327	25,241	86,697	105,535	8,688	200,920
Net transfer from premises and equipment				—	—	217	217
Payments	(102,717)	(10,537)	(17,443)	(130,697)	(3,948)	—	(134,645)
Charge-offs	(43,956)	(2,485)	(4,910)	(51,351)	—	—	(51,351)
Net gains (losses) and write-downs	—	—	—	—	—	13,842	13,842
Foreclosure of nonaccruing loans	(7,511)	—	(809)	(8,320)	—	8,320	—
Foreclosure of loans guaranteed by U.S. government agencies	—	—	(2,435)	(2,435)	(866)	—	(3,301)
Proceeds from sales	—	—	—	—	(37,322)	(97,004)	(134,326)
Net transfers to nonaccruing loans	—	—	6,081	6,081	(6,081)	—	—
Return to accrual status	—	(289)	(320)	(609)	—	—	(609)
Other, net	—	—	—	—	1,525	—	1,525
Balance, December 31, 2021	$ 74,104	$ 14,262	$ 45,693	$ 134,059	$ 210,618	$ 24,589	$ 369,266

	Year Ended December 31, 2020						
	Nonaccruing Loans						
	Commercial	Commercial Real Estate	Loan to Individuals	Total	Renegotiated Loans	Real Estate and Other Repossessed Assets	Total Nonperforming Assets
Balance, December 31, 2019	$ 115,416	$ 27,626	$ 37,909	$ 180,951	$ 92,452	$ 20,359	$ 293,762
Additions	263,981	19,919	20,658	304,558	96,935	—	401,493
Payments	(61,617)	(459)	(11,567)	(73,643)	(2,752)	—	(76,395)
Charge-offs	(73,370)	(1,300)	(4,729)	(79,399)	—	—	(79,399)
Net gains (losses) and write-downs	—	—	—	—	—	(1,628)	(1,628)
Foreclosure of nonaccruing loans	(65,690)	(18,540)	(1,093)	(85,323)	—	85,323	—
Foreclosure of loans guaranteed by U.S. government agencies	—	—	(1,506)	(1,506)	(3,422)	—	(4,928)
Proceeds from sales	—	—	—	—	(30,860)	(13,528)	(44,388)
Net transfers to nonaccruing loans	—	—	1,326	1,326	—	—	1,326
Return to accrual status	(11,561)	—	(710)	(12,271)	(1,916)	—	(14,187)
Other, net	—	—	—	—	1,338	—	1,338
Balance, December 31, 2021	$ 167,159	$ 27,246	$ 40,288	$ 234,693	$ 151,775	$ 90,526	$ 476,994

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

Real Estate and Other Repossessed Assets

Real estate and other repossessed assets totaled $25 million at December 31, 2021, composed primarily of $15 million of developed commercial real estate and $7.1 million of oil and gas properties. Real estate and other repossessed assets decreased $66 million compared to December 31, 2020 primarily related to the sale of repossessed oil and gas properties. The decrease of $4.2 million compared to September 30, 2021 was primarily due to the sale of certain repossessed oil and gas properties.

Liquidity and Capital

BOK Financial has numerous material cash requirements in the normal course of business. These obligations include deposits and other borrowed funds, leased premises, 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. Additional information on loan commitments can be found in the "Loan Commitments" section of Management's Discussion and Analysis while the distribution of time deposit balances can be located in Note 8, "Deposits", and information related to Other Borrowings can be located in Note 9, "Other Borrowings".

Our funding sources, which primarily include deposits and borrowings from the Federal Home Loan Banks, provide adequate liquidity to meet our operating needs. Based on the average balances for 2021, approximately 76% of our funding was provided by deposit accounts, 10% from borrowed funds, less than 1% from long-term subordinated debt and 11% from equity. The loan to deposit ratio decreased to 49% at December 31, 2021 from 64% at December 31, 2020, providing significant on-balance sheet liquidity to meet future loan demand and contractual obligations. BOK Financial, similar to the banking industry as a whole, saw significant transaction deposit growth in 2021. We are maintaining higher balances at the Federal Reserve to cover vital business obligations, to meet future asset growth opportunities and to stay nimble in a potential rising rate environment.

Subsidiary Bank

Deposits and borrowed funds are the primary sources of liquidity for the subsidiary 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 ExpressBank call center. Commercial deposit growth is supported by offering treasury management and lockbox services. We also acquire brokered deposits when the cost of funds is advantageous to other funding sources.

Table 26 - Average Deposits by Line of Business
(In thousands)

	Year Ended December 31,	
	2021	**2020**
Commercial Banking	**$ 17,659,695**	$ 14,319,729
Consumer Banking	**8,439,577**	7,599,937
Wealth Management	**9,426,771**	8,676,047
Subtotal	**35,526,043**	30,595,713
Funds Management and other	**2,394,934**	2,169,285
Total	**$ 37,920,977**	$ 32,764,998

Average deposits for 2021 totaled $37.9 billion and represented approximately 76% of total liabilities and capital compared to $32.8 billion and 67% of total liabilities and capital for 2020. Average deposits increased $5.2 billion over the prior year. Inflows resulting from PPP loans and government stimulus payments during the pandemic, along with additional core deposit growth as customers maintain higher balances during the current economic environment, have all contributed to the significant increase in deposits. Interest-bearing transaction deposit account balances increased by $3.0 billion and demand deposits grew by $2.3 billion.

Average deposits attributed to Commercial Banking were $17.7 billion for 2021, a $3.3 billion or 23% increase over 2020. Interest-bearing transaction account balances increased $1.7 billion or 25% and demand deposit balances increased $1.6 billion or 23%. 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 charges through the earnings credit. The earnings credit is a non-cash method that enables commercial customers to offset deposit service charges based on account balances. Commercial deposit balances may decrease as the economic outlook improves and if short-term rates move higher, enhancing their investment alternatives.

Average Consumer Banking deposit balances increased $840 million or 11% over the prior year. Average demand deposit and average interest-bearing transaction account balances grew by $390 million or 15% and $429 million or 13%, respectively, while time deposit balances decreased $172 million or 18%.

Average Wealth Management deposit balances grew by $751 million or 9% over the prior year. Interest-bearing transaction balances increased $633 million or 9%. Non-interest-bearing demand deposits increased $275 million or 25% and time deposit balances decreased $163 million or 22%.

Brokered deposits included in time deposits averaged $62 million for 2021, compared to $131 million for 2020. Brokered deposits included in time deposits totaled $49 million at December 31, 2021 and $81 million at December 31, 2020.

Average interest-bearing transaction accounts for 2021 included $2.1 billion of brokered deposits compared to $1.9 billion for 2020. Brokered deposits included in interest-bearing transaction accounts totaled $2.1 billion at December 31, 2021 and $2.2 billion at December 31, 2020.

The distribution of our period end deposit account balances among principal markets follows in Table 27.

Table 27 - Period End Deposits by Principal Market Area
(In thousands)

	December 31,	
	2021	**2020**
Oklahoma:		
Demand	**$ 5,433,405**	$ 4,329,205
Interest-bearing:		
Transaction	**12,689,367**	12,603,658
Savings	**521,439**	420,996
Time	**978,822**	1,134,453
Total interest-bearing	**14,189,628**	14,159,107
Total Oklahoma	**19,623,033**	18,488,312
Texas:		
Demand	**4,552,983**	3,449,882
Interest-bearing:		
Transaction	**5,345,461**	3,800,427
Savings	**178,458**	139,173
Time	**337,559**	383,062
Total interest-bearing	**5,861,478**	4,322,662
Total Texas	**10,414,461**	7,772,544
Colorado:		
Demand	**2,526,855**	2,168,404
Interest-bearing:		
Transaction	**2,334,371**	2,170,485
Savings	**78,636**	69,384
Time	**174,351**	208,778
Total interest-bearing	**2,587,358**	2,448,647
Total Colorado	**5,114,213**	4,617,051
New Mexico:		
Demand	**1,196,057**	941,074
Interest-bearing:		
Transaction	**858,394**	733,007
Savings	**107,963**	91,646
Time	**163,871**	186,307
Total interest-bearing	**1,130,228**	1,010,960
Total New Mexico	**2,326,285**	1,952,034

	December 31,	
	2021	**2020**
Arizona:		
Demand	**934,282**	905,201
Interest-bearing:		
Transaction	**834,491**	768,220
Savings	**16,182**	12,174
Time	**31,274**	32,721
Total interest-bearing	**881,947**	813,115
Total Arizona	**1,816,229**	1,718,316
Kansas/Missouri:		
Demand	**658,342**	426,738
Interest-bearing:		
Transaction	**1,086,946**	960,237
Savings	**18,844**	16,286
Time	**12,255**	14,610
Total interest-bearing	**1,118,045**	991,133
Total Kansas/Missouri	**1,776,387**	1,417,871
Arkansas:		
Demand	**42,499**	45,834
Interest-bearing:		
Transaction	**119,543**	122,388
Savings	**3,213**	2,333
Time	**6,196**	7,197
Total interest-bearing	**128,952**	131,918
Total Arkansas	**171,451**	177,752
Total BOK Financial deposits	**$ 41,242,059**	$ 36,143,880

Estimated uninsured deposits totaled $27.1 billion at December 31, 2021 and $21.0 billion at December 31, 2020. The portion of time deposits in excess of the FDIC limit, as applied without regard to other deposit balances held by the depositor, were $747 million at December 31, 2021.

In addition to deposits, liquidity for the subsidiary 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. The Company had no wholesale federal funds purchased at December 31, 2021 and $200 million at December 31, 2020. Securities repurchase agreements generally mature within 90 days and are secured by certain trading or 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 $1.7 billion during 2021 and $3.4 billion during 2020.

On April 13, 2020, the banking agencies published an interim final rule which permits banking organizations to exclude from regulatory capital requirements PPP covered loans pledged to the Federal Reserve's Paycheck Protection Program Liquidity Facility ("PPPLF"). The Company initially funded PPP loans from deposits and Federal Home Loan Bank borrowings, but transitioned to the PPPLF in June of 2020 in order to realize this regulatory capital relief. As PPP loans paid off and this benefit declined, the Company paid off the PPPLF during the third quarter of 2021.

At December 31, 2021, the estimated unused credit available to BOKF, NA from collateralized sources was approximately $18.1 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.

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

Parent Company and Other Non-Bank Subsidiaries

The primary sources of liquidity for BOK Financial are cash on hand and dividends from the subsidiary bank. Cash and cash equivalents totaled $231 million at December 31, 2021. Dividends from the subsidiary 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, 2021, based on the most restrictive limitations as well as management’s internal capital policy, BOKF, NA could declare up to $293 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.

As a result of the acquisition of CoBiz Financial, we obtained $60 million of subordinated debt issued in June 2015 that will mature on June 25, 2030. This debt bears interest at the rate of 5.625% through June 25, 2025 and thereafter, the notes will bear an annual floating rate equal to 3-month LIBOR plus 317 basis points. We also acquired $72 million of junior subordinated debentures. Interest is based on spreads over 3-month LIBOR ranging from 145 basis points to 295 basis points and mature September 17, 2033 through September 30, 2035. The junior subordinated debentures are subject to early redemption prior to maturity.

Shareholders' equity at December 31, 2021 was $5.4 billion, an increase of $97 million over December 31, 2020. Net income less cash dividends paid increased equity $474 million during 2021. Changes in interest rates resulted in accumulated other comprehensive income of $72 million at December 31, 2021, compared to $336 million at December 31, 2020. Capital is managed to maximize long-term value to the shareholders. Factors considered in managing capital include projections of future earnings, 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 April 30, 2019, 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, 2021, a cumulative total of 3,333,470 shares have been repurchased under this authorization. The Company repurchased 1,359,657 shares during 2021 at an average price of $86.74 per share. We view share buybacks opportunistically, but within the context of maintaining our strong capital position.

BOK Financial and the subsidiary bank are subject to various capital requirements administered by federal agencies. Failure to meet minimum capital requirements, including capital conservation buffer, can result in certain mandatory and additional discretionary actions by regulators that could have a material impact on operations including restrictions on capital distributions from dividends and share repurchases and executive bonus payments. These capital requirements include quantitative measures of assets, liabilities and off-balance sheet items. The capital standards are also subject to qualitative judgments by the regulators.

A summary of minimum capital requirements follows for BOK Financial on a consolidated basis in Table 28.

Table 28 – Capital Ratios

	Minimum Capital Requirement	Capital Conservation Buffer	Minimum Capital Requirement Including Capital Conservation Buffer	December 31, 2021	December 31, 2020
Risk-based capital:					
Common equity Tier 1	4.50 %	2.50 %	7.00 %	**12.24 %**	11.95 %
Tier 1 capital	6.00 %	2.50 %	8.50 %	**12.25 %**	11.95 %
Total capital	8.00 %	2.50 %	10.50 %	**13.29 %**	13.82 %
Tier 1 Leverage	4.00 %	N/A	4.00 %	**8.55 %**	8.28 %
Average total equity to average assets				**10.68 %**	10.46 %
Tangible common equity ratio				**8.61 %**	9.02 %

In March 2020, in response to the impact on the financial markets by the COVID-19 pandemic, the banking agencies issued an interim final rule permitting banking organizations that implement CECL the option to delay for two years an estimate of the CECL methodology's effect on regulatory capital, followed by a three-year transition period. The estimate includes the implementation date adjustment as of January 1, 2020 plus an estimate of the impact of the change for a two year period following implementation of CECL. We have elected to delay the regulatory capital impact of the transition in accordance with the interim final rule. Deferral of the impact of CECL added 15 basis points to the Company's Common equity Tier 1 capital at December 31, 2021.

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 29 following provides a reconciliation of the non-GAAP measures with financial measures defined by GAAP.

Table 29 – Non-GAAP Measures
(Dollars in thousands)

	December 31, 2021	December 31, 2020
Tangible common equity ratio:		
Total shareholders' equity	**$ 5,363,732**	$ 5,266,266
Less: Goodwill and intangible assets, net	**1,136,527**	1,161,527
Tangible common equity	**4,227,205**	4,104,739
Total assets	**50,249,431**	46,671,088
Less: Goodwill and intangible assets, net	**1,136,527**	1,161,527
Tangible assets	**$ 49,112,904**	$ 45,509,561
Tangible common equity ratio	8.61 %	9.02 %
Pre-provision net revenue:		
Net income before taxes	**$ 796,100**	$ 563,864
Add: Provision for expected credit losses	**(100,000)**	222,592
Less: Net income (loss) attributable to non-controlling interests	**(1,796)**	41
Pre-provision net revenue	$ 697,896	$ 786,415

Pre-provision net revenue is a measure of revenue less expenses, and is calculated before provision for credit losses and income tax expense. This financial measure is frequently used by investors and analysts that enables them to assess a company's ability to generate earnings to cover credit losses through a credit cycle. It also provides an additional basis for comparing the results of operations between periods by isolating the impact of the provision for credit losses, which can vary significantly between periods.

Off-Balance Sheet Arrangements

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

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 10-K contains forward-looking statements that are based on management's beliefs, assumptions, current expectations, estimates and projections about BOK Financial, the financial services industry, the economy generally and the expected or potential impact of the novel coronavirus (COVID-19) pandemic, and the related responses of the government, consumers, and others, on our business, financial condition and results of operations. Words such as “anticipates,” “believes,” “estimates,” “expects,” “forecasts,” “plans,” “projects,” “will,” “intends,” variations of such words and similar expressions are intended to identify such forward-looking statements. Management judgments relating to and discussion of the provision and allowance for credit losses, allowance for uncertain tax positions, accruals for loss contingencies and valuation of mortgage servicing rights involve judgments as to expected events and are inherently forward-looking statements. Assessments that acquisitions and growth endeavors will be profitable are necessary statements of belief as to the outcome of future events based in part on information provided by others which BOK Financial has not independently verified. These various forward-looking statements are not guarantees of future performance and involve certain risks, uncertainties, and assumptions which are difficult to predict with regard to timing, extent, likelihood and degree of occurrence. Therefore, actual results and outcomes may materially differ from what is expected, implied or forecasted in such forward-looking statements. Internal and external factors that might cause such a difference include, but are not limited to changes in government, consumer or business responses to, and ability to treat or prevent further outbreak of, the COVID-19 pandemic, commodity prices, interest rates and interest rate relationships, inflation, demand for products and services, the degree of competition by traditional and nontraditional competitors, changes in banking regulations, tax laws, prices, levies and assessments, the impact of technological advances, and trends in customer behavior as well as their ability to repay loans. BOK Financial and its affiliates undertake no obligation to update, amend or clarify forward-looking statements, whether as a result of new information, future events, or otherwise.

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

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 decrease in interest rates in the current low-rate environment are not meaningful.

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.

The interest rate sensitivity in Table 30 indicates management's estimation of the impact of rate changes on net interest revenue. Should deposit costs be 10% more sensitive to changes in rates, the variation in net interest revenue over the next twelve months would be 6.91%, or $79.3 million for the 200 basis point increase scenario. Alternatively, should deposit funding costs be 10% less sensitive to changes in rates, the variation in net interest revenue over the next twelve months would be 8.30%, or $95.2 million for the 200 basis point increase scenario.

Table 30 – Interest Rate Sensitivity
(Dollars in thousands)

	200 bp Increase		100 bp Increase	
	2021	2020	**2021**	2020
Anticipated impact over the next twelve months on net interest revenue	**$ 87,241**	$ 24,489	**$54,213**	$22,186
	7.60 %	2.33 %	**4.72%**	2.11%
Anticipated impact over months twelve through twenty-four	**$ 185,054**	$ 109,549	**$129,850**	$84,648
	16.03 %	10.85 %	**11.25%**	8.38%

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

	December 31,			
	2021		**2020**	
	Up 50 bp	**Down 50 bp**	**Up 50 bp**	**Down 50 bp**
MSR Asset	**$ 31,856**	**$ (41,815)**	$ 29,065	$ (14,585)
MSR Hedge	**(38,213)**	**36,692**	(19,873)	18,354
Net Exposure	**(6,357)**	**(5,123)**	9,192	3,769

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 32 - Mortgage Pipeline Sensitivity Analysis
(In thousands)

	Year Ended December 31,			
	2021		2020	
	Up 50 bp	Down 50 bp	Up 50 bp	Down 50 bp
Average[1]	**$ (430)**	**$ (439)**	$ (386)	$ (414)
Low[2]	**103**	**13**	582	998
High[3]	**(1,244)**	**(1,097)**	(799)	(1,483)
Period End	**(85)**	**(181)**	(507)	(510)

[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 risk, liquidity risk 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 and manage the market 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. Risk management tools include Value at Risk ("VaR"), stress testing and sensitivity analysis. Economic hedges in either the futures or cash markets may be used to reduce the risk associated with some trading programs. Basis Risk can result when trading asset values and the instruments used to hedge them move at different rates.

VaR measures the potential loss of a given position or portfolio of positions at a specified confidence level and time horizon. BOK Financial utilizes a historical VaR methodology to measure and aggregate risks across its covered trading positions. For Market Risk Rule purposes, the Company calculates VaR using a historical simulation approach and measures the potential trading losses using a 10-day holding period and a 99% confidence level. Presented in Table 33 below are VaR measures for both the three months ended December 31, 2021 and September 30, 2021.

Due to inherent limitations of the VaR methodology, including its reliance on past market behavior which might not be indicative of future market performance, VaR is only one of several tools used to measure and manage market risk. Other tools used to actively manage market risk include stress testing (“Stressed VaR”), and sensitivity analysis.

Stressed VaR, is calculated using the same internal models as used for the VaR-based measure. Stressed VaR is calculated over a ten-day holding period at a one-tail, 99% confidence level and employs a historical simulation approach based on a continuous twelve-month historical window selected to reflect a period of significant financial stress for the Company’s trading portfolio.

The trading portfolio’s VaR and Stressed VaR profiles are influenced by a variety of factors, including the size and composition of the portfolio, market volatility, and the correlation between different positions. A portfolio of trading positions is typically less risky than the sum of the risk from each of the individual sub-portfolios, because, under normal market conditions, risk within each category partially offsets the exposure to other risk categories. Table 33 below summarizes certain VaR and Stressed VaR based measures for the three months ended December 31, 2021 and September 30, 2021. In the fourth quarter of 2021, both VaR measures increased from the previous quarter. This increase resulted from growth in total trading assets and an increase in basis risk between trading assets and their economic hedges.

Table 33 –VaR and SVaR Measures
(In thousands)

	Three Months Ended			
	Dec. 31, 2021		Sep. 30, 2021	
	10 day 99% VaR	10 day 99% SVaR	10 day 99% VaR	10 day 99% SVaR
Mean	**$ 8,930**	**$ 40,010**	$ 9,600	$ 19,230
Low	**6,100**	**21,390**	5,220	9,050
High	**15,060**	**67,440**	16,350	37,810
Period End	**9,770**	**45,050**	5,690	22,200

The Company monitors the accuracy of internal VaR models and modeling processes by back-testing model performance. The Company updates historical data used by the VaR model on a regular basis and model validators independent of business lines perform regular modeled validations to access model input, processing, and reporting components. These models are required to be independently validated and approved prior to implementation.

Management also performs a sensitivity analysis to measure market risk from changes in interest rates on its trading portfolio. Applicable interest rates are shocked up and down 50 basis points calculating 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 34 –Trading Securities Sensitivity Analysis
(In thousands)

	Year Ended December 31,			
	2021		2020	
	Up 50 bp	Down 50 bp	Up 50 bp	Down 50 bp
Average[1]	**$ (852)**	**$ 3,364**	$ (2,473)	$ 3,910
Low[2]	**8,631**	**13,323**	7,893	15,309
High[3]	**(9,345)**	**(5,392)**	(12,490)	(4,855)
Period End	**1,587**	**355**	(4,380)	4,241

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, 2021.

Ernst & Young LLP (PCAOB ID: 42), 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, 2021. Their report, which expresses an unqualified opinion on the effectiveness of the Company's internal control over financial reporting as of December 31, 2021, is included in this annual report.

Report of Independent Registered Public Accounting Firm

To the Shareholders and the 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, 2021, based on 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, 2021, 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, 2021 and 2020, 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, 2021, and the related notes and our report dated February 23, 2022 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

Tulsa, Oklahoma

February 23, 2022

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, 2021 and 2020, 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, 2021, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2021 and 2020, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2021, 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, 2021, 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 23, 2022 expressed an unqualified opinion thereon.

Adoption of New Accounting Standard

As discussed in Notes 1 and 4 to the consolidated financial statements, the Company changed its method for accounting for credit losses in 2020.

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.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of the critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Allowance for credit losses

Description of the Matter	The Company's loan portfolio totaled $20.2 billion as of December 31, 2021, and the associated allowance for credit losses (ACL) was $289.4 million. A $100 million negative provision for credit losses was recorded for the year ended December 31, 2021. As discussed in Note 1 and 4 to the consolidated financial statements, management's estimate for the expected credit losses within the loan portfolio represents the portion of amortized cost basis of loans and related unfunded commitments they do not expect to collect over the asset's contractual life, considering past events, current conditions, as well as reasonable and supportable forecasts of future economic conditions. The allowance for credit losses consists of specific allowances attributed to certain individual loans, generally nonaccruing loans, with dissimilar risk characteristics that have not yet been charged down to amounts they expect to recover, general allowances for estimated credit losses on pools of loans that share similar risk characteristics, and qualitative reserves with the estimated impact of factors that are not captured in the modeled results or historical experience. Auditing management's estimate of the ACL and related provision for credit losses was complex due to the allowance models used, high degree of subjectivity in evaluating management's development of forecasts of future economic conditions ("economic scenarios"), probability weighting of economic scenarios, and qualitative reserves used in the general allowance.
How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design and tested the operating effectiveness of internal controls over the ACL process, including, among others, controls over the development, operation, and monitoring of economic scenarios, probability weighting of economic scenarios and qualitative reserves used in the allowance results. We involved EY specialists in testing management's models including evaluating model methodology, model performance and testing key modeling assumptions as well as controls covering the economic scenarios used by the ACL models. Additionally, with the support of EY specialists, we assessed the economic scenarios and related probability weights by evaluating management's methodology and agreeing a sample of key economic variables used to external sources. We also performed various sensitivity analyses and analytical procedures, including comparison of a sample of the key economic variables to alternative external sources and historical statistics. With respect to general ACL models, with the support of EY specialists, we evaluated model design and re-performed the calculation for a sample of models. We also tested the appropriateness of key inputs and assumptions used in these models by agreeing a sample of inputs to internal sources. We evaluated the overall ACL amount, including model estimates, qualitative reserves, and whether the recorded ACL appropriately reflects expected credit losses. We performed analytical procedures on the ACL, charge-off and delinquency rates, and coverage ratios of the allowance. Our audit response also included specific substantive tests of management's process to measure qualitative reserves, including those related to the significant judgments made by management. We compared calculations to industry peer data and compared qualitative reserves to prior periods and prior economic cycles. We also evaluated if the qualitative reserves were applied based on a comprehensive framework and that all available information was considered, well-documented, and consistently applied. We searched for and evaluated information that corroborates or contradicts management's economic scenarios and related probability weights as well as identification and measurement of qualitative reserves.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1990.

Tulsa, Oklahoma

February 23, 2022

Consolidated Statements of Earnings

(In thousands, except share and per share data)

	Year Ended December 31,		
Interest and dividend revenue	**2021**	**2020**	**2019**
Loans	**$ 769,357**	$ 889,507	$ 1,123,791
Residential mortgage loans held for sale	**5,465**	6,397	7,105
Trading securities	**155,989**	67,689	61,595
Investment securities	**10,430**	11,943	13,426
Available for sale securities	**230,383**	261,196	254,031
Fair value option securities	**1,542**	18,475	32,936
Restricted equity securities	**5,703**	10,963	26,860
Interest-bearing cash and cash equivalents	**1,060**	2,830	12,214
Total interest and dividend revenue	**1,179,929**	1,269,000	1,531,958
Interest expense			
Deposits	**33,484**	89,996	175,538
Borrowed funds	**17,877**	56,616	228,428
Subordinated debentures	**10,535**	13,944	15,113
Total interest expense	**61,896**	160,556	419,079
Net interest and dividend revenue	**1,118,033**	1,108,444	1,112,879
Provision for credit losses	**(100,000)**	222,592	44,000
Net interest and dividend revenue after provision for credit losses	**1,218,033**	885,852	1,068,879
Other operating revenue			
Brokerage and trading revenue	**112,989**	221,833	159,826
Transaction card revenue	**96,983**	90,182	87,216
Fiduciary and asset management revenue	**178,274**	167,445	177,025
Deposit service charges and fees	**104,217**	96,805	112,485
Mortgage banking revenue	**105,896**	182,360	107,541
Other revenue	**69,950**	51,695	58,108
Total fees and commissions	**668,309**	810,320	702,201
Other gains, net	**63,742**	6,046	10,214
Gain (loss) on derivatives, net	**(19,378)**	42,320	14,951
Gain (loss) on fair value option securities, net	**(2,239)**	53,248	15,787
Change in fair value of mortgage servicing rights	**41,637**	(79,524)	(53,517)
Gain on available for sale securities, net	**3,704**	9,910	5,597
Total other operating revenue	**755,775**	842,320	695,233
Other operating expense			
Personnel	**695,382**	688,474	660,565
Business promotion	**16,289**	14,511	35,662
Charitable contributions to BOKF Foundation	**9,000**	9,000	3,000
Professional fees and services	**50,906**	53,437	54,861
Net occupancy and equipment	**108,587**	112,722	110,275
Insurance	**15,881**	19,990	20,906
Data processing and communications	**151,614**	135,497	124,983
Printing, postage and supplies	**14,218**	15,061	16,517
Amortization of intangible assets	**18,311**	20,443	20,618
Mortgage banking costs	**42,698**	56,711	50,685
Other expense	**54,822**	38,462	35,172
Total other operating expense	**1,177,708**	1,164,308	1,133,244
Net income before taxes	**796,100**	563,864	630,868
Federal and state income taxes	**179,775**	128,793	130,183
Net income	**616,325**	435,071	500,685
Net income (loss) attributable to non-controlling interests	**(1,796)**	41	(73)
Net income attributable to BOK Financial Corporation shareholders	**$ 618,121**	$ 435,030	$ 500,758
Earnings per share:			
Basic	**$ 8.95**	$ 6.19	$ 7.03
Diluted	**$ 8.95**	$ 6.19	$ 7.03
Average shares used in computation:			
Basic	**68,591,920**	69,840,977	70,787,700
Diluted	**68,594,322**	69,844,172	70,802,612
Dividends declared per share	**$ 2.09**	$ 2.05	$ 2.01

See accompanying notes to Consolidated Financial Statements.

Consolidated Statements of Comprehensive Income
(In thousands)

	Year Ended December 31, 2021		
	2021	2020	2019
Net income	**$ 616,325**	$ 435,071	$ 500,685
Other comprehensive income (loss) before income taxes:			
Net change in unrealized gain (loss)	**(341,369)**	313,796	241,047
Reclassification adjustments included in earnings:			
Gain on available for sale securities, net	**(3,704)**	(9,910)	(5,597)
Other comprehensive gain (loss), before income taxes	**(345,073)**	303,886	235,450
Federal and state income taxes	**(81,576)**	72,941	57,942
Other comprehensive gain (loss), net of income taxes	**(263,497)**	230,945	177,508
Comprehensive income	**352,828**	666,016	678,193
Comprehensive income (loss) attributable to non-controlling interests	**(1,796)**	41	(73)
Comprehensive income attributable to BOK Financial Corp. shareholders	**$ 354,624**	$ 665,975	$ 678,266

See accompanying notes to Consolidated Financial Statements.

Consolidated Balance Sheets

(In thousands, except share data)

	December 31, 2021	December 31, 2020
Assets		
Cash and due from banks	**$ 712,067**	$ 798,757
Interest-bearing cash and cash equivalents	**2,125,343**	381,816
Trading securities	**9,136,813**	4,707,975
Investment securities, net of allowance (fair value**: 2021 – $231,395;** 2020 – $272,431)	**210,444**	244,843
Available for sale securities	**13,157,817**	13,050,665
Fair value option securities	**43,770**	114,982
Restricted equity securities	**83,113**	171,391
Residential mortgage loans held for sale	**192,295**	252,316
Loans	**20,205,680**	23,007,520
Allowance for loan losses	**(256,421)**	(388,640)
Loans, net of allowance	**19,949,259**	22,618,880
Premises and equipment, net	**574,148**	551,308
Receivables	**223,021**	245,880
Goodwill	**1,044,749**	1,048,091
Intangible assets, net	**91,778**	113,436
Mortgage servicing rights	**163,198**	101,172
Real estate and other repossessed assets, net of allowance (**2021 – $6,083**; 2020 – $15,060)	**24,589**	90,526
Derivative contracts, net	**1,097,297**	810,688
Cash surrender value of bank-owned life insurance	**405,607**	398,758
Receivable on unsettled securities sales	**56,172**	62,386
Other assets	**957,951**	907,218
Total assets	**$ 50,249,431**	$ 46,671,088
Liabilities and Equity		
Liabilities:		
Noninterest-bearing demand deposits	**$ 15,344,423**	$ 12,266,338
Interest-bearing deposits:		
Transaction	**23,268,573**	21,158,422
Savings	**924,735**	751,992
Time	**1,704,328**	1,967,128
Total deposits	**41,242,059**	36,143,880
Funds purchased and repurchase agreements	**2,326,449**	1,662,386
Other borrowings	**36,753**	1,882,970
Subordinated debentures	**131,226**	276,005
Accrued interest, taxes and expense	**273,041**	323,667
Derivative contracts, net	**275,625**	405,779
Due on unsettled securities purchases	**160,686**	257,627
Other liabilities	**435,221**	427,213
Total liabilities	**44,881,060**	41,379,527
Shareholders' equity:		
Common stock ($0.00006 par value; 2,500,000,000 shares authorized; shares issued and outstanding: **2021 – 76,254,029;** 2020 – 75,995,205)	**5**	5
Capital surplus	**1,378,794**	1,368,062
Retained earnings	**4,447,691**	3,973,675
Treasury stock (shares at cost: **2021 – 7,786,257**; 2020 – 6,357,605)	**(535,129)**	(411,344)
Accumulated other comprehensive income (loss)	**72,371**	335,868
Total shareholders' equity	**5,363,732**	5,266,266
Non-controlling interests	**4,639**	25,295
Total equity	**5,368,371**	5,291,561
Total liabilities and equity	**$ 50,249,431**	$ 46,671,088

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, 2018	75,711	$ 5	$ 1,334,030	$ 3,369,654	3,589	$ (198,995)	$ (72,585)	$ 4,432,109	$ 10,936	$ 4,443,045
Transition adjustment - Leasing standard	—	—	—	2,862	—	—	—	2,862	—	2,862
Balance, January 1, 2019, Adjusted	75,711	$ 5	$ 1,334,030	$ 3,372,516	3,589	$ (198,995)	$ (72,585)	$ 4,434,971	$ 10,936	$ 4,445,907
Net income (loss)	—	—	—	500,758	—	—	—	500,758	(73)	500,685
Other comprehensive income	—	—	—	—	—	—	177,508	177,508	—	177,508
Repurchase of common stock	—	—	—	—	1,572	(129,483)	—	(129,483)	—	(129,483)
Share-based compensation plans:										
Stock options exercised	27	—	1,421	—	—	—	—	1,421	—	1,421
Non-vested shares awarded, net	21	—	—	—	—	—	—	—	—	—
Vesting of non-vested shares	—	—	—	—	18	(1,428)	—	(1,428)	—	(1,428)
Share-based compensation	—	—	15,544	—	—	—	—	15,544	—	15,544
Cash dividends on common stock	—	—	—	(143,496)	—	—	—	(143,496)	—	(143,496)
Capital calls and distributions, net	—	—	—	—	—	—	—	—	(2,739)	(2,739)
Balance, December 31, 2019	75,759	5	1,350,995	3,729,778	5,179	(329,906)	104,923	4,855,795	8,124	4,863,919
Transition adjustment - CECL	—	—	—	(46,696)	—	—	—	(46,696)	—	(46,696)
Balance, January 1, 2020, Adjusted	75,759	5	1,350,995	3,683,082	5,179	(329,906)	104,923	4,809,099	8,124	4,817,223
Net income	—	—	—	435,030	—	—	—	435,030	41	435,071
Other comprehensive income	—	—	—	—	—	—	230,945	230,945	—	230,945
Repurchase of common stock	—	—	—	—	1,107	(75,830)	—	(75,830)	—	(75,830)
Share-based compensation plans:										
Stock options exercised	12	—	675	—	—	—	—	675	—	675
Non-vested shares awarded, net	224	—	—	—	—	—	—	—	—	—
Vesting of non-vested shares	—	—	—	—	72	(5,608)	—	(5,608)	—	(5,608)
Share-based compensation	—	—	16,392	—	—	—	—	16,392	—	16,392
Cash dividends on common stock	—	—	—	(144,437)	—	—	—	(144,437)	—	(144,437)
Capital calls and distributions, net	—	—	—	—	—	—	—	—	17,130	17,130
Balance, December 31, 2020	75,995	$ 5	$ 1,368,062	$ 3,973,675	6,358	$ (411,344)	$ 335,868	$ 5,266,266	$ 25,295	$ 5,291,561

(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, 2020	**75,995**	**5**	**1,368,062**	**3,973,675**	**6,358**	**(411,344)**	**335,868**	**5,266,266**	**25,295**	**5,291,561**
Net income (loss)	—	—	—	**618,121**	—	—	—	**618,121**	**(1,796)**	**616,325**
Other comprehensive loss	—	—	—	—	—	—	**(263,497)**	**(263,497)**	—	**(263,497)**
Repurchase of common stock	—	—	—	—	**1,360**	**(117,938)**	—	**(117,938)**	—	**(117,938)**
Share-based compensation plans:										
Stock options exercised	**17**	—	**973**	—	—	—	—	**973**	—	**973**
Non-vested shares awarded, net	**242**	—	—	—	—	—	—	—	—	—
Vesting of non-vested shares	—	—	—	—	**68**	**(5,847)**	—	**(5,847)**	—	**(5,847)**
Share-based compensation	—	—	**9,759**	—	—	—	—	**9,759**	—	**9,759**
Cash dividends on common stock	—	—	—	**(144,105)**	—	—	—	**(144,105)**	—	**(144,105)**
Capital calls and distributions, net	—	—	—	—	—	—	—	—	**(18,860)**	**(18,860)**
Balance, December 31, 2021	**76,254**	**$ 5**	**$ 1,378,794**	**$ 4,447,691**	**7,786**	**$ (535,129)**	**$ 72,371**	**$ 5,363,732**	**$ 4,639**	**$ 5,368,371**

See accompanying notes to Consolidated Financial Statements.

Consolidated Statements of Cash Flows
(In thousands)

	Year Ended		
	2021	**2020**	**2019**
Cash Flows From Operating Activities:			
Net income	**$ 616,325**	$ 435,071	$ 500,685
Adjustments to reconcile net income to net cash provided by (used in) operating activities:			
Provision for credit losses	**(100,000)**	222,592	44,000
Change in fair value of mortgage servicing rights due to market changes	**(41,637)**	79,524	53,517
Change in fair value of mortgage servicing rights due to principal payments	**38,761**	41,598	38,979
Net unrealized losses (gains) from derivative contracts	**30,201**	(59,253)	(25,936)
Share-based compensation	**9,759**	16,392	15,544
Depreciation and amortization	**102,468**	99,013	95,416
Net amortization of discounts and premiums	**18,293**	5,357	(16,984)
Net losses (gains) on financial instruments and other losses (gains), net	**(67,446)**	(15,949)	(583)
Net gain on mortgage loans held for sale	**(70,464)**	(114,545)	(40,402)
Mortgage loans originated for sale	**(2,818,789)**	(3,764,112)	(3,025,930)
Proceeds from sale of mortgage loans held for sale	**2,939,522**	3,817,475	3,035,600
Capitalized mortgage servicing rights	**(31,132)**	(31,209)	(35,128)
Change in trading and fair value option securities	**(4,357,950)**	(2,103,931)	(483,007)
Change in receivables	**39,183**	945,087	(740,868)
Change in other assets	**(12,568)**	1,739	18,955
Change in other liabilities	**12,897**	8,895	92,463
Net cash provided by (used in) operating activities	**(3,692,577)**	(416,256)	(473,679)
Cash Flows From Investing Activities:			
Proceeds from maturities or redemptions of investment securities	**33,865**	46,992	60,128
Proceeds from maturities or redemptions of available for sale securities	**3,500,081**	2,695,067	1,841,069
Purchases of available for sale securities	**(4,607,199)**	(4,575,324)	(5,245,256)
Proceeds from sales of available for sale securities	**622,881**	384,507	1,211,718
Change in amount receivable on unsettled available for sale securities transactions	**(10,406)**	(6,357)	25,410
Loans originated, net of principal collected	**2,853,326**	(1,103,752)	(44,414)
Net payments or proceeds on derivative asset contracts	**161,093**	(121,130)	33,566
Net change in restricted equity securities	**88,278**	289,161	116,105
Proceeds from disposition of assets	**165,040**	73,135	62,576
Purchases of assets	**(204,287)**	(141,134)	(384,639)
Net cash provided by (used in) investing activities	**2,602,672**	(2,458,835)	(2,323,737)
Cash Flows From Financing Activities:			
Net change in demand deposits, transaction deposits and savings accounts	**5,360,979**	8,773,433	2,252,936
Net change in time deposits	**(262,800)**	(250,721)	104,288
Net change in other borrowed funds	**(1,269,241)**	(5,091,026)	1,110,970
Repayment of subordinated debentures	**(150,000)**	—	—
Change in amount due on unsettled security purchases	**(117,452)**	63,521	(41,651)
Issuance of common and treasury stock, net	**(4,874)**	(4,933)	(7)
Net change in derivative margin accounts	**(467,865)**	(600,218)	(207,122)
Net payments or proceeds on derivative liability contracts	**(79,962)**	127,054	(33,622)
Repurchase of common stock	**(117,938)**	(75,830)	(129,483)
Dividends paid	**(144,105)**	(144,437)	(143,496)
Net cash provided by (used in) financing activities	**2,746,742**	2,796,843	2,912,813
Net increase (decrease) in cash and cash equivalents	**1,656,837**	(78,248)	115,397
Cash and cash equivalents at beginning of period	**1,180,573**	1,258,821	1,143,424
Cash and cash equivalents at end of period	**$ 2,837,410**	$ 1,180,573	$ 1,258,821

Supplemental Cash Flow Information:			
Cash paid for interest	**$ 68,775**	$ 160,288	$ 417,070
Cash paid for taxes	**$ 135,331**	$ 136,181	$ 87,361
Net loans and bank premises transferred to repossessed real estate and other assets	**$ 8,320**	$ 85,323	$ 10,665
Increase in U.S. government guaranteed loans eligible for repurchase	**$ 87,087**	$ 290,977	$ 91,634
Increase in receivables from conveyance of GNMA OREO	**$ 6,376**	$ 11,322	$ 28,669
Right-of-use assets obtained in exchange for operating lease liabilities	**$ 40,798**	$ 16,177	$ 62,755

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., BOK Financial Private Wealth, Inc., BOK Financial Insurance, 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. Determination that the Company is the primary beneficiary considers 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.

Certain prior year amounts have been reclassified to conform to current year presentation.

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 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 BOK Financial in the metropolitan areas of Phoenix, Arizona; Northwest Arkansas; Denver, Colorado; Kansas City, Missouri/Kansas; and as Bank of Albuquerque in Albuquerque, New Mexico. 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, loss contingencies, 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. Goodwill is recognized as the excess of the purchase price over the net fair value of assets acquired and liabilities assumed.

Acquired loans with more than an insignificant credit deterioration since inception are recorded at fair value plus a gross-up amount which is offset by an allowance for credit losses. Acquired loans without a more than insignificant credit deterioration since inception are recorded at fair value. An allowance for credit losses is recognized through a provision for credit losses, similar to origination loans.

The Consolidated Statements of Earnings include the results of operations from the acquisition date.

Goodwill and Intangible Assets

Goodwill for each reporting unit is evaluated for impairment annually as of October 1st or more frequently if conditions indicate that impairment may have occurred. The evaluation of possible goodwill impairment 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.

During the evaluation for impairment, management qualitatively assesses whether it is more likely than not that the fair value of the reporting units is less than their carrying value. Reporting unit carrying value includes sufficient capital to exceed regulatory requirements plus goodwill. 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. Specifically, the analysis may include:

- General economic conditions including overall economic activity, consumer spending and mobility, unemployment rates, consumer confidence, and duration and severity of any current market moving instability.
- Global health concerns including ongoing pandemics or potential for widespread health issues, the future course of a pandemic and the potential for medical advances.
- Regional economic conditions including demand for oil and price stability of oil, other overarching conditions that may be affecting any of the Company's primary states such as weather or other catastrophes, pandemics and health related lockdowns, or other state mandates.
- Industry conditions including federal funds rate movement by the Federal Reserve, the interest rate environment and the resulting effect on net interest revenue and operating revenue, and regulatory mandates that hinder or provide relief to the financial services industry.
- Company specific conditions including current and forecasted income, changes in stock price, the Company's stock price compared to peers and other indexes, book value per share compared to fair value per share, goodwill compared to total shareholders' equity, current capital and liquidity position, demand for products and services, health of the loan portfolio and other credit related factors, and current credit ratings with the ratings agencies, and regulatory ratings.
- Reporting unit performance and forecasts including any event that may significantly impact a reporting unit.

If management concludes based on the qualitative assessment that goodwill may be impaired, a quantitative 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. 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.

Both the qualitative assessment and quantitative analysis require significant management judgment, including estimates of changes in future economic conditions and their underlying causes and duration, the reasonableness and effectiveness of management's responses to those changes, changes in governmental fiscal and monetary policies, and fair value measurements based largely on significant unobservable inputs. The results of these judgments may have a significant impact on the Company's reported results of operations.

See Note 6, "Goodwill and Intangible Assets" for breakout of goodwill by reporting unit.

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 day 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.

On a quarterly basis, the Company performs separate evaluations of debt investment and available for sale securities for the presence of impairment. We assess whether impairment is present on an individual security basis when the fair value of a debt security is less than the amortized cost.

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 and whether there is any impairment attributable to credit-related factors. If an impairment exists, the amount attributed to credit-related factors is measured and an allowance for credit loss is recognized. Declines in fair value that are not recorded in the allowance are recorded in other comprehensive income, net of taxes.

BOK Financial may elect to carry certain securities that are not held for trading purposes 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 other financial 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.

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; and
- 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.

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. Fair values for exchange-traded contracts are based on quoted prices in an active market for identical instruments. Fair values for over-the-counter contracts 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. 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.

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. 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.

BOK Financial may offer derivative instruments such as to-be-announced U.S. agency residential mortgage-backed securities to mortgage banking customers to enable them to manage their market risk or to mitigate the Company's market risk of holding trading securities. Changes in the fair value of derivative instruments for trading purposes or used to mitigate the market risk of holding trading securities are included in Other Operating Revenue - Brokerage and trading revenue.

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. 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.

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, forward sales contracts, and residential mortgage loans held for sale are carried at fair value. Changes in the fair value are reported in Other Operating Revenue - Mortgage banking revenue.

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 mortgage 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.

For loans acquired with no evidence of credit deterioration, discounts are accreted on either an individual basis for loans with unique characteristics or on a pool basis for groups of homogeneous loans. Accretion is discontinued when a loan with an individually attributed discount is placed on nonaccruing status.

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

Performing loans may be renewed under the then 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 Sheets. 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. A portion of 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. Guaranteed loans may either be resold into GNMA pools after a performance period specified by the programs or foreclosed and conveyed to the guarantors.

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

Allowances for Credit Losses and Accrual for Off-balance Sheet Credit Risk from Unfunded Loans Commitments

BOK Financial’s accounting policies have changed significantly with the adoption of CECL as of January 1, 2020. Prior periods are not restated. Prior to January 1, 2020, general allowances and nonspecific allowances were based on incurred credit losses in accordance with accounting policies disclosed in Note 1 of the Consolidated Financial Statements included in the 2019 Form 10-K.

The allowance for loan losses and accrual for off-balance sheet credit risk from unfunded loan commitments represent the portion of the amortized cost basis of loans that we do not expect to collect over the asset’s contractual life, considering past events, current conditions, and reasonable and supportable forecasts of future economic conditions. The appropriateness of the allowance for credit losses, including industry and product adjustments, is assessed quarterly by a senior management Allowance Committee. This review is based on an on-going evaluation of the estimated expected credit losses in the portfolio and on unused commitments to provide financing. A 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 certain individual loans, generally nonaccruing loans, with dissimilar risk characteristics that have not yet been charged down to amounts we expect to recover and general allowances for estimated credit losses on pools of loans that share similar risk characteristics.

When full collection of principal or interest is uncertain, the loan’s risk characteristics have changed, and we exclude the loan from the general allowance pool, typically designating it as nonaccruing. For these loans, a specific allowance reflects the expected credit loss.

We measure specific allowances for loans excluded from the general allowance pool 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. For a non-collateral dependent loan, the specific allowance is the amount by which the loan’s amortized cost basis exceeds its net realizable value. We measure the specific allowance for collateral dependent loans as the amount by which the loan’s amortized cost basis exceeds its fair value. When repayment is expected to be provided substantially through the sale of collateral, we deduct estimated selling costs from the collateral’s fair value. Generally, third party appraisals that conform to Uniform Standards of Professional Appraisal Practice serve as the basis for the fair value of real property held as collateral. These appraised values are on an “as-is” basis and generally are not adjusted by the Company. We obtain updated appraisals at least annually or more frequently if market conditions indicate collateral values may have declined. For energy loans, our internal staff of engineers generally determines collateral value of mineral rights based on projected cash flows from proven oil and gas reserves under existing economic and operating conditions. For real property held as collateral for other loans, third party appraisals that conform to Uniform Standards of Professional Appraisal Practice generally serve as the basis for the fair value. These appraised values are on an “as-is” basis and generally are not adjusted by the Company. We obtain updated appraisals at least annually or more frequently if market conditions indicate collateral values may have declined. Our special assets staff generally determines the value of other collateral based on projected liquidation cash flows under current market conditions. We evaluate collateral values and available cash resources quarterly. Historical statistics may be used to estimate specific allowances in limited situations, such as when a collateral dependent loan is removed from the general allowance pool near the end of a reporting period until an appraisal of collateral value is received or a full assessment of future cash flows is completed.

General allowances estimate expected credit losses on pools of loans sharing similar risk characteristics that are expected to occur over the loan’s estimated remaining life. The loan’s estimated remaining life represents the contractual term adjusted for amortization, estimates of prepayments, and borrower-owned extension options. Approximately 90 percent of the committed dollars in the loan portfolio is risk graded loans with general allowance model inputs that include probability of default, loss given default, and exposure at default. Probability of default is based on the migration of loans from performing to nonperforming using historical life of loan analysis periods. Loss given default is based on the aggregate losses incurred, net of estimated recoveries. Exposure at default represents an estimate of the outstanding amount of credit exposure at the time a default may occur.

Charge-off migration is used to calculate the general allowance for the majority of non-risk graded loans to individuals. The expected credit loss on less than 10% of the committed dollars in the portfolio is calculated using charge-off migration.

The expected credit loss on approximately 1% of the committed dollars in the portfolio is calculated using a non-modeled approach. Specifically, the calculation applies a long-term net charge-off rate to the loan balances, adjusted for the weighted average remaining maturity of each portfolio.

In estimating the expected credit losses for general allowances on performing risk-graded loans, each portfolio class is assigned relevant economic loss drivers which best explain variations in portfolio net loss rates. The probability of default estimates for each portfolio class are adjusted for current and forecasted economic conditions. The result is applied to the exposure at default and loss given default to calculate the lifetime expected credit loss estimate. Selection of relevant economic loss drivers is re-evaluated periodically and involves statistical analysis as well as management judgment. The unemployment rate factors significantly in the allowance for loan losses calculation, affecting commercial and loans to individuals segments. Other primary factors impacting the commercial portfolio include BBB corporate spreads, real gross domestic product growth rate, and energy commodity prices. The primary commercial real estate variables are vacancy rate and BBB corporate spreads. In addition to the unemployment rate, the forecast for loans to individuals is tied to home price index. The forecasts may include regional economic factors when localized conditions diverge from national conditions.

An Economic Forecast Committee, consisting of senior management with members largely independent of the allowance process develops a twelve-month forward-looking forecast for the relevant economic loss drivers. Management develops these forecasts based on external data as well as a view of future economic conditions, which may include adjustments for regional conditions. The forecast includes three economic scenarios and probability weights for each scenario. The base forecast represents management's view of the most likely outcome, while the downside forecast reflects reasonably possible worsening economic conditions, and the upside forecast projects reasonably possible improving conditions.

At the end of the one-year reasonable and supportable forecast period, we transition from shorter-term expected losses to long-term loss averages for the loan’s estimated remaining life. The difference between short-term loss forecasts and long-term loss averages is run-off over the reversion horizon, up to three years, depending on the forecasted economic scenarios.

General allowances also consider the estimated impact of factors that are not captured in the modeled results or historical experience. These factors may increase or decrease modeled results by amounts determined by the Allowance Committee. Factors not captured in modeled results or historical experience may include for example, new lines of business, market conditions that have not been previously encountered, observed changes in credit risk that are not yet reflected in macro-economic factors, or economic conditions that impact loss given default assumptions.

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 that are not unconditionally cancellable by the bank. This accrual is included in other liabilities in the Consolidated Balance Sheets. The appropriateness of the accrual is determined in the same manner as the allowance for loan losses, with the added consideration of commitment usage over the remaining life for those loans that the bank can not unconditionally cancel.

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 valuation 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 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. 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. These are not credit obligations. 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 flows 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 related implementation costs, 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.

Premises and equipment includes rights to use leased facilities and equipment. Right of use assets are initially measured by the present value of future rent payments over lease terms, adjusted for rent concessions. Rent payments exclude both payments made for non-lease components such as services and variable lease payments other than payments dependent on an index at lease commencement. Lease term includes options reasonably certain to be exercised. The right of use assets and lease liabilities are amortized to achieve straight-line expense over the lease term. Upon lease modification, the right of use asset and liability are reassessed and remeasured. Right of use assets are evaluated for impairment when facts and circumstances change that indicate an impairment may be necessary. Leases less than twelve months are excluded from capitalization.

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

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.

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 an 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.

Management evaluates the Company's current tax expense or benefit based upon estimates of 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, 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. 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.

We also recognize the benefit of uncertain 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 assessed quarterly and are part of our current accrued income tax liability. These 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 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.

Employee Benefit Plans

BOK Financial sponsors a defined contribution plan ("Thrift Plan") and a defined benefit cash balance pension plan ("Pension Plan"). Employer contributions to the Thrift Plan, which matches employee contributions subject to percentage and years of service limits, are expensed when incurred. Pension Plan costs, which are based upon actuarial computations of current costs, are expensed annually. 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. Adjustments required to recognize the Pension Plan's net funded status are made through accumulated other comprehensive income, net of deferred income taxes.

Share-Based Compensation Plans

BOK Financial awards non-vested common shares and stock options as compensation to certain officers. The grant date fair value of non-vested shares is based on the then-current market value of BOK Financial common stock. Non-vested shares generally cliff vest in 3 years and are subject to a holding period after vesting of 2 years. 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.

Compensation cost is initially based on the grant date fair value of the award and 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. Share-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.

Restricted stock units ("RSUs") may also be awarded for certain executives who have elected to defer income recognition upon vesting of their awards. RSUs are subject to the same vesting criteria as non-vested shares. Upon vesting and meeting other relevant conditions, RSUs are settled through cash distributions. The value of the awards will vary in amounts equal to changes in the fair value of an equal number of BOK Financial common shares.

Tax effects of share-based payments are recognized through tax expense. Dividends on non-vested shares are charged to retained earnings. Dividend equivalents on RSUs are charged to expense.

Other Operating Revenue

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

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

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

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

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

Transaction card revenue includes merchant discount fees and electronic funds transfer network fees, net of interchange fees paid to card issuers and assessments paid to card networks. Merchant discount fees represent fees paid by customers for account management and electronic processing of card transactions. Merchant discount fees are recognized at the time the customer’s transactions are processed or other services are performed. The Company also maintains the TransFund electronic funds transfer network for the benefit of its members, which includes 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 include commercial account service charges, overdraft fees, check card fee revenue and automated service charges and other deposit service fees. Fees are recognized at least quarterly in accordance with published deposit account agreements and disclosure statements for retail accounts or contractual agreements for commercial accounts. Item charges for overdraft or non-sufficient funds items are recognized as items are presented for payment. Account balance charges and activity fees are accrued monthly and collected in arrears. Commercial account activity fees may be offset by an earnings credit based on account balances. Check card fees represent interchange fees paid by a merchant bank for transactions processed from cards issued by the Company. Check card fees are recognized when transactions are processed.

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

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. 2016-13, *Financial Instruments - Credit Losses (Topic 326): Assets Measured at Amortized Cost* ("ASU 2016-13")

On June 16, 2016, the FASB issued ASU 2016-13 to provide more timely recording of credit losses on loans and other financial assets measured at amortized cost. The Company adopted the new standard January 1, 2020, through a cumulative effect adjustment to retained earnings. Prior periods were not restated.

Under ASU 2016-13, acquired loans must be reserved in a manner consistent with originated loans while the incurred loss model excluded purchased loans because the loans had been marked to fair value at acquisition. Under ASU 2016-13, the fair value discount will remain in place and be accreted into interest income over the life of any acquired loans in the portfolio.

Another transition adjustment component is related to expected credit losses for residential mortgage loans sold that exceed amounts guaranteed by the U.S. Department of Veterans Affairs as we retain the credit risk for any amounts exceeding the guarantee as well as for recourse loans.

Prior to ASU 2016-13, held-to-maturity non-agency securities carried no reserve for credit losses.

Note 4 disaggregates the transition adjustment for loans and unfunded loan commitments among portfolio segments as well as on-and off-balance sheet reserves.

FASB Accounting Standards Update No. 2020-04, *Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting* ("ASU 2020-04")

On March 12, 2020, the FASB issued ASU 2020-04 which provides optional expedients and exceptions for applying U.S. GAAP to contract modifications and hedging relationships that reference LIBOR or another reference rate expected to be discontinued, subject to meeting certain criteria. Under the new guidance, an entity can elect by accounting topic or industry subtopic to account for the modification of a contract affected by reference rate reform as a continuation of the existing contract, if certain conditions are met. In addition, the new guidance allows an entity to elect on a hedge-by-hedge basis to continue to apply hedge accounting for hedging relationships in which the critical terms change due to reference rate reform, if certain conditions are met. A one-time election to sell and/or transfer held-to-maturity debt securities that reference a rate affected by reference rate reform is also allowed. ASU 2020-04 became effective for all entities as of March 12, 2020 and will apply to all LIBOR reference rate modifications through December 31, 2022. Adoption of ASU 2020-04 did not have a material impact on the Company's financial statements.

FASB Accounting Standards Update No. 2021-01, *Reference Rate Reform (Topic 848): Scope* ("ASU 2021-01")

On January 7, 2021, the FASB issued ASU 2021-01 which clarifies that certain optional expedients and exceptions in Topic 848 for contract modifications and hedge accounting apply to derivatives that are affected by the discounting transition. The amendments in this update are elective and apply to all entities that have derivative instruments that use an interest rate for margining, discounting, or contract price alignment that is modified as a result of reference rate reform. The amendments also optionally apply to all entities that designate receive-variable-rate, pay-variable-rate cross-currency interest rate swaps as hedging instruments in net investment hedges that are modified as a result of reference rate reform. ASU 2021-01 is effective immediately for all entities and amendments may be applied on a full retrospective basis as of any date from the beginning of an interim period that includes or is subsequent to March 12, 2020. Adoption of ASU 2021-01 did not have a material impact on the Company's financial statements.

(2) Securities

Trading Securities

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

	December 31, 2021		December 31, 2020	
	Fair Value	Net Unrealized Gain (Loss)	Fair Value	Net Unrealized Gain (Loss)
U.S. government securities	**$ 23,610**	**$ 40**	$ 9,183	$ —
Residential agency mortgage-backed securities	**9,068,900**	**(9,338)**	4,669,148	(3,624)
Municipal securities	**25,783**	**34**	19,172	42
Other debt securities	**18,520**	**(26)**	10,472	22
Total trading securities	**$ 9,136,813**	**$ (9,290)**	$ 4,707,975	$ (3,560)

Investment Securities

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

	December 31, 2021			
	Amortized Cost	Fair Value	Gross Unrealized Gain	Gross Unrealized Loss
Municipal securities	**$ 203,772**	**$ 223,609**	**$ 19,851**	**$ (14)**
Residential agency mortgage-backed securities	**6,939**	**7,500**	**561**	**—**
Other debt securities	**288**	**286**	**—**	**(2)**
Total investment securities	**$ 210,999**	**$ 231,395**	**$ 20,412**	**$ (16)**
Allowance for credit losses[1]	**(555)**			
Investment securities, net of allowance	**$ 210,444**	**$ 231,395**	**$ 20,412**	**$ (16)**

[1] Effective with the adoption of FASB ASU No. 2016-13, Financial Instruments - Credit Losses (Topic 326) on January 1, 2020.

	December 31, 2020			
	Amortized Cost	Fair Value	Gross Unrealized Gain	Gross Unrealized Loss
Municipal securities	$ 229,245	$ 255,270	$ 26,169	$ (144)
Residential agency mortgage-backed securities	8,913	9,790	877	—
Other debt securities	7,373	7,371	—	(2)
Total investment securities	$ 245,531	$ 272,431	$ 27,046	$ (146)
Allowance for credit losses[1]	(688)			
Investment securities, net of allowance	$ 244,843	$ 272,431	$ 27,046	$ (146)

[1] Effective with the adoption of FASB ASU No. 2016-13, Financial Instruments - Credit Losses (Topic 326) on January 1, 2020.

The amortized cost and fair values of investment securities at December 31, 2021, 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[1]
Fixed maturity debt securities:						
Amortized cost	$ 21,800	$ 103,923	$ 72,262	$ 6,075	$ 204,060	4.45
Fair value	21,960	117,750	78,053	6,132	223,895	
Residential mortgage-backed securities:						
Amortized cost					$ 6,939	[2]
Fair value					7,500	
Total investment securities:						
Amortized cost					$ 210,999	
Fair value					231,395	

[1] Expected maturities may differ from contractual maturities because borrowers may have the right to call or prepay obligations with or without penalty.
[2] The average expected lives of residential mortgage-backed securities were 4.1 years based upon current prepayment assumptions.

Temporarily Impaired Investment Securities
(in thousands):

	December 31, 2021						
		Less Than 12 Months		12 Months or Longer		Total	
	Number of Securities	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Investment:							
Municipal securities	**1**	**$ —**	**$ —**	**$ 587**	**$ 14**	**$ 587**	**$ 14**
Other debt securities	**2**	**$ 273**	**$ 2**	**$ —**	**$ —**	**$ 273**	**$ 2**
Total investment securities	**3**	**$ 273**	**$ 2**	**$ 587**	**$ 14**	**$ 860**	**$ 16**

	December 31, 2020						
		Less Than 12 Months		12 Months or Longer		Total	
	Number of Securities	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Investment:							
Municipal securities	6	$ 2,451	$ 40	$ 2,043	$ 104	$ 4,494	$ 144
Other debt securities	2	250	1	25	1	275	2
Total investment securities	8	$ 2,701	$ 41	$ 2,068	$ 105	$ 4,769	$ 146

Available for Sale Securities

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

	December 31, 2021			
	Amortized Cost	Fair Value	Gross Unrealized Gain	Gross Unrealized Loss
U.S. Treasury	**$ 1,001**	**$ 1,000**	**$ —**	**$ (1)**
Municipal securities	**515,551**	**508,365**	**1,302**	**(8,488)**
Mortgage-backed securities:				
Residential agency	**7,908,587**	**8,006,616**	**155,477**	**(57,448)**
Residential non-agency	**10,625**	**24,339**	**13,714**	**—**
Commercial agency	**4,628,172**	**4,617,025**	**36,868**	**(48,015)**
Other debt securities	**500**	**472**	**—**	**(28)**
Total available for sale securities	**$ 13,064,436**	**$ 13,157,817**	**$ 207,361**	**$ (113,980)**

	December 31, 2020			
	Amortized Cost	Fair Value	Gross Unrealized Gain	Gross Unrealized Loss
U.S. Treasury	$ 500	$ 508	$ 8	$ —
Municipal securities	165,318	167,979	2,666	(5)
Mortgage-backed securities:				
Residential agency	9,019,013	9,340,471	328,183	(6,725)
Residential non-agency	17,563	32,770	15,207	—
Commercial agency	3,406,956	3,508,465	103,590	(2,081)
Other debt securities	500	472	—	(28)
Total available for sale securities	$ 12,609,850	$ 13,050,665	$ 449,654	$ (8,839)

The amortized cost and fair values of available for sale securities at December 31, 2021, 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[1]
Fixed maturity debt securities:						
Amortized cost	$ 74,454	$ 1,881,944	$ 2,695,022	$ 493,804	$ 5,145,224	6.76
Fair value	74,874	1,898,237	2,657,759	495,992	5,126,862	
Residential mortgage-backed securities:						
Amortized cost					$ 7,919,212 [2]	
Fair value					8,030,955	
Total available-for-sale securities:						
Amortized cost					$ 13,064,436	
Fair value					13,157,817	

[1] Expected maturities may differ from contractual maturities, because borrowers may have the right to call or prepay obligations with or without penalty.
[2] The average expected lives of residential mortgage-backed securities were 3.7 years based upon current prepayment assumptions.

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

	Year Ended December 31,		
	2021	2020	2019
Proceeds	**$ 622,881**	$ 384,507	$ 1,211,718
Gross realized gains	**5,702**	9,976	14,996
Gross realized losses	**(1,998)**	(66)	(9,399)
Related federal and state income tax expense	**889**	2,524	1,425

The fair value of debt securities pledged as collateral for repurchase agreements, public trust funds on deposit and for other purposes, as required by law was $10.2 billion at December 31, 2021 and $11.6 billion at December 31, 2020.

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

Temporarily Impaired Available for Sale Securities
(In thousands)

	December 31, 2021						
		Less Than 12 Months		12 Months or Longer		Total	
	Number of Securities	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Available for sale:							
U.S. Treasury	**1**	**$ 1,000**	**$ 1**	**$ —**	**$ —**	**$ 1,000**	**$ 1**
Municipal securities	**175**	**423,575**	**7,762**	**22,476**	**726**	**446,051**	**8,488**
Mortgage-backed securities:							
Residential agency	**120**	**$ 2,382,094**	**$ 37,121**	**$ 750,044**	**$ 20,327**	**$ 3,132,138**	**$ 57,448**
Commercial agency	**165**	**2,104,689**	**35,488**	**703,216**	**12,527**	**2,807,905**	**48,015**
Other debt securities	**1**	**—**	**—**	**472**	**28**	**472**	**28**
Total available for sale securities	**462**	**$ 4,911,358**	**$ 80,372**	**$ 1,476,208**	**$ 33,608**	**$ 6,387,566**	**$ 113,980**

	December 31, 2020						
		Less Than 12 Months		12 Months or Longer		Total	
	Number of Securities	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Available for sale:							
Municipal securities	1	6,166	5	—	—	6,166	5
Mortgage-backed securities:							
Residential agency	38	$ 786,890	$ 6,605	$ 160,747	$ 120	$ 947,637	$ 6,725
Commercial agency	37	350,506	1,587	277,627	494	628,133	2,081
Other debt securities	1	—	—	472	28	472	28
Total available for sale securities	77	$ 1,143,562	$ 8,197	$ 438,846	$ 642	$ 1,582,408	$ 8,839

No credit impairment of available for sale securities was identified in 2021. Unrealized losses related to changes in interest rates subsequent to purchase and are not attributable to credit. Based on evaluations of impaired securities as of December 31, 2021, 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.

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, 2021		December 31, 2020	
	Fair Value	Net Unrealized Gain (Loss)	Fair Value	Net Unrealized Gain (Loss)
Residential agency mortgage-backed securities	**43,770**	**1,591**	114,982	4,463

(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, 2021 (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	$ 2,614,162	$ 53,881	$ (10,101)	$ 43,780	$ —	$ 43,780
Energy contracts	6,360,095	1,168,363	(375,624)	792,739	—	792,739
Agricultural contracts	—	—	—	—	—	—
Foreign exchange contracts	216,272	215,148	—	215,148	—	215,148
Equity option contracts	42,136	755	—	755	(242)	513
Total customer risk management programs	9,232,665	1,438,147	(385,725)	1,052,422	(242)	1,052,180
Trading	35,592,751	139,694	(104,326)	35,368	(721)	34,647
Interest rate risk management programs	869,506	10,687	(217)	10,470	—	10,470
Total derivative contracts	$ 45,694,922	$ 1,588,528	$ (490,268)	$ 1,098,260	$ (963)	$ 1,097,297

	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	$ 2,614,162	$ 54,062	$ (10,101)	$ 43,961	$ (33,870)	$ 10,091
Energy contracts	6,480,840	1,210,946	(375,624)	835,322	(803,102)	32,220
Agricultural contracts	—	—	—	—	—	—
Foreign exchange contracts	208,381	207,119	—	207,119	(447)	206,672
Equity option contracts	42,136	755	—	755	—	755
Total customer risk management programs	9,345,519	1,472,882	(385,725)	1,087,157	(837,419)	249,738
Trading	41,285,649	152,947	(104,326)	48,621	(24,074)	24,547
Interest rate risk management programs	298,832	1,557	(217)	1,340	—	1,340
Total derivative contracts	$ 50,930,000	$ 1,627,386	$ (490,268)	$ 1,137,118	$ (861,493)	$ 275,625

[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, 2020 (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	$ 3,212,469	$ 113,524	$ (144)	$ 113,380	$ —	$ 113,380
Energy contracts	3,791,565	386,008	(211,468)	174,540	—	174,540
Agricultural contracts	14,765	3,859	—	3,859	—	3,859
Foreign exchange contracts	337,001	332,257	—	332,257	(420)	331,837
Equity option contracts	70,199	1,222	—	1,222	(285)	937
Total customer risk management programs	7,425,999	836,870	(211,612)	625,258	(705)	624,553
Trading	84,997,593	440,627	(240,655)	199,972	(26,958)	173,014
Internal risk management programs	995,123	17,352	(4,231)	13,121	—	13,121
Total derivative contracts	$ 93,418,715	$ 1,294,849	$ (456,498)	$ 838,351	$ (27,663)	$ 810,688

	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	$ 3,212,469	$ 113,900	$ (144)	$ 113,756	$ (104,202)	$ 9,554
Energy contracts	3,617,678	361,334	(211,468)	149,866	(114,070)	35,796
Agricultural contracts	14,781	3,844	—	3,844	(3,844)	—
Foreign exchange contracts	336,223	331,035	—	331,035	(1,165)	329,870
Equity option contracts	70,199	1,222	—	1,222	—	1,222
Total customer risk management programs	7,251,350	811,335	(211,612)	599,723	(223,281)	376,442
Trading	88,929,916	414,801	(240,655)	174,146	(145,692)	28,454
Internal risk management programs	145,256	5,529	(4,231)	1,298	(415)	883
Total derivative contracts	$ 96,326,522	$ 1,231,665	$ (456,498)	$ 775,167	$ (369,388)	$ 405,779

[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,					
	2021		2020		2019	
	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 U.S. agency residential mortgage-backed securities[1]	**$ —**	**$ —**	$ —	$ —	$ 9,579	$ —
Interest rate swaps	**5,503**	**—**	4,507	—	3,647	—
Energy contracts	**14,190**	**—**	17,287	—	5,064	—
Agricultural contracts	**27**	**—**	34	—	28	—
Foreign exchange contracts	**712**	**—**	921	—	623	—
Equity option contracts	**—**	**—**	—	—	—	—
Total customer risk management programs	**20,432**	**—**	22,749	—	18,941	—
Trading[2]	**(11,453)**	**—**	8,255	—	13,999	—
Internal risk management programs	**—**	**(19,378)**	—	42,320	—	14,951
Total derivative contracts	**$ 8,979**	**$ (19,378)**	$ 31,004	$ 42,320	$ 32,940	$ 14,951

1 To-be-announced U.S. agency residential mortgage-backed securities customer hedging program transitioned to trading program during 2019.

2 Includes changes in fair value of to-be-announced U.S. agency residential mortgage-backed securities and other derivative instruments offered to mortgage banking customers to manage their market risk or held to mitigate market risk of trading securities portfolio, which is offset by changes in fair value of trading securities also included in Brokerage and trading revenue in the Consolidated Statement of Earnings.

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, 2021				December 31, 2020			
	Fixed Rate	**Variable Rate**	**Non-accrual**	**Total**	Fixed Rate	Variable Rate	Non-accrual	Total
Commercial	**$ 3,360,117**	**$ 9,072,244**	**$ 74,104**	**$ 12,506,465**	$ 3,174,203	$ 9,736,173	$ 167,159	$ 13,077,535
Commercial real estate	**929,015**	**2,888,048**	**14,262**	**3,831,325**	1,047,486	3,623,806	27,246	4,698,538
Paycheck protection program	**276,341**	**—**	**—**	**276,341**	1,682,310	—	—	1,682,310
Loans to individuals	**2,037,792**	**1,508,064**	**45,693**	**3,591,549**	2,174,874	1,333,975	40,288	3,549,137
Total	**$ 6,603,265**	**$ 13,468,356**	**$ 134,059**	**$ 20,205,680**	**$ 8,078,873**	**$ 14,693,954**	**$ 234,693**	**$ 23,007,520**
Foregone interest on nonaccrual loans				**$ 14,102**				$ 22,870

At December 31, 2021, loans to businesses and individuals with collateral primarily located in Texas totaled $6.8 billion or 34% of the total loan portfolio. Loans to businesses and individuals with collateral primarily located in Oklahoma totaled $3.2 billion or 16% of our total loan portfolio. Loans to businesses and individuals with collateral primarily located in Colorado totaled $2.5 billion or 12% 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, 2020, loans to businesses and individuals with collateral primarily located in Texas totaled $7.2 billion or 31% of the loan portfolio, loans to businesses and individuals with collateral primarily located in Oklahoma totaled $3.8 billion or 17% of the loan portfolio and loans to businesses and individuals with collateral primarily located in Colorado totaled $2.8 billion or 12% 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, 2021, commercial loans with collateral primarily located in Texas totaled $4.4 billion or 35% of the commercial loan portfolio segment. Commercial loans with collateral primarily located in Oklahoma totaled $1.7 billion or 13% of the commercial loan portfolio segment. Commercial loans with collateral primarily located in Colorado totaled $1.6 billion or 13% of the commercial loan portfolio segment. The commercial loan portfolio segment is further divided into loan classes. The services loan class totaled $3.4 billion or 17% of total loans. Approximately $1.7 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 Native American tribal and state and local municipal government entities, Native American tribal casino operations, educational services, foundations and not-for-profit organizations and specialty trade contractors. The energy loan class totaled $3.0 billion or 15% of total loans, including $2.2 billion of outstanding loans to energy producers. Approximately 67% of the committed production loans are secured by properties primarily producing oil and 33% of the committed production loans are secured by properties primarily producing natural gas. The healthcare loan class totaled $3.4 billion or 17% 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, 2020, commercial loans with collateral primarily located in Texas totaled $4.3 billion or 33% of the commercial loan portfolio segment, commercial loans with collateral primarily located in Oklahoma totaled $1.8 billion or 14% of the commercial loan portfolio segment and commercial loans with collateral primarily located in Colorado totaled $1.7 billion or 13% of the commercial loan portfolio segment. The energy loan class totaled $3.5 billion or 15% of total loans, including $2.6 billion of outstanding loans to energy producers. At December 31, 2020, approximately 58% of committed production loans were secured by properties primarily producing oil and 42% were secured by properties producing natural gas. The services loan class totaled $3.5 billion or 15% of total loans. Approximately $1.5 billion of loans in the services category consisted of loans with individual balances of less than $10 million. The healthcare loan class totaled $3.3 billion or 14% 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, 2021, 30% of commercial real estate loans were secured by properties primarily located in the Dallas and Houston metropolitan areas of Texas and 12% of commercial real estate loans were secured by properties located primarily in the Tulsa and Oklahoma City metropolitan areas of Oklahoma. At December 31, 2020, 27% of commercial real estate loans are secured by properties primarily located in the Dallas and Houston metropolitan areas of Texas and 10% of commercial real estate loans were secured by properties located primarily in the Tulsa and Oklahoma City metropolitan areas of Oklahoma.

Paycheck Protection Program

BOK Financial is actively participating in programs initiated by the Coronavirus Aid, Relief and Economic Security Act ("CARES Act"), including the Small Business Administration's ("SBA") Paycheck Protection Program ("PPP") that began on April 3, 2020. PPP provided fully forgivable loans when utilized for qualified expenditures, including to help small business maintain payrolls during the COVID-19 pandemic. These loans generally have a contractual term of two years, though most are expected to be forgiven prior to maturity after completion of a compliance period. Loans are guaranteed and amounts forgiven will be reimbursed to the Company by the SBA. The loans carry a rate of 1%. Interest plus loan fees, which vary depending on loan size, are accrued over the contractual life of the loan. Any unaccreted origination fees will be recognized when the loan is paid.

Loans to Individuals

Loans to individuals include residential mortgage and personal loans. Residential mortgage loans provide funds for our customers to purchase or refinance their primary residence or to borrow against the equity in their home. These loans are secured by a first or second mortgage on the customer's primary residence. These loans are made in accordance with underwriting policies we believe to be conservative and are fully documented. Loans may be individually underwritten or credit scored based on size and other criteria. Credit scoring is assessed based on significant credit characteristics including credit history, residential and employment stability.

In general, we sell the majority of our conforming fixed rate loan originations in the secondary market and retain the majority of our non-conforming and adjustable-rate mortgage loans. 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. Home equity loans are primarily first-lien and fully amortizing.

Residential mortgage, which includes home equity loans, and personal loans are made in accordance with underwriting policies we believe to be conservative and are fully documented. Loans may be individually underwritten or credit scored based on size and other criteria. Credit scoring is assessed based on significant credit characteristics including credit history, residential and employment stability.

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.

Approximately 91% of the loans in this segment are secured by collateral located within our geographical footprint. Loans for which the collateral location is less relevant, such as unsecured loans are categorized by the borrower’s primary operating location.

Residential mortgage loans guaranteed by U.S. government agencies have limited credit exposure because of the agency guarantee. This amount includes residential mortgage loans previously sold into GNMA mortgage pools that the Company may repurchase when certain defined delinquency criteria are met. Because of this repurchase right, the Company is deemed to have regained effective control over these loans and must include them on the Consolidated Balance Sheet.

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, 2021, outstanding commitments totaled $12.5 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, 2021, outstanding standby letters of credit totaled $700 million.

Allowances for Credit Losses and Accrual for Off-balance Sheet Credit Risk from Unfunded Loans Commitments

BOK Financial maintains an allowance for loan losses and accrual for off-balance sheet credit risk from unfunded commitments. The allowance consists of specific allowances attributed to certain individual loans, generally nonaccruing loans, with dissimilar risk characteristics that have not yet been charged down to amounts we expect to recover and general allowances for estimated credit losses on pools of loans that share similar risk characteristics based on probability of default, loss given default and exposure at default for each loan class developed based on current and forecasted relevant economic loss drivers.

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 that are not unconditionally cancellable by the bank.

The activity in the allowance for loan losses and the allowance for off-balance sheet credit losses related to loan commitments and standby letters of credit for the year ended December 31, 2021 is summarized as follows (in thousands):

	Commercial	Commercial Real Estate	Paycheck Protection Program	Loans to Individuals	Nonspecific Allowance	Total
Allowance for loan losses:						
Beginning balance, adjusted	**254,934**	**86,558**	—	**47,148**	—	**388,640**
Provision for loan losses	**(59,326)**	**(26,522)**	—	**(9,354)**	—	**(95,202)**
Loans charged off	**(43,956)**	**(2,485)**	—	**(4,910)**	—	**(51,351)**
Recoveries of loans previously charged off	**10,404**	**1,002**	—	**2,928**	—	**14,334**
Ending balance	**$ 162,056**	**$ 58,553**	**$ —**	**$ 35,812**	**$ —**	**$ 256,421**
Allowance for off-balance sheet credit risk from unfunded loan commitments:						
Beginning balance, adjusted	**14,422**	**20,571**	—	**1,928**	—	**36,921**
Provision for off-balance sheet credit risk	**(610)**	**(3,129)**	—	**(205)**	—	**(3,944)**
Ending balance	**$ 13,812**	**$ 17,442**	**$ —**	**$ 1,723**	**$ —**	**$ 32,977**

Changes in our reasonable and supportable forecasts of macroeconomic variables, primarily due to the anticipated impact of the on-going COVID-19 pandemic, and other assumptions, resulted in a $90.1 million decrease in the allowance for lending activities during the year ended December 31, 2021. Changes in the loan portfolio characteristics, including specific impairment and losses, loan balances and risk grading resulted in a $9.0 million decrease in the allowance for lending activities.

The activity in the allowance for loan losses and the allowance for off-balance sheet credit losses related to loan commitments and standby letters of credit for the year ended December 31, 2020 is summarized as follows (in thousands):

	Commercial	Commercial Real Estate	Paycheck Protection Program	Loans to Individuals	Nonspecific Allowance	Total
Allowance for loan losses:						
Beginning balance	$ 118,187	$ 51,805	$ —	$ 23,572	$ 17,195	$ 210,759
Transition adjustment	33,681	(4,620)	—	13,943	(17,195)	25,809
Beginning balance, adjusted	151,868	47,185	—	37,515	—	236,568
Provision for loan losses	171,800	40,407	—	10,253	—	222,460
Loans charged off	(73,370)	(1,300)	—	(4,729)	—	(79,399)
Recoveries of loans previously charged off	4,636	266	—	4,109	—	9,011
Ending balance	$ 254,934	$ 86,558	$ —	$ 47,148	$ —	$ 388,640
Allowance for off-balance sheet credit risk from unfunded loan commitments:						
Beginning balance	$ 1,434	$ 107	$ —	$ 44	$ —	$ 1,585
Transition adjustment	10,144	11,660	—	1,748	—	23,552
Beginning balance, adjusted	11,578	11,767	—	1,792	—	25,137
Provision for off-balance sheet credit risk	2,844	8,804	—	136	—	11,784
Ending balance	$ 14,422	$ 20,571	$ —	$ 1,928	$ —	$ 36,921

The allowance for loan losses and recorded investment of the related loans by portfolio segment for each impairment measurement method at December 31, 2021 is as follows (in thousands):

	Collectively Measured for General Allowances		Individually Measured for Specific Allowances		Total	
	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance
Commercial	**$ 12,432,361**	**$ 158,063**	**$ 74,104**	**$ 3,993**	**$ 12,506,465**	**$ 162,056**
Commercial real estate	**3,817,063**	**56,204**	**14,262**	**2,349**	**3,831,325**	**58,553**
Paycheck protection program	**276,341**	**—**	**—**	**—**	**276,341**	**—**
Loans to individuals	**3,545,856**	**35,812**	**45,693**	**—**	**3,591,549**	**35,812**
Total	**$ 20,071,621**	**$ 250,079**	**$ 134,059**	**$ 6,342**	**$ 20,205,680**	**$ 256,421**

The allowance for loan losses and recorded investment of the related loans by portfolio segment for each impairment measurement method at December 31, 2020 is as follows (in thousands):

	Collectively Measured for General Allowances		Individually Measured for Specific Allowances		Total	
	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance	Recorded Investment	Related Allowance
Commercial	$ 12,910,376	$ 235,882	$ 167,159	$ 19,052	$ 13,077,535	$ 254,934
Commercial real estate	4,671,292	83,169	27,246	3,389	4,698,538	86,558
Paycheck protection program	1,682,310	—	—	—	1,682,310	—
Loans to individuals	3,508,849	47,148	40,288	—	3,549,137	47,148
Total	$ 22,772,827	$ 366,199	$ 234,693	$ 22,441	$ 23,007,520	$ 388,640

Credit Quality Indicators

The Company utilizes risk grading as primary credit quality indicators as it influences the probability of default which is a key attribute in the expected credit losses calculation. Substantially all commercial as well as commercial real estate loans and certain loans to individuals are risk graded based on a quarterly evaluation of the borrowers' ability to repay the loans. Certain commercial loans and most loans to individuals are small, homogeneous pools that are not risk-graded. The credit quality of these loans is based on past due days in accordance with regulatory guidelines.

We have included in the credit quality indicator "pass" loans that are in compliance with the original terms of the agreement and currently exhibit no factors that cause management to have doubts about the borrowers' ability to remain in compliance with the original terms of the agreement, which is consistent with the regulatory guideline of "pass." This also includes past due residential mortgages that are guaranteed by agencies of the U.S. government that continue to accrue interest based on criteria of the guarantors' programs.

Other loans especially mentioned ("Special Mention") 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. Non-graded loans 30 to 59 days past due are categorized as Special Mention.

The risk grading process identified certain loans that have a well-defined weakness (for example, 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 remain on accruing status. Non-graded loans 60 to 89 days past due are categorized as Accruing Substandard.

Nonaccruing loans represent loans for which full collection of principal and interest is uncertain. This includes certain loans considered "substandard" and all loans considered "doubtful" by regulatory guidelines. Non-graded loans 90 or more days past due are categorized as Nonaccrual.

Probability of default is lowest for pass graded loans and increases for each credit quality indicator, Special Mention, and Accruing Substandard.

Vintage represents the year of origination, except for revolving loans which are considered in aggregate. Loans that were once revolving but have converted to term loans without additional underwriting appear in a separate vintage column.

The following table summarizes the Company's loan portfolio at December 31, 2021 by the risk grade categories and vintage (in thousands):

	Origination Year								
	2021	2020	2019	2018	2017	Prior	Revolving Loans	Revolving Loans Converted to Term Loans	Total
Commercial:									
Energy									
Pass	$ 252,133	$ 29,556	$ 15,914	$ 13,548	$ 4,741	$ 6,765	$ 2,540,525	$ —	$ 2,863,182
Special Mention	558	771	—	—	—	—	750	—	2,079
Accruing Substandard	10,650	22,611	1,185	814	—	716	74,556	—	110,532
Nonaccrual	—	20,487	—	—	—	714	9,890	—	31,091
Total energy	263,341	73,425	17,099	14,362	4,741	8,195	2,625,721	—	3,006,884
Healthcare									
Pass	563,800	589,193	516,558	498,998	319,096	688,136	160,154	26	3,335,961
Special Mention	6,835	—	15,583	—	11,135	—	5	—	33,558
Accruing Substandard	—	—	27,135	543	—	1,981	—	—	29,659
Nonaccrual	—	—	—	6,542	—	8,711	509	—	15,762
Total healthcare	570,635	589,193	559,276	506,083	330,231	698,828	160,668	26	3,414,940
Services									
Pass	696,149	405,057	289,375	275,010	225,404	795,029	607,958	375	3,294,357
Special Mention	434	405	1,830	1,047	3,290	47	17,210	192	24,455
Accruing Substandard	43	530	4,166	10,714	1,785	2,366	11,607	—	31,211
Nonaccrual	—	—	—	230	13,918	2,519	503	—	17,170
Total services	696,626	405,992	295,371	287,001	244,397	799,961	637,278	567	3,367,193
General business									
Pass	584,438	211,892	264,462	177,384	168,977	215,014	1,047,420	2,284	2,671,871
Special Mention	218	223	60	1,435	3,842	—	5,875	—	11,653
Accruing Substandard	265	1,066	1,634	7,697	8,336	3,024	1,821	—	23,843
Nonaccrual	—	2,444	4,562	1,046	762	518	730	19	10,081
Total general business	584,921	215,625	270,718	187,562	181,917	218,556	1,055,846	2,303	2,717,448
Total commercial	2,115,523	1,284,235	1,142,464	995,008	761,286	1,725,540	4,479,513	2,896	12,506,465
Commercial real estate:									
Pass	717,400	711,231	871,283	403,115	279,058	664,684	117,847	31	3,764,649
Special Mention	—	—	—	6,660	10,898	9,244	—	—	26,802
Accruing Substandard	—	—	—	13,352	4,480	7,780	—	—	25,612
Nonaccrual	—	—	8,076	—	—	6,186	—	—	14,262
Total commercial real estate	717,400	711,231	879,359	423,127	294,436	687,894	117,847	31	3,831,325

	Origination Year								
	2021	2020	2019	2018	2017	Prior	Revolving Loans	Revolving Loans Converted to Term Loans	Total
Paycheck protection program:									
Pass	**237,357**	**38,984**	**—**	**—**	**—**	**—**	**—**	**—**	**276,341**
Total paycheck protection program	**237,357**	**38,984**	**—**	**—**	**—**	**—**	**—**	**—**	**276,341**
Loans to individuals:									
Residential mortgage									
Pass	**386,092**	**452,537**	**84,001**	**60,390**	**68,150**	**295,632**	**320,638**	**21,463**	**1,688,903**
Special Mention	**—**	**—**	**156**	**—**	**19**	**411**	**282**	**159**	**1,027**
Accruing Substandard	**98**	**—**	**—**	**—**	**127**	**41**	**400**	**—**	**666**
Nonaccrual	**1,516**	**1,809**	**383**	**1,968**	**629**	**22,289**	**2,177**	**803**	**31,574**
Total residential mortgage	**387,706**	**454,346**	**84,540**	**62,358**	**68,925**	**318,373**	**323,497**	**22,425**	**1,722,170**
Residential mortgage guaranteed by U.S. government agencies									
Pass	**699**	**11,380**	**20,650**	**27,970**	**32,742**	**246,871**	**—**	**—**	**340,312**
Nonaccrual	**—**	**—**	**1,259**	**821**	**635**	**11,146**	**—**	**—**	**13,861**
Total residential mortgage guaranteed by U.S. government agencies	**699**	**11,380**	**21,909**	**28,791**	**33,377**	**258,017**	**—**	**—**	**354,173**
Personal:									
Pass	**218,960**	**180,577**	**177,389**	**70,249**	**92,592**	**135,041**	**638,713**	**728**	**1,514,249**
Special Mention	**—**	**9**	**34**	**3**	**—**	**47**	**—**	**—**	**93**
Accruing Substandard	**435**	**5**	**165**	**—**	**—**	**1**	**—**	**—**	**606**
Nonaccrual	**110**	**14**	**10**	**24**	**35**	**40**	**25**	**—**	**258**
Total personal	**219,505**	**180,605**	**177,598**	**70,276**	**92,627**	**135,129**	**638,738**	**728**	**1,515,206**
Total loans to individuals	**607,910**	**646,331**	**284,047**	**161,425**	**194,929**	**711,519**	**962,235**	**23,153**	**3,591,549**
Total loans	**$ 3,678,190**	**$ 2,680,781**	**$ 2,305,870**	**$ 1,579,560**	**$ 1,250,651**	**$ 3,124,953**	**$ 5,559,595**	**$ 26,080**	**$ 20,205,680**

The following table summarizes the Company's loan portfolio at December 31, 2020 by the risk grade categories and vintage (in thousands):

	Origination Year								
	2020	2019	2018	2017	2016	Prior	Revolving Loans	Revolving Loans Converted to Term Loans	Total
Commercial:									
Energy									
Pass	$ 112,614	$ 51,863	$ 89,346	$ 7,178	$ 1,148	$ 7,956	$ 2,548,663	$ —	$ 2,818,768
Special Mention	—	—	—	—	—	—	202,590	—	202,590
Accruing Substandard	24,000	1,363	1,453	—	12,667	—	283,294	—	322,777
Nonaccrual	21,076	2,607	—	—	—	21,064	80,312	—	125,059
Total energy	157,690	55,833	90,799	7,178	13,815	29,020	3,114,859	—	3,469,194
Healthcare									
Pass	536,745	615,221	638,302	422,834	234,399	658,286	147,132	—	3,252,919
Special Mention	—	27,500	—	—	—	8,282	5	—	35,787
Accruing Substandard	—	—	1,191	929	132	11,387	—	—	13,639
Nonaccrual	—	18	183	—	—	2,935	509	—	3,645
Total healthcare	536,745	642,739	639,676	423,763	234,531	680,890	147,646	—	3,305,990
Services									
Pass	534,853	436,384	372,867	307,374	373,785	683,936	665,491	682	3,375,372
Special Mention	150	9,057	389	291	2,038	2,000	3,063	—	16,988
Accruing Substandard	429	6,380	26,008	6,027	5,030	7,954	38,797	—	90,625
Nonaccrual	4,833	448	—	12,590	1,049	6,138	540	—	25,598
Total services	540,265	452,269	399,264	326,282	381,902	700,028	707,891	682	3,508,583
General business									
Pass	419,756	394,985	310,273	236,222	103,987	186,600	1,055,878	2,316	2,710,017
Special Mention	197	4,519	9,713	7,803	2,511	3,159	2,483	19	30,404
Accruing Substandard	1,432	3,069	6,694	10,935	10,042	3,729	4,449	140	40,490
Nonaccrual	1,675	3,728	4,863	1,436	530	107	477	41	12,857
Total general business	423,060	406,301	331,543	256,396	117,070	193,595	1,063,287	2,516	2,793,768
Total commercial	1,657,760	1,557,142	1,461,282	1,013,619	747,318	1,603,533	5,033,683	3,198	13,077,535
Commercial real estate:									
Pass	725,577	1,211,338	954,226	489,193	314,899	722,475	223,131	38	4,640,877
Special Mention	—	—	259	12,311	2,725	5,831	—	—	21,126
Accruing Substandard	—	—	—	4,410	—	4,852	27	—	9,289
Nonaccrual	—	8,300	—	232	7,468	11,246	—	—	27,246
Total commercial real estate	725,577	1,219,638	954,485	506,146	325,092	744,404	223,158	38	4,698,538

	Origination Year								
	2020	2019	2018	2017	2016	Prior	Revolving Loans	Revolving Loans Converted to Term Loans	Total
Paycheck protection program:									
Pass	1,682,310	—	—	—	—	—	—	—	1,682,310
Total paycheck protection program	1,682,310	—	—	—	—	—	—	—	1,682,310
Loans to individuals:									
Residential mortgage									
Pass	564,325	149,832	120,875	124,930	158,801	348,292	335,259	24,553	1,826,867
Special Mention	33	11	2,094	—	59	318	950	10	3,475
Accruing Substandard	—	—	51	—	—	34	272	76	433
Nonaccrual	648	104	1,658	784	2,010	22,415	3,835	774	32,228
Total residential mortgage	565,006	149,947	124,678	125,714	160,870	371,059	340,316	25,413	1,863,003
Residential mortgage guaranteed by U.S. government agencies									
Pass	4,859	33,880	34,464	43,099	58,264	226,380	—	—	400,946
Nonaccrual	—	—	545	—	309	6,887	—	—	7,741
Total residential mortgage guaranteed by U.S. government agencies	4,859	33,880	35,009	43,099	58,573	233,267	—	—	408,687
Personal:									
Pass	219,873	200,580	76,246	100,229	64,104	102,126	510,571	1,510	1,275,239
Special Mention	39	55	66	—	469	31	965	—	1,625
Accruing Substandard	11	214	10	—	—	—	29	—	264
Nonaccrual	28	17	57	73	50	49	45	—	319
Total personal	219,951	200,866	76,379	100,302	64,623	102,206	511,610	1,510	1,277,447
Total loans to individuals	789,816	384,693	236,066	269,115	284,066	706,532	851,926	26,923	3,549,137
Total loans	$ 4,855,463	$ 3,161,473	$ 2,651,833	$ 1,788,880	$ 1,356,476	$ 3,054,469	$ 6,108,767	$ 30,159	$ 23,007,520

Nonaccruing Loans

A summary of nonaccruing loans as of December 31, 2021 follows (in thousands):

	Total	With No Allowance	With Allowance	Related Allowance
Commercial:				
Energy	**$ 31,091**	**$ 31,091**	**$ —**	**$ —**
Healthcare	**15,762**	**9,679**	**6,083**	**53**
Services	**17,170**	**13,686**	**3,484**	**2,584**
General business	**10,081**	**7,690**	**2,391**	**1,357**
Total commercial	**74,104**	**62,146**	**11,958**	**3,994**
Commercial real estate	**14,262**	**6,186**	**8,076**	**2,349**
Loans to individuals:				
Residential mortgage	**31,574**	**31,574**	**—**	**—**
Residential mortgage guaranteed by U.S. government agencies	**13,861**	**13,861**	**—**	**—**
Personal	**258**	**258**	**—**	**—**
Total loans to individuals	**45,693**	**45,693**	**—**	**—**
Total	**$ 134,059**	**$ 114,025**	**$ 20,034**	**$ 6,343**

A summary of nonaccruing loans as of December 31, 2020 follows (in thousands):

	Total	With No Allowance	With Allowance	Related Allowance
Commercial:				
Energy	$ 125,059	$ 76,633	$ 48,426	$ 16,478
Healthcare	3,645	3,645	—	—
Services	25,598	20,810	4,788	2,574
General business	12,857	12,857	—	—
Total commercial	167,159	113,945	53,214	19,052
Commercial real estate	27,246	13,645	13,601	3,389
Loans to individuals:				
Residential mortgage	32,228	32,228	—	—
Residential mortgage guaranteed by U.S. government agencies	7,741	7,741	—	—
Personal	319	319	—	—
Total loans to individuals	40,288	40,288	—	—
Total	$ 234,693	$ 167,878	$ 66,815	$ 22,441

Troubled Debt Restructurings

At December 31, 2021 the Company has $273 million in troubled debt restructurings (TDRs), of which $211 million are accruing residential mortgage loans guaranteed by U.S. government agencies. Of the approximately $141 million TDRs that are performing in accordance with the modified terms, $97 million are government guaranteed loans. The loans designated as TDRs had $994 thousand in charge offs during the year ended December 31, 2021.

At December 31, 2020, TDRs totaled $187 million, of which $152 million were accruing residential mortgage loans guaranteed by U.S. government agencies. Approximately $95 million of TDRs were performing. The loans designated as TDRs had $20.9 million in charge offs during the year ended December 31, 2020.

TDRs generally consist of interest rate concessions, payment stream concessions or a combination of concessions to distressed borrowers. During the year ended December 31, 2021, $121 million of loans were restructured. During the year ended December 31, 2020, $83 million of loans were restructured.

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, as modified for short-term payment deferral forbearance.

A summary of loans currently performing and past due as of December 31, 2021 is as follows (in thousands):

		Past Due				
	Current	30 to 59 Days	60 to 89 Days	90 Days or More	Total	Past Due 90 Days or More and Accruing
Commercial:						
Energy	$ 3,002,623	$ 545	3,716	$ —	$ 3,006,884	$ —
Healthcare	3,412,072	2,359	—	509	3,414,940	—
Services	3,352,639	920	4,620	9,014	3,367,193	—
General business	2,705,596	6,080	997	4,775	2,717,448	199
Total commercial	12,472,930	9,904	9,333	14,298	12,506,465	199
Commercial real estate	3,827,962	—	206	3,157	3,831,325	—
Paycheck protection program	276,341	—	—	—	276,341	74
Loans to individuals						
Permanent mortgage	1,707,654	6,263	1,556	6,697	1,722,170	—
Permanent mortgages guaranteed by U.S. government agencies	181,022	26,869	16,751	129,531	354,173	118,819
Personal	1,514,938	66	24	178	1,515,206	40
Total loans to individuals	3,403,614	33,198	18,331	136,406	3,591,549	118,859
Total	$ 19,980,847	$ 43,102	$ 27,870	$ 153,861	$ 20,205,680	$ 119,132

A summary of loans currently performing and past due as of December 31, 2020 is as follows (in thousands):

	Current	Past Due 30 to 59 Days	Past Due 60 to 89 Days	Past Due 90 Days or More	Total	Past Due 90 Days or More and Accruing
Commercial:						
Energy	$ 3,410,995	$ 12,735	4,050	$ 41,414	$ 3,469,194	$ —
Healthcare	3,302,345	—	—	3,645	3,305,990	—
Services	3,489,423	3,278	177	15,705	3,508,583	326
General business	2,776,038	1,206	6,277	10,247	2,793,768	4,495
Total commercial	12,978,801	17,219	10,504	71,011	13,077,535	4,821
Commercial real estate	4,672,279	276	5,310	20,673	4,698,538	5,126
Paycheck protection program	1,682,310	—	—	—	1,682,310	—
Loans to individuals						
Permanent mortgage	1,849,304	5,812	837	7,050	1,863,003	181
Permanent mortgages guaranteed by U.S. government agencies	262,102	41,389	22,041	83,155	408,687	78,349
Personal	1,273,702	3,317	90	338	1,277,447	241
Total loans to individuals	3,385,108	50,518	22,968	90,543	3,549,137	78,771
Total	$ 22,718,498	$ 68,013	$ 38,782	$ 182,227	$ 23,007,520	$ 88,718

Following is disclosure of loans and the combined allowance for loan losses and accrual for off-balance sheet credit losses under the previous incurred loss model.

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

	Commercial	Commercial Real Estate	Residential Mortgage	Personal	Nonspecific Allowance	Total
Allowance for loan losses:						
Beginning balance	$ 102,226	$ 60,026	$ 17,964	$ 9,473	$ 17,768	$ 207,457
Provision for loan losses	57,125	(12,046)	(3,838)	3,537	(573)	44,205
Loans charged off	(43,185)	(1,161)	(288)	(6,343)	—	(50,977)
Recoveries	2,021	4,986	562	2,505	—	10,074
Ending balance	$ 118,187	$ 51,805	$ 14,400	$ 9,172	$ 17,195	$ 210,759
Allowance for off-balance sheet credit losses:						
Beginning balance	1,655	52	52	31	—	1,790
Provision for off-balance sheet credit losses	(221)	55	(8)	(31)	—	(205)
Ending balance	$ 1,434	$ 107	$ 44	$ —	$ —	$ 1,585
Total provision for credit losses	$ 56,904	$ (11,991)	$ (3,846)	$ 3,506	$ (573)	$ 44,000

(5) Premises and Equipment and Leases

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

	December 31,	
	2021	2020
Land	**$ 69,776**	$ 69,776
Buildings and improvements	**472,450**	440,528
Software and related integration	**159,063**	120,444
Furniture and equipment	**186,092**	165,344
Construction in progress	**36,917**	46,949
Premises and equipment	**924,298**	843,041
Less accumulated depreciation	**350,150**	291,733
Premises and equipment, net of accumulated depreciation	**$ 574,148**	$ 551,308

Depreciation expense of premises and equipment was $63.4 million, $54.3 million and $51.6 million for the years ended December 31, 2021, 2020 and 2019, respectively.

Premises and equipment included right-of-use assets for leased office space and facilities. Leases are at market rates at inception and may contain escalations based on consumer price index or similar benchmarks and options to renew at then market rates.

Right-of-use assets of $181 million at December 31, 2021 and $166 million at December 31, 2020 are included in buildings and improvements and related right-of-use liabilities are included in other liabilities. At December 31, 2021, the weighted-average remaining lease term was 10.9 years and the weighted average discount rate on operating leases was 2.9%. At December 31, 2021, un-discounted operating lease liabilities are scheduled to mature as follows: $23.8 million in 2022, $24.7 million in 2023, $24.3 million in 2024, $23.6 million in 2025, $22.6 million in 2026 and $130 million thereafter.

Total lease expense for BOK Financial was $35.8 million in 2021, $42.0 million in 2020 and $43.0 million in 2019. Rent expense and right of use asset amortization recognized as occupancy and equipment expense was $23.4 million in 2021, $25.0 million in 2020 and $24.2 million in 2019. Operating cash flows from operating leases were $25.3 million and $25.6 million for the years ended December 31, 2021 and December 31, 2020, respectively. Operating expenses related to leased assets and short term lease costs totaled $11.5 million, $13.4 million and $12.6 million for the years ended December 31, 2021, 2020 and 2019, respectively.

BOKF, NA is obligated under a long-term lease for its bank premises in downtown Tulsa. The original lease dated November 1, 1976 was renegotiated on July 1, 2019. The new lease will terminate on December 31, 2034. The Company has the option to renew for an additional 10 years. 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 Company may lease owned properties or sublease unoccupied leased facilities. Income on these leases is immaterial.

(6) Goodwill and Intangible Assets

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

	Dec. 31, 2021	Dec. 31, 2020
Core deposit premiums	**$ 103,200**	$ 103,200
Less accumulated amortization	**44,149**	32,256
Net core deposit premiums	**59,051**	70,944
Other identifiable intangible assets	**78,154**	82,731
Less accumulated amortization	**45,427**	40,239
Net other identifiable intangible assets	**32,727**	42,492
Total intangible assets, net	**$ 91,778**	$ 113,436

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

	Core Deposit Premiums	Other Identifiable Intangible Assets	Total
2022	$ 10,981	$ 4,665	$ 15,646
2023	10,145	3,625	13,770
2024	9,379	2,611	11,990
2025	8,675	2,201	10,876
2026	7,986	1,828	9,814
Thereafter	11,885	17,797	29,682
	$ 59,051	$ 32,727	$ 91,778

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, 2019	$ 913,931	$ 43,458	$ 90,702	$ —	$ 1,048,091
Balance, December 31, 2020	913,931	43,458	90,702	—	1,048,091
Sale of consolidated merchant banking investment during 2021	**(3,342)**	—	—	—	**(3,342)**
Balance, December 31, 2021	**$ 910,589**	**$ 43,458**	**$ 90,702**	**$ —**	**$ 1,044,749**

At October 1, 2021, the Company performed a qualitative impairment assessment of goodwill based on factors including, but not limited to, general economic conditions, financial services industry considerations, regional economic conditions, global health concerns and related medical developments, general BOKF Financial performance and reporting unit performance. No impairment was indicated for any reporting unit.

(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, 2021		December 31, 2020	
	Unpaid Principal Balance/ Notional	**Fair Value**	**Unpaid Principal Balance/ Notional**	**Fair Value**
Residential mortgage loans held for sale	**$ 182,710**	**$ 186,175**	$ 227,161	$ 236,444
Residential mortgage loan commitments	**171,412**	**6,167**	380,637	20,435
Forward sales contracts	**328,433**	**(47)**	549,414	(4,563)
		$ 192,295		$ 252,316

No residential mortgage loans held for sale were 90 days or more past due or considered impaired as of December 31, 2021 or December 31, 2020. No credit losses were recognized on residential mortgage loans held for sale for the years ended December 31, 2021, 2020 and 2019.

Mortgage banking revenue was as follows (in thousands):

	Year Ended		
	2021	**2020**	**2019**
Production revenue:			
Net realized gains on sales of mortgage loans	**$ 76,282**	$ 107,847	$ 39,730
Net change in unrealized gain on mortgage loans held for sale	**(5,818)**	6,697	672
Net change in the fair value of mortgage loan commitments	**(14,268)**	15,202	(145)
Net change in the fair value of forward sales contracts	**4,516**	(3,898)	2,463
Total mortgage production revenue	**60,712**	125,848	42,720
Servicing revenue	**45,184**	56,512	64,821
Total mortgage banking revenue	**$ 105,896**	$ 182,360	$ 107,541

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,		
	2021	2020	2019
Number of residential mortgage loans serviced for others	**102,008**	106,201	126,828
Outstanding principal balance of residential mortgage loans serviced for others	**$ 16,442,446**	$ 16,228,449	$ 20,727,106
Weighted average interest rate	**3.58 %**	3.84 %	3.98 %
Remaining contractual term (in months)	**281**	280	289

Activity in capitalized mortgage servicing rights during the three years ended December 31, 2021 is as follows (in thousands):

Balance, December 31, 2018	$ 259,254
Additions	35,128
Change in fair value due to loan runoff	(38,979)
Change in fair value due to market changes	(53,517)
Balance, December 31, 2019	201,886
Additions	31,209
Disposals	(10,801)
Change in fair value due to loan runoff	(41,598)
Change in fair value due to market changes	(79,524)
Balance, December 31, 2020	101,172
Additions	**31,132**
Acquisitions	**28,018**
Change in fair value due to loan runoff	**(38,761)**
Change in fair value due to market changes	**41,637**
Balance, December 31, 2021	**$ 163,198**

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,	
	2021	2020
Discount rate – risk-free rate plus a market premium	**8.39%**	9.14%
Prepayment rate - based upon loan interest rate, original term and loan type	**12.11%**	19.73%
Loan servicing costs – annually per loan based upon loan type:		
Performing loans	**$69 - $94**	$69 - $94
Delinquent loans	**$150 - $500**	$150 - $500
Loans in foreclosure	**$1,000 - $4,000**	$1,000 - $4,000
Primary/secondary mortgage rate spread	**105 bps**	105 bps
Escrow earnings rate – indexed to rates paid on deposit accounts with comparable average life	**1.32%**	0.43%
Delinquency rate	**2.05%**	3.54%

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.

(8) Deposits

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

	Year Ended December 31,		
	2021	**2020**	**2019**
Transaction deposits	**$ 21,961**	$ 60,424	$ 132,854
Savings	**374**	385	677
Time:			
Certificates of deposits under $100,000	**2,961**	6,741	8,299
Certificates of deposits $100,000 and over	**4,719**	18,270	29,288
Other time deposits	**3,469**	4,176	4,420
Total time	**11,149**	29,187	42,007
Total	**$ 33,484**	$ 89,996	$ 175,538

The aggregate amounts of time deposits in denominations of $250,000 or more at December 31, 2021 and 2020 were $828 million and $815 million, respectively.

Time deposit maturities are as follows: 2022 – $1.3 billion, 2023 – $156 million, 2024 – $54 million, 2025 – $39 million, 2026 – $82 million and $25 million thereafter.

The aggregate amount of overdrawn customer transaction deposits that have been reclassified as loan balances was $3.4 million at December 31, 2021 and $3.1 million at December 31, 2020.

(9) Other Borrowed Funds

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

	As of December 31, 2021		Year Ended December 31, 2021		
	Balance	Rate	Average Balance	Rate	Maximum Outstanding At Any Month End
Funds purchased	$ 199,513	0.05 %	$ 543,183	0.46 %	$ 542,465
Repurchase agreements	2,126,936	0.08 %	1,695,519	0.33 %	2,920,728
Other borrowings:					
Federal Home Loan Bank advances	—	— %	1,679,315	0.27 %	2,600,000
GNMA repurchase liability	7,420	4.36 %	11,956	4.06 %	23,856
Paycheck protection program liquidity facility	—	— %	879,145	0.35 %	1,662,598
Other	29,333	3.23 %	29,445	4.18 %	31,875
Total other borrowings	36,753		2,599,861	0.38 %	
Subordinated debentures[1]	131,226	3.95 %	224,058	4.70 %	276,049
Total other borrowed funds	$ 2,494,428		$ 5,062,621	0.56 %	

	As of December 31, 2020		Year Ended December 31, 2020		
	Balance	Rate	Average Balance	Rate	Maximum Outstanding At Any Month End
Funds purchased	$ 769,365	0.05 %	$ 2,045,795	0.58 %	$ 3,311,938
Repurchase agreements	893,021	0.09 %	1,589,746	0.24 %	3,230,097
Other borrowings:					
Federal Home Loan Bank advances	200,000	0.29 %	3,393,989	1.00 %	7,500,000
GNMA repurchase liability	19,500	4.35 %	42,771	4.18 %	126,569
Federal Reserve Bank advances	—	— %	42,464	0.26 %	—
Paycheck protection program liquidity facility	1,635,963	0.35 %	1,152,073	0.35 %	2,013,414
Other	27,507	5.24 %	28,156	5.12 %	49,376
Total other borrowings	1,882,970		4,659,453	0.88 %	
Subordinated debentures[1]	276,005	4.72 %	275,965	5.05 %	276,005
Total other borrowed funds	$ 3,821,361		$ 8,570,959	0.82 %	

	As of December 31, 2019		Year Ended December 31, 2019		
	Balance	Rate	Average Balance	Rate	Maximum Outstanding At Any Month End
Funds purchased	$ 3,390,528	1.53 %	$ 2,438,376	2.08 %	$ 3,390,528
Repurchase agreements	427,822	0.50 %	399,785	0.57 %	427,822
Other borrowings:					
Federal Home Loan Bank advances	4,500,000	1.79 %	7,122,466	2.44 %	8,000,000
GNMA repurchase liability	15,417	4.32 %	13,746	4.47 %	19,581
Other	11,638	5.09 %	11,144	5.30 %	34,676
Total other borrowings	4,527,055		7,147,356	2.45 %	
Subordinated debentures[1]	275,923	5.15 %	276,075	5.47 %	275,923
Total other borrowed funds	$ 8,621,328		$ 10,261,592	2.37 %	

[1] Parent Company only.

Aggregate annual principal repayments at December 31, 2021 are as follows (in thousands):

2022	$ 2,343,341
2023	3,378
2024	3,498
2025	3,622
2026	3,752
Thereafter	136,837
Total	$ 2,494,428

Funds purchased are unsecured and generally mature within one day 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, 2021 and 2020 is as follows (dollars in thousands):

	December 31, 2021			
Security Sold/Maturity	**Amortized Cost**	**Fair Value**	**Repurchase Liability[1]**	**Rate**
U.S. government agency mortgage-backed securities:				
Overnight[1]	**$ 907,154**	**$ 902,507**	**$ 884,936**	**0.08 %**
Less than 30 days[2]	**N/A**	**1,242,000**	**1,242,000**	**1.50 %**
Total Agency Securities	**$ 907,154**	**$ 2,144,507**	**$ 2,126,936**	**1.58 %**

	December 31, 2020			
Security Sold/Maturity	**Amortized Cost**	**Fair Value**	**Repurchase Liability[1]**	**Rate**
U.S. government agency mortgage-backed securities:				
Overnight[1]	$ 893,069	$ 910,885	$ 893,021	0.09 %
Less than 30 days	—	—	—	— %
Total Agency Securities	$ 893,069	$ 910,885	$ 893,021	0.09 %

[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.
[2] Trading position.

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 $500 million to secure BOK Financial's obligations to depositors of public funds. The unused credit available to BOK Financial at December 31, 2021 pursuant to the Federal Home Loan Bank's collateral policies is $5.9 billion.

In 2016, BOK Financial issued $150 million of subordinated debt set to mature on June 30, 2056. This debt bore an interest rate of 5.375%, payable quarterly. On August 23, 2021, BOK Financial exercised its option to redeem the debt at the principal amount plus accrued interest and realized a $5.2 million loss on extinguishment of debt.

As a result of the acquisition of CoBiz Financial, we obtained $60 million of subordinated debt issued in June 2015 that will mature on June 25, 2030. This debt bears interest at the rate of 5.625% through June 2025 and thereafter, the notes will bear interest at an annual floating rate equal to three-month LIBOR plus 3.17%. The debt contains a call option that allows for repayment prior to contractual maturity. The call option is available on June 25, 2025 and quarterly thereafter at 100% of the principal amount.

Also through CoBiz Financial, we acquired junior subordinated debentures split across three issuance tranches. Junior subordinated debentures of $21 million will mature September 17, 2033 and bear an interest rate of three-month LIBOR plus 2.95% that resets quarterly. Junior subordinated debentures of $31 million will mature on July 23, 2034 and bear an interest rate of three-month LIBOR plus 2.60% that resets quarterly. Junior subordinated debentures of $20 million will mature on September 30, 2035 and bear an interest rate of three-month LIBOR plus 1.45% that resets quarterly. The junior subordinated debentures are subject to early redemption prior to maturity.

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 outstanding at December 31, 2021 and December 31, 2020.

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

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. Significant components of deferred tax assets and liabilities are as follows (in thousands):

	December 31,	
	2021	**2020**
Deferred tax assets:		
Credit loss reserves	**$ 67,339**	$ 101,265
Lease liability	**48,457**	44,794
Deferred compensation	**33,945**	29,504
Unearned fees	**11,368**	14,584
Purchased loan discount	**7,498**	11,537
Share-based compensation	**5,989**	6,525
Valuation adjustments	**1,883**	3,834
Other	**28,958**	29,963
Total deferred tax assets	**205,437**	242,006
Deferred tax liabilities:		
Available for sale securities mark to market	**21,841**	105,769
Right-of-use asset	**41,291**	38,635
Mortgage servicing rights	**31,703**	24,182
Acquired identifiable intangible	**14,307**	18,138
Depreciation	**10,939**	13,754
Lease financing	**11,120**	11,828
Other	**39,698**	39,210
Total deferred tax liabilities	**170,899**	251,516
Net deferred tax assets (liabilities)	**$ 34,538**	$ (9,510)

No valuation allowance was necessary on deferred tax assets as of December 31, 2021 and 2020.

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,		
	2021	**2020**	**2019**
Current income tax expense:			
Federal	**$ 121,196**	$ 173,888	$ 110,887
State	**21,065**	29,889	15,088
Total current income tax expense	**142,261**	203,777	125,975
Deferred income tax expense (benefit):			
Federal	**29,777**	(65,989)	3,416
State	**7,737**	(8,995)	792
Total deferred income tax expense (benefit)	**37,514**	(74,984)	4,208
Total income tax expense	**$ 179,775**	$ 128,793	$ 130,183

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,		
	2021	**2020**	**2019**
Amount:			
Federal statutory tax	**$ 167,181**	$ 118,412	$ 132,482
Tax exempt revenue	**(6,084)**	(7,035)	(12,227)
Effect of state income taxes, net of federal benefit	**22,489**	14,251	12,715
Utilization of tax credits, net of proportional amortization of low-income housing limited partnership investments	**(8,801)**	(6,994)	(5,127)
Other, net	**4,990**	10,159	2,340
Total income tax expense	**$ 179,775**	$ 128,793	$ 130,183

	Year Ended December 31,		
	2021	**2020**	**2019**
Percent of pretax income:			
Federal statutory tax	**21.0 %**	21.0 %	21.0 %
Tax exempt revenue	**(0.7)**	(1.2)	(1.9)
Effect of state income taxes, net of federal benefit	**2.8**	2.5	2.0
Utilization of tax credits, net of proportional amortization of low-income housing limited partnership investments	**(1.1)**	(1.2)	(0.8)
Other, net	**0.6**	1.7	0.3
Total	**22.6 %**	22.8 %	20.6 %

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

	2021	**2020**	**2019**
Balance as of January 1	**$ 22,902**	$ 20,465	$ 18,869
Additions for tax for current year positions	**3,961**	6,384	5,649
Settlements during the period	**(1,754)**	—	—
Lapses of applicable statute of limitations	**(4,017)**	(3,947)	(4,053)
Balance as of December 31	**$ 21,092**	$ 22,902	$ 20,465

Of the above unrecognized tax benefits, $16.4 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 $2.3 million for 2021, $2.4 million for 2020 and $2.2 million for 2019 in interest and penalties. The Company had approximately $6.4 million and $5.9 million accrued for the payment of interest and penalties at December 31, 2021 and 2020, 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. Interest continues to accrue 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 2021 quarterly variable rates ranged from 3.13% to 3.22%.

The projected benefit obligation and fair value of plan assets, respectively, were $20 million and $39 million at December 31, 2021 and $24 million and $38 million at December 31, 2020. The net periodic benefit credit was $2.2 million for December 31, 2021, $1.3 million for December 31, 2020 and $815 thousand for December 31, 2019, and is included in Personnel expense in the Consolidated Statements of Earnings. Total expected future benefit payments related to the Pension Plan were $22.4 million at December 31, 2021.

The following table presents the weighted-average assumptions used in the measurement of the Company's net periodic benefit cost as of December 31:

	2021	2020
Discount rate	**1.73 %**	2.69 %
Expected return on plan assets	**5.50 %**	5.50 %

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. No minimum contribution was required for 2021, 2020 or 2019. On November 2, 2021, the Board of Directors approved a plan to terminate the Pension Plan and management is currently in the process of executing the termination strategy.

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 $30.5 million for 2021, $29.9 million for 2020 and $27.6 million for 2019.

(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.

No options have been awarded since 2013. At December 31, 2021, the number of options outstanding and the weighted average remaining contractual life of options outstanding was not significant. The aggregate intrinsic value of options exercised was $496 thousand for 2021, $318 thousand for 2020 and $761 thousand for 2019.

The Company also awards restricted stock to certain officers and employees and restricted stock units ("RSUs") to certain executives, (collectively "non-vested shares"). Vesting of all non-vested shares is subject to service requirements. Additionally, vesting of certain non-vested shares is subject to performance criteria based on changes in the Company's earnings per share relative to defined peers. The following represents a summary of the non-vested shares for the three years ended December 31, 2021 (in thousands):

	Restricted Stock		Restricted Stock Units	
	Shares	**Weighted Average Grant Date Fair Value**	**Units**	**Weighted Average Grant Date Fair Value**
Non-vested at January 1, 2019	527,607		—	
Granted	145,724	$ 76.74	46,689	$ 87.40
Vested	(114,201)	61.28	—	—
Forfeited	(131,952)	83.69	—	—
Non-vested at December 31, 2019	427,178		46,689	
Granted	236,750	$ 83.49	22,980	$ 77.36
Vested	(225,527)	83.50	—	—
Forfeited	(18,167)	83.10	—	—
Non-vested at December 31, 2020	420,234		69,669	
Granted	**247,917**	**$ 73.01**	**17,570**	**$ 88.25**
Vested	**(166,965)**	**94.96**	**—**	**—**
Forfeited	**(11,632)**	**75.83**	**—**	**—**
Non-vested at December 31, 2021	**489,554**		**87,239**	

Compensation expense recognized on non-vested shares totaled $9.3 million for 2021, $16.0 million for 2020 and $15.1 million for 2019. Unrecognized compensation cost of non-vested shares totaled $12.6 million at December 31, 2021. We expect to recognize compensation expense of $8.3 million in 2022, $4.1 million in 2023, and $224 thousand in 2024.

Compensation cost for restricted stock units is variable based on the current fair value of BOK Financial common shares. Vesting of 101,495 non-vested shares may be increased or decreased based on performance criteria defined in the plan documents.

(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.

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

	Year Ended December 31,	
	2021	**2020**
Beginning balance	**$ 92,940**	$ 75,189
Advances	**588,252**	498,425
Payments	**(583,040)**	(484,958)
Adjustments[1]	**(2,933)**	4,284
Ending balance	**$ 95,219**	$ 92,940

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

As defined by banking regulations, loan commitments and equity investments from the subsidiary banks 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, 2021, loan commitments and equity investments were limited to $416 million to a single affiliate and $833 million to all affiliates. The largest loan commitment and equity investment to a single affiliate was $264 million and the aggregate loan commitments and equity investments to all affiliates were $324 million. The largest outstanding amount to a single affiliate at December 31, 2021 was $4.0 million and the total outstanding amounts to all affiliates were $5.0 million. At December 31, 2020, total loan commitments and equity investments to all affiliates were $324 million and the total outstanding amounts to all affiliates were $5.3 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.

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. Pursuant to this agreement, BOKF paid QuikTrip approximately $10.4 million in 2021, $10.0 million in 2020 and $10.0 million in 2019. 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 81% of the Funds' assets of $4.0 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 252,533 Visa Class B shares which are convertible into 408,624 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. No value has been currently assigned to the Class B shares.

On June 24, 2015, BOKF, NA received a complaint that an employee had colluded with a bond issuer and an individual in misusing revenues pledged to municipal bonds for which BOKF, NA served as trustee under the bond indenture. The Company conducted an investigation and concluded that employees in one of its Corporate Trust offices had, with respect to a single group of affiliated bond issuances, violated Company policies and procedures. The relationship manager was terminated. The Company reported the circumstances to, and cooperated with an investigation by, the Securities and Exchange Commission ("SEC"). On September 7, 2016, BOKF, NA agreed, and the SEC entered, a consent order finding that BOKF, NA had violated Section 17(a) of the Securities Act of 1933 and Section 10(b) of the Securities Exchange Act and requiring BOKF, NA to disgorge $1,067,721 of fees and pay a civil penalty of $600,000. BOKF, NA disgorged the fees and paid the penalty. On August 26, 2016, BOKF, NA was sued in the United States District Court for New Jersey by two bondholders in a putative class action alleging BOKF, NA participated in the fraudulent sale of securities by the principals. The action remains stayed with no current deadlines pending. On September 14, 2016, BOKF, NA was sued in the District Court of Tulsa County, Oklahoma by 19 bondholders also alleging BOKF, NA participated in the fraudulent sale of securities by the principals. The Tulsa County District Court action is pending on BOKF, NA's motion to dismiss the plaintiff's Third Amended Petition.

On December 28, 2015, in an action brought by the SEC, the New Jersey District Court entered a judgment against the principals involved in issuing the bonds. On January 8, 2020, the Court entered judgment against the principal individual and his wife for $36,805,051 in principal amount and $10,937,831 in pre-judgment interest. The SEC continues to aggressively pursue collection of the judgment. If the individual principal and his wife cannot pay the bonds, a bondholder loss could become probable. Management has been advised by counsel that BOKF, NA has valid defenses to claims of bondholders and that no loss to the Company is probable. No provision for losses has been made at this time. BOKF, NA estimates that, upon sale of all remaining collateral securing payment of the bonds, approximately $20 million will remain outstanding. A reasonable estimate cannot be made of the amount of any bondholder loss, though the amount of bondholder loss could be material to the Company in the event a loss to the Company becomes probable.

On September 29, 2021, The United States Court of Appeals for the Fifth Circuit affirmed the dismissal of the previously reported putative class action in the United States District Court for the Northern District of Texas alleging an extended overdraft fee charged by BOKF, NA was interest. The dismissal by the United States District Court for New Mexico of a second putative class action in which the plaintiff made the same allegations as were made in the Texas action remains on appeal to the United States Court of Appeals for the Tenth Circuit. Management is advised by counsel that a loss is not probable and that the loss, if any, cannot be reasonably estimated.

On March 7, 2020, three former employees sued BOKF, NA, the Plan Committee of the BOKF, NA 401k Plan, and Cavanal Hill Investment Management, Inc., a subsidiary of BOKF, NA, alleging that the defendants included proprietary investment products as investment options in the BOKF, NA 401k Plan, whose fees were too high and performance too low, for the purpose of earning fees. The action is brought as a putative class action on behalf of all Plan Participants. The action is pending on the defendants' motion to dismiss. Management is advised by counsel that a loss is not probable and that the loss, if any, cannot be reasonably estimated.

In 2019, a limited liability partnership sued BOKF, NA in Colorado District Court alleging that the Bank breached various fiduciary duties as trustee of a trust that was a co-general partner of the partnership and claiming in excess of $60 million in damages. From 2000 to 2009, BOKF was serving as personal representative of the estate of the creator of the trust. In 2009, BOKF moved to close the probate of the estate in the Colorado Probate Court. The members of the partnership who now sue BOKF objected to the closing of the estate and made the same allegations in the 2009 probate hearing as they now make in the 2019 Colorado District Court action. In 2009, the Colorado Probate Court entered summary judgment against the beneficiaries and the estate was closed. In the 2019 action, the Colorado District Court denied BOKF's motions for summary judgment and the matter is proceeding to trial. 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 a private equity fund and invests in several tax credit entities and other funds as permitted by banking regulations. Consolidation of these investments is based on the variable interest model.

At December 31, 2021, the Company has $352 million in interests in various alternative investments generally consisting of unconsolidated limited partnership interests in entities for which investment return is in the form of low income housing tax credits or other investments in merchant banking activities. The investment balance also includes $106 million in unfunded commitments included in Other liabilities on the Consolidated Balance Sheets. At December 31, 2020, the Company had $290 million in interests in various alternative investments and included $94 million in unfunded commitments in Other liabilities.

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, 2021. 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 2021 or 2020.

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 $905 million for the year ended December 31, 2021 and $727 million for the year ended December 31, 2020.

(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 2021, 2020 or 2019.

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. Dividends are further restricted by minimum capital requirements.

Regulatory Capital

BOK Financial and the subsidiary bank is 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.

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 subsidiary bank exceeded the regulatory definition of well capitalized as of December 31, 2021 and December 31, 2020.

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

	Minimum Capital Requirement	Capital Conservation Buffer	Minimum Capital Requirement Including Capital Conservation Buffer	Well Capitalized Bank Requirement	December 31, 2021		December 31, 2020	
Common Equity Tier 1 Capital (to Risk Weighted Assets):								
Consolidated	**4.50%**	**2.50%**	**7.00%**	**N/A**	**$ 4,230,626**	**12.24 %**	$ 3,881,912	11.95 %
BOKF, NA	**4.50%**	**N/A**	**4.50%**	**6.50%**	**3,869,454**	**11.27 %**	3,756,950	11.66 %
Tier I Capital (to Risk Weighted Assets):								
Consolidated	**6.00%**	**2.50%**	**8.50%**	**N/A**	**$ 4,235,265**	**12.25 %**	$ 3,881,912	11.95 %
BOKF, NA	**6.00%**	**N/A**	**6.00%**	**8.00%**	**3,871,457**	**11.28 %**	3,756,950	11.66 %
Total Capital (to Risk Weighted Assets):								
Consolidated	**8.00%**	**2.50%**	**10.50%**	**N/A**	**$ 4,594,787**	**13.29 %**	$ 4,489,110	13.82 %
BOKF, NA	**8.00%**	**N/A**	**8.00%**	**10.00%**	**4,164,940**	**12.13 %**	4,153,347	12.89 %
Leverage (Tier I Capital to Average Assets):								
Consolidated	**4.00%**	**N/A**	**4.00%**	**N/A**	**$ 4,235,265**	**8.55 %**	$ 3,881,912	8.28 %
BOKF, NA	**4.00%**	**N/A**	**4.00%**	**5.00%**	**3,871,457**	**7.84 %**	3,756,950	8.04 %

Accumulated Other Comprehensive Income (Loss)

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

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

	Unrealized Gain (Loss) on		
	Available for Sale Securities	**Employee Benefit Plans**	**Total**
Balance, December 31, 2018	$ (70,999)	$ (1,586)	$ (72,585)
Net change in unrealized gain (loss)	239,017	2,030	241,047
Reclassification adjustments included in earnings:			
Gain on available for sale securities, net	(5,597)	—	(5,597)
Other comprehensive income (loss), before income taxes	233,420	2,030	235,450
Federal and state income tax	57,425	517	57,942
Other comprehensive income (loss), net of income taxes	175,995	1,513	177,508
Balance, December 31, 2019	104,996	(73)	104,923
Net change in unrealized gain (loss)	312,576	1,220	313,796
Reclassification adjustments included in earnings:			
Gain on available for sale securities, net	(9,910)	—	(9,910)
Other comprehensive income (loss), before income taxes	302,666	1,220	303,886
Federal and state income tax	72,630	311	72,941
Other comprehensive income (loss), net of income taxes	230,036	909	230,945
Balance, December 31, 2020	335,032	836	335,868
Net change in unrealized gain (loss)	**(343,730)**	**2,361**	**(341,369)**
Reclassification adjustments included in earnings:			
Gain on available for sale securities, net	**(3,704)**	**—**	**(3,704)**
Other comprehensive income (loss), before income taxes	**(347,434)**	**2,361**	**(345,073)**
Federal and state income tax	**(82,177)**	**601**	**(81,576)**
Other comprehensive income (loss), net of income taxes	**(265,257)**	**1,760**	**(263,497)**
Balance, December 31, 2021	**$ 69,775**	**$ 2,596**	**$ 72,371**

(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		
	2021	**2020**	**2019**
Numerator:			
Net income attributable to BOK Financial Corp. shareholders	**$ 618,121**	$ 435,030	$ 500,758
Less: Earnings allocated to participating securities	**4,299**	2,612	3,227
Numerator for basic earnings per share – income available to common shareholders	**613,822**	432,418	497,531
Effect of reallocating undistributed earnings of participating securities	**—**	—	—
Numerator for diluted earnings per share – income available to common shareholders	**$ 613,822**	$ 432,418	$ 497,531
Denominator:			
Weighted average shares outstanding	**69,071,511**	70,259,553	71,250,081
Less: Participating securities included in weighted average shares outstanding	**479,591**	418,576	462,381
Denominator for basic earnings per common share	**68,591,920**	69,840,977	70,787,700
Dilutive effect of employee stock compensation plans	**2,402**	3,195	14,912
Denominator for diluted earnings per common share	**68,594,322**	69,844,172	70,802,612
Basic earnings per share	**$ 8.95**	$ 6.19	$ 7.03
Diluted earnings per share	**$ 8.95**	$ 6.19	$ 7.03

(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, insurance 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 and capital costs. Credit costs are attributed to the lines of business based on net loans charged off or recovered. 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 wholesale borrowing rates 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 a proxy of wholesale borrowing rates 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 wholesale funding 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 wholesale funding rates 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 or recovered as attributed to the lines of business. The provision for credit losses in excess of net charge-offs or recoveries is attributed to Funds Management and Other.

The operations of CoBiz, acquired on October 1, 2018 were allocated to the operating segments in the second quarter of 2019. Prior to April 1, 2019, CoBiz operations were included in Funds Management and other.

Reportable segments reconciliation to the Consolidated Financial Statements for the year ended December 31, 2021 is as follows (in thousands):

	Commercial	Consumer	Wealth Management	Funds Management and Other	BOK Financial Consolidated
Net interest and dividend revenue from external sources	$ 606,902	$ 67,856	$ 214,458	$ 228,817	$ 1,118,033
Net interest revenue (expense) from internal sources	(71,167)	35,671	(386)	35,882	—
Net interest and dividend revenue	535,735	103,527	214,072	264,699	1,118,033
Net loans charged off and provision for credit losses	31,128	4,009	(223)	(134,914)	(100,000)
Net interest and dividend revenue after provision for credit losses	504,607	99,518	214,295	399,613	1,218,033
Other operating revenue	262,402	173,341	298,962	21,070	755,775
Other operating expense	281,089	209,596	320,357	366,666	1,177,708
Net direct contribution	485,920	63,263	192,900	54,017	796,100
Gain (loss) on financial instruments, net	154	(21,871)	—	21,717	—
Change in fair value of mortgage servicing rights	—	41,637	—	(41,637)	—
Gain (loss) on repossessed assets, net	13,001	85	—	(13,086)	—
Corporate expense allocations	49,941	46,010	40,301	(136,252)	—
Net income before taxes	449,134	37,104	152,599	157,263	796,100
Federal and state income taxes	120,618	9,461	39,049	10,647	179,775
Net income	328,516	27,643	113,550	146,616	616,325
Net income attributable to non-controlling interests	—	—	—	(1,796)	(1,796)
Net income attributable to BOK Financial Corp. shareholders	$ 328,516	$ 27,643	$ 113,550	$ 148,412	$ 618,121
Average assets	$ 28,536,881	$ 10,029,687	$ 19,425,475	$ (7,840,340)	$ 50,151,703

Reportable segments reconciliation to the Consolidated Financial Statements for the year ended December 31, 2020 is as follows (in thousands):

	Commercial	Consumer	Wealth Management	Funds Management and Other	BOK Financial Consolidated
Net interest and dividend revenue from external sources	$ 714,932	$ 78,004	$ 130,818	$ 184,690	$ 1,108,444
Net interest revenue (expense) from internal sources	(126,444)	69,000	(13,528)	70,972	—
Net interest and dividend revenue	588,488	147,004	117,290	255,662	1,108,444
Net loans charged off and provision for credit losses	69,475	2,805	(209)	150,521	222,592
Net interest and dividend revenue after provision for credit losses	519,013	144,199	117,499	105,141	885,852
Other operating revenue	187,361	243,719	398,834	12,406	842,320
Other operating expense	258,903	230,402	325,627	349,376	1,164,308
Net direct contribution	447,471	157,516	190,706	(231,829)	563,864
Gain (loss) on financial instruments, net	193	95,344	4	(95,541)	—
Change in fair value of mortgage servicing rights	—	(79,524)	—	79,524	—
Gain (loss) on repossessed assets, net	(2,677)	276	—	2,401	—
Corporate expense allocations	24,862	42,155	35,331	(102,348)	—
Net income before taxes	420,125	131,457	155,379	(143,097)	563,864
Federal and state income taxes	114,120	33,483	39,765	(58,575)	128,793
Net income	306,005	97,974	115,614	(84,522)	435,071
Net loss attributable to non-controlling interests	—	—	—	41	41
Net income attributable to BOK Financial Corp. shareholders	$ 306,005	$ 97,974	$ 115,614	$ (84,563)	$ 435,030
Average assets	$ 26,994,075	$ 9,842,114	$ 15,695,646	$ (3,827,445)	$ 48,704,390

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

	Commercial	Consumer	Wealth Management	Funds Management and Other	BOK Financial Consolidated
Net interest and dividend revenue from external sources	$ 919,148	$ 99,679	$ 61,277	$ 32,775	$ 1,112,879
Net interest revenue (expense) from internal sources	(242,907)	95,775	38,815	108,317	—
Net interest and dividend revenue	676,241	195,454	100,092	141,092	1,112,879
Net loans charged off and provision for credit losses	39,011	6,271	(308)	(974)	44,000
Net interest and dividend revenue after provision for credit losses	637,230	189,183	100,400	142,066	1,068,879
Other operating revenue	170,412	187,500	341,389	(4,068)	695,233
Other operating expense	252,459	226,346	277,267	377,172	1,133,244
Net direct contribution	555,183	150,337	164,522	(239,174)	630,868
Gain (loss) on financial instruments, net	106	30,375	2	(30,483)	—
Change in fair value of mortgage servicing rights	—	(53,517)	—	53,517	—
Gain (loss) on repossessed assets, net	331	496	—	(827)	—
Corporate expense allocations	43,055	46,926	36,239	(126,220)	—
Net income before taxes	512,565	80,765	128,285	(90,747)	630,868
Federal and state income taxes	137,759	20,572	32,954	(61,102)	130,183
Net income	374,806	60,193	95,331	(29,645)	500,685
Net income attributable to non-controlling interests	—	—	—	(73)	(73)
Net income attributable to BOK Financial Corp. shareholders	$ 374,806	$ 60,193	$ 95,331	$ (29,572)	$ 500,758
Average assets	$ 22,807,589	$ 9,301,341	$ 10,204,426	$ (219,009)	$ 42,094,347

(18) Fees and Commissions Revenue

Fees and commissions revenue by reportable segment and primary service line is as follows for the year ended December 31, 2021.

	Commercial	Consumer	Wealth Management	Funds Management and Other	Consolidated	Out of Scope[1]	In Scope[2]
Trading revenue	$ —	$ —	$ 27,595	$ —	$ 27,595	$ 27,595	$ —
Customer hedging revenue	23,424	—	300	(3,292)	20,432	20,432	—
Retail brokerage revenue	—	—	18,762	—	18,762	—	18,762
Insurance brokerage revenue	—	—	11,765	—	11,765	—	11,765
Investment banking revenue	19,129	—	16,742	(1,436)	34,435	16,272	18,163
Brokerage and trading revenue	42,553	—	75,164	(4,728)	112,989	64,299	48,690
TransFund EFT network revenue	76,603	3,591	(67)	6	80,133	—	80,133
Merchant services revenue	11,806	55	—	—	11,861	—	11,861
Corporate card revenue	4,502	—	169	318	4,989	—	4,989
Transaction card revenue	92,911	3,646	102	324	96,983	—	96,983
Personal trust revenue	—	—	97,582	—	97,582	—	97,582
Corporate trust revenue	—	—	14,805	—	14,805	—	14,805
Institutional trust & retirement plan services revenue	—	—	50,765	—	50,765	—	50,765
Investment management services and other	—	—	15,300	(178)	15,122	—	15,122
Fiduciary and asset management revenue	—	—	178,452	(178)	178,274	—	178,274
Commercial account service charge revenue	50,213	1,821	2,326	—	54,360	—	54,360
Overdraft fee revenue	104	21,439	70	9	21,622	—	21,622
Check card revenue	—	23,714	—	—	23,714	—	23,714
Automated service charge and other deposit fee revenue	94	4,340	87	—	4,521	—	4,521
Deposit service charges and fees	50,411	51,314	2,483	9	104,217	—	104,217
Mortgage production revenue	—	60,712	—	—	60,712	60,712	—
Mortgage servicing revenue	—	47,055	—	(1,871)	45,184	45,184	—
Mortgage banking revenue	—	107,767	—	(1,871)	105,896	105,896	—
Other revenue	41,206	10,637	42,564	(24,457)	69,950	54,349	15,601
Total fees and commissions revenue	$ 227,081	$ 173,364	$ 298,765	$ (30,901)	$ 668,309	$ 224,544	$ 443,765

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

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

Fees and commissions revenue by reportable segment and primary service line is as follows for the year ended December 31, 2020.

	Commercial	Consumer	Wealth Management	Funds Management and Other	Consolidated	Out of Scope[1]	In Scope[2]
Trading revenue	$ —	$ —	$ 144,299	$ —	$ 144,299	$ 144,299	$ —
Customer hedging revenue	22,767	—	395	(413)	22,749	22,749	—
Retail brokerage revenue	—	—	15,690	—	15,690	—	15,690
Insurance brokerage revenue	—	—	12,702	—	12,702	—	12,702
Investment banking revenue	9,183	—	17,391	(181)	26,393	8,530	17,863
Brokerage and trading revenue	31,950	—	190,477	(594)	221,833	175,578	46,255
TransFund EFT network revenue	75,363	3,058	(56)	5	78,370	—	78,370
Merchant services revenue	9,172	60	—	—	9,232	—	9,232
Corporate card revenue	2,362	—	75	143	2,580	—	2,580
Transaction card revenue	86,897	3,118	19	148	90,182	—	90,182
Personal trust revenue	—	—	84,759	—	84,759	—	84,759
Corporate trust revenue	—	—	19,308	—	19,308	—	19,308
Institutional trust & retirement plan services revenue	—	—	46,253	—	46,253	—	46,253
Investment management services and other	—	—	17,290	(165)	17,125	—	17,125
Fiduciary and asset management revenue	—	—	167,610	(165)	167,445	—	167,445
Commercial account service charge revenue	44,489	1,654	2,282	(4)	48,421	—	48,421
Overdraft fee revenue	132	21,679	74	7	21,892	—	21,892
Check card revenue	—	21,355	—	—	21,355	—	21,355
Automated service charge and other deposit fee revenue	311	4,749	74	3	5,137	—	5,137
Deposit service charges and fees	44,932	49,437	2,430	6	96,805	—	96,805
Mortgage production revenue	—	125,848	—	—	125,848	125,848	—
Mortgage servicing revenue	—	58,249	—	(1,737)	56,512	56,512	—
Mortgage banking revenue	—	184,097	—	(1,737)	182,360	182,360	—
Other revenue	23,340	8,902	38,693	(19,240)	51,695	39,092	12,603
Total fees and commissions revenue	$ 187,119	$ 245,554	$ 399,229	$ (21,582)	$ 810,320	$ 397,030	$ 413,290

1 Out of scope revenue generally relates to financial instruments or contractual rights and obligations within the scope of other applicable accounting guidance.
2 In scope revenue represents revenue subject to FASB ASC Topic 606, *Revenue from Contracts with Customers.*

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

	Commercial	Consumer	Wealth Management	Funds Management and Other	Consolidated	Out of Scope[1]	In Scope[2]
Trading revenue	$ —	$ —	$ 88,558	$ —	$ 88,558	$ 88,558	$ —
Customer hedging revenue	8,422	—	9,667	852	18,941	18,941	—
Retail brokerage revenue	—	—	16,251	(115)	16,136	—	16,136
Insurance brokerage revenue	—	—	10,131	3,730	13,861	—	13,861
Investment banking revenue	10,136	—	12,194	—	22,330	8,678	13,652
Brokerage and trading revenue	18,558	—	136,801	4,467	159,826	116,177	43,649
TransFund EFT network revenue	73,479	3,924	(82)	3	77,324	—	77,324
Merchant services revenue	8,607	56	—	123	8,786	—	8,786
Corporate card revenue	1,072	—	32	2	1,106	—	1,106
Transaction card revenue	83,158	3,980	(50)	128	87,216	—	87,216
Personal trust revenue	—	—	81,763	—	81,763	—	81,763
Corporate trust revenue	—	—	24,635	—	24,635	—	24,635
Institutional trust & retirement plan services revenue	—	—	45,084	—	45,084	—	45,084
Investment management services and other	—	—	23,993	1,550	25,543	—	25,543
Fiduciary and asset management revenue	—	—	175,475	1,550	177,025	—	177,025
Commercial account service charge revenue	42,251	1,713	2,137	1,804	47,905	—	47,905
Overdraft fee revenue	313	35,134	138	(229)	35,356	—	35,356
Check card revenue	—	21,865	—	165	22,030	—	22,030
Automated service charge and other deposit fee revenue	823	6,155	168	48	7,194	—	7,194
Deposit service charges and fees	43,387	64,867	2,443	1,788	112,485	—	112,485
Mortgage production revenue	—	42,724	—	(4)	42,720	42,720	—
Mortgage servicing revenue	—	66,692	—	(1,871)	64,821	64,821	—
Mortgage banking revenue	—	109,416	—	(1,875)	107,541	107,541	—
Other revenue	23,564	9,733	26,664	(1,853)	58,108	39,428	18,680
Total fees and commissions revenue	$ 168,667	$ 187,996	$ 341,333	$ 4,205	$ 702,201	$ 263,146	$ 439,055

1 Out of scope revenue generally relates to financial instruments or contractual rights and obligations within the scope of other applicable accounting guidance.
2 In scope revenue represents revenue subject to FASB ASC Topic 606, *Revenue from Contracts with Customers.*

(19) 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, 2021 and 2020, respectively. Transfers between significant other observable inputs and significant unobservable inputs during the year ended December 31, 2021 and 2020 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, 2021 and 2020.

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, 2021 (in thousands):

	Total	Quoted Prices in Active Markets for Identical Instruments	Significant Other Observable Inputs	Significant Unobservable Inputs
Assets:				
Trading securities:				
U.S. government securities	$ 23,610	$ 4,999	$ 18,611	$ —
Residential agency mortgage-backed securities	9,068,900	—	9,068,900	—
Municipal securities	25,783	—	25,783	—
Other trading securities	18,520	—	18,520	—
Total trading securities	9,136,813	4,999	9,131,814	—
Available for sale securities:				
U.S. Treasury	1,000	1,000	—	—
Municipal securities	508,365	—	508,365	—
Residential agency mortgage-backed securities	8,006,616	—	8,006,616	—
Residential non-agency mortgage-backed securities	24,339	—	24,339	—
Commercial agency mortgage-backed securities	4,617,025	—	4,617,025	—
Other debt securities	472	—	—	472
Total available for sale securities	13,157,817	1,000	13,156,345	472
Fair value option securities — Residential agency mortgage-backed securities	43,770	—	43,770	—
Residential mortgage loans held for sale[1]	192,295	—	185,969	6,326
Mortgage servicing rights, net[2]	163,198	—	—	163,198
Derivative contracts, net of cash margin[3]	1,097,297	8,331	1,088,966	—
Liabilities:				
Derivative contracts, net of cash margin[3]	275,625	—	275,625	—

1 Residential mortgage loans held for sale measured at fair value on a recurring basis using significant unobservable inputs (Level 3) consist of residential mortgage loans intended for sale to U.S. government agencies that fail to meet conforming standards and are valued at 95.07% of the unpaid principal balance.

2 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.

3 See Note 3 for detail of fair value of derivative contracts by contract type. Derivative contracts in asset positions that were valued based on quoted prices in active markets for identical instruments (Level 1) are primarily exchange-traded interest rate derivative contracts. Derivative contracts in liability positions that were valued using quoted prices in active markets for identical instruments are exchange-traded 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, 2020 (in thousands):

	Total	Quoted Prices in Active Markets for Identical Instruments	Significant Other Observable Inputs	Significant Unobservable Inputs
Assets:				
Trading securities:				
U.S. government securities	$ 9,183	$ 4,999	$ 4,184	$ —
Residential agency mortgage-backed securities	4,669,148	—	4,669,148	—
Municipal securities	19,172	—	19,172	—
Other trading securities	10,472	—	10,472	—
Total trading securities	4,707,975	4,999	4,702,976	—
Available for sale securities:				
U.S. Treasury	508	508	—	—
Municipal securities	167,979	—	167,979	—
Residential agency mortgage-backed securities	9,340,471	—	9,340,471	—
Residential non-agency mortgage-backed securities	32,770	—	32,770	—
Commercial agency mortgage-backed securities	3,508,465	—	3,508,465	—
Other debt securities	472	—	—	472
Total available for sale securities	13,050,665	508	13,049,685	472
Fair value option securities — Residential agency mortgage-backed securities	114,982	—	114,982	—
Residential mortgage loans held for sale[1]	252,316	—	245,299	7,017
Mortgage servicing rights, net[2]	101,172	—	—	101,172
Derivative contracts, net of cash margin[3]	810,688	10,780	799,908	—
Liabilities:				
Derivative contracts, net of cash margin[3]	405,779	—	405,779	—

[1] Residential mortgage loans held for sale measured at fair value on a recurring basis using significant unobservable inputs (Level 3) consist of residential mortgage loans intended for sale to U.S. government agencies that fail to meet conforming standards and are valued at 94.57% of the unpaid principal balance.

[2] 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.

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

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

Securities

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

The fair value of certain available for sale and held-to-maturity 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.

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 nonaccruing loans and real property and other assets acquired to satisfy loans, which are based primarily on comparisons to completed sales of similar assets.

The following represents the carrying value of assets measured at fair value on a non-recurring basis and related losses 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, 2021			Fair Value Adjustments for the Year Ended December 31, 2021 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	Other gains (losses), net
Nonaccruing loans	**$ —**	**$ 808**	**$ 1,990**	**$ 2,087**	**$ —**
Real estate and other repossessed assets	**—**	**1,706**	**—**	**—**	**(150)**

	Carrying Value at December 31, 2020			Fair Value Adjustments for the Year Ended December 31, 2020 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	Other gains (losses), net
Nonaccruing loans	$ —	$ 801	$ 20,423	$ 39,299	$ —
Real estate and other repossessed assets	—	18,188	2,842	—	4,602

The fair value of collateral-dependent nonaccruing 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 nonaccruing 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, 2021 follows (in thousands):

Quantitative Information about Level 3 Non-recurring Fair Value Measurements

	Fair Value	Valuation Technique(s)	Significant Unobservable Input	Range (Weighted Average)
Nonaccruing loans	$ 1,990	Discounted cash flows	Management knowledge of industry and non-real estate collateral including but not limited to recoverable oil & gas reserves, forward looking commodity prices, and estimated operating costs	16% - 97% (37%)[1]

[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, 2020 follows (in thousands):

Quantitative Information about Level 3 Non-recurring Fair Value Measurements

	Fair Value	Valuation Technique(s)	Significant Unobservable Input	Range (Weighted Average)
Nonaccruing loans	$ 20,423	Discounted cash flows	Management knowledge of industry and non-real estate collateral including but not limited to recoverable oil & gas reserves, forward looking commodity prices, and estimated operating costs	1% - 91% (23%)[1]
Real estate and other repossessed assets	2,842	Discounted cash flows	Management knowledge of industry and non-real estate collateral including but not limited to recoverable oil & gas reserves, forward looking commodity prices, and estimated operating costs	N/A

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

The fair value of pension plan assets was approximately $39 million at December 31, 2021 and $38 million at December 31, 2020, 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, 2021				
	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	$ 712,067	$ 712,067	$ 712,067	$ —	$ —
Interest-bearing cash and cash equivalents	2,125,343	2,125,343	2,125,343	—	—
Trading securities:					
U.S. government securities	23,610	23,610	4,999	18,611	—
Residential agency mortgage-backed securities	9,068,900	9,068,900	—	9,068,900	—
Municipal securities	25,783	25,783	—	25,783	—
Other trading securities	18,520	18,520	—	18,520	—
Total trading securities	9,136,813	9,136,813	4,999	9,131,814	—
Investment securities:					
Municipal securities	203,772	223,609	—	57,698	165,911
Residential agency mortgage-backed securities	6,939	7,500	—	7,500	—
Other debt securities	288	286	—	286	—
Total investment securities	210,999	231,395	—	65,484	165,911
Allowance for credit losses	(555)	—	—	—	—
Investment securities, net of allowance	210,444	231,395	—	65,484	165,911
Available for sale securities:					
U.S. Treasury	1,000	1,000	1,000	—	—
Municipal securities	508,365	508,365	—	508,365	—
Residential agency mortgage-backed securities	8,006,616	8,006,616	—	8,006,616	—
Residential non-agency mortgage-backed securities	24,339	24,339	—	24,339	—
Commercial agency mortgage-backed securities	4,617,025	4,617,025	—	4,617,025	—
Other debt securities	472	472	—	—	472
Total available for sale securities	13,157,817	13,157,817	1,000	13,156,345	472
Fair value option securities — Residential agency mortgage-backed securities	43,770	43,770	—	43,770	—
Residential mortgage loans held for sale	192,295	192,295	—	185,969	6,326
Loans:					
Commercial	12,506,465	12,395,664	—	—	12,395,664
Commercial real estate	3,831,325	3,786,767	—	—	3,786,767
Paycheck protection program	276,341	269,912	—	—	269,912
Loans to individuals	3,591,549	3,586,878	—	—	3,586,878
Total loans	20,205,680	20,039,221	—	—	20,039,221
Allowance for loan losses	(256,421)	—	—	—	—
Loans, net of allowance	19,949,259	20,039,221	—	—	20,039,221
Mortgage servicing rights	163,198	163,198	—	—	163,198
Derivative instruments with positive fair value, net of cash margin	1,097,297	1,097,297	8,331	1,088,966	—
Deposits with no stated maturity	39,537,731	39,537,731	—	—	39,537,731
Time deposits	1,704,328	1,703,886	—	—	1,703,886
Other borrowed funds	2,363,202	2,360,746	—	—	2,360,746
Subordinated debentures	131,226	141,761	—	141,761	—
Derivative instruments with negative fair value, net of cash margin	275,625	275,625	—	275,625	—

	December 31, 2020				
	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	$ 798,757	$ 798,757	$ 798,757	$ —	$ —
Interest-bearing cash and cash equivalents	381,816	381,816	381,816	—	—
Trading securities:					
U.S. government securities	9,183	9,183	4,999	4,184	—
Residential agency mortgage-backed securities	4,669,148	4,669,148	—	4,669,148	—
Municipal securities	19,172	19,172	—	19,172	—
Other trading securities	10,472	10,472	—	10,472	—
Total trading securities	4,707,975	4,707,975	4,999	4,702,976	—
Investment securities:					
Municipal securities	229,245	255,270	—	69,404	185,866
Residential agency mortgage-backed securities	8,913	9,790	—	9,790	—
Other debt securities	7,373	7,371	—	7,371	—
Total investment securities	245,531	272,431	—	86,565	185,866
Allowance for credit losses	(688)	—	—	—	—
Investment securities, net of allowance	244,843	272,431	—	86,565	185,866
Available for sale securities:					
U.S. Treasury securities	508	508	508	—	—
Municipal securities	167,979	167,979	—	167,979	—
Residential agency mortgage-backed securities	9,340,471	9,340,471	—	9,340,471	—
Residential non-agency mortgage-backed securities	32,770	32,770	—	32,770	—
Commercial agency mortgage-backed securities	3,508,465	3,508,465	—	3,508,465	—
Other debt securities	472	472	—	—	472
Total available for sale securities	13,050,665	13,050,665	508	13,049,685	472
Fair value option securities — Residential agency mortgage-backed securities	114,982	114,982	—	114,982	—
Residential mortgage loans held for sale	252,316	252,316	—	245,299	7,017
Loans:					
Commercial	13,077,535	13,003,383	—	—	13,003,383
Commercial real estate	4,698,538	4,649,763	—	—	4,649,763
Paycheck protection program	1,682,310	1,669,461	—	—	1,669,461
Loans to individuals	3,549,137	3,563,199	—	—	3,563,199
Total loans	23,007,520	22,885,806	—	—	22,885,806
Allowance for loan losses	(388,640)	—	—	—	—
Loans, net of allowance	22,618,880	22,885,806	—	—	22,885,806
Mortgage servicing rights	101,172	101,172	—	—	101,172
Derivative instruments with positive fair value, net of cash margin	810,688	810,688	10,780	799,908	—
Deposits with no stated maturity	34,176,752	34,176,752	—	—	34,176,752
Time deposits	1,967,128	1,976,936	—	—	1,976,936
Other borrowed funds	3,545,356	3,542,489	—	—	3,542,489
Subordinated debentures	276,005	269,544	—	269,544	—
Derivative instruments with negative fair value, net of cash margin	405,779	405,779	—	405,779	—

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

Fair Value Election

As more fully disclosed in Note 2 and Note 7 to the Consolidated Financial Statements, the Company has elected to carry all 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.

(20) Parent Company Only Financial Statements

Summarized financial information for BOK Financial – Parent Company Only follows:

Balance Sheets
(In thousands)

	December 31,	
	2021	2020
Assets		
Cash and cash equivalents	**$ 230,647**	$ 183,805
Loan to bank subsidiary	**65,187**	65,204
Investment in bank subsidiary	**4,951,405**	5,079,336
Investment in non-bank subsidiaries	**228,447**	195,768
Other assets	**22,011**	24,338
Total assets	**$ 5,497,697**	$ 5,548,451
Liabilities and Shareholders' Equity		
Liabilities:		
Other liabilities	**$ 2,739**	$ 6,180
Subordinated debentures	**131,226**	276,005
Total liabilities	**133,965**	282,185
Shareholders' equity:		
Common stock	**5**	5
Capital surplus	**1,378,794**	1,368,062
Retained earnings	**4,447,691**	3,973,675
Treasury stock	**(535,129)**	(411,344)
Accumulated other comprehensive income	**72,371**	335,868
Total shareholders' equity	**5,363,732**	**5,266,266**
Total liabilities and shareholders' equity	**$ 5,497,697**	$ 5,548,451

Statements of Earnings
(In thousands)

	Year Ended December 31,		
	2021	**2020**	**2019**
Dividends, interest and fees received from bank subsidiary	**$ 483,868**	$ 179,140	$ 344,007
Dividends, interest and fees received from non-bank subsidiaries	**8,030**	25,050	9,325
Other revenue	**767**	907	1,036
Total revenue	**492,665**	205,097	354,368
Interest expense	**10,535**	13,944	15,113
Other operating expense	**2,914**	2,697	2,352
Total expense	**13,449**	16,641	17,465
Net income before taxes, other losses, net, and equity in undistributed income of subsidiaries	**479,216**	188,456	336,903
Other gains (losses), net	**(3,415)**	1,465	3,310
Net income before taxes and equity in undistributed income of subsidiaries	**475,801**	189,921	340,213
Federal and state income taxes	**(4,202)**	(4,502)	(4,516)
Net income before equity in undistributed income of subsidiaries	**480,003**	194,423	344,729
Equity in undistributed income of bank subsidiaries	**126,380**	276,217	166,797
Equity in undistributed income of non-bank subsidiaries	**11,738**	(35,610)	(10,768)
Net income attributable to BOK Financial Corp. shareholders	**$ 618,121**	$ 435,030	$ 500,758

Statements of Cash Flows
(In thousands)

	Year Ended December 31,		
	2021	2020	2019
Cash Flows From Operating Activities:			
Net income	**$ 618,121**	$ 435,030	$ 500,758
Adjustments to reconcile net income to net cash provided by operating activities:			
Equity in undistributed income of bank subsidiaries	**(126,380)**	(276,217)	(166,797)
Equity in undistributed income of non-bank subsidiaries	**(11,738)**	35,610	10,768
Other losses (gains), net	**3,415**	(1,465)	(3,310)
Change in other assets	**1,160**	15,225	(1,765)
Change in other liabilities	**389**	850	855
Net cash provided by operating activities	**484,967**	209,033	340,509
Cash Flows From Investing Activities:			
Investment in subsidiaries	**(25,665)**	(14,807)	(19,837)
Dissolution of subsidiaries	**4,457**	—	—
Net cash used in investing activities	**(21,208)**	(14,807)	(19,837)
Cash Flows From Financing Activities:			
Repayment of subordinated debentures	**(150,000)**	—	—
Issuance of common and treasury stock, net	**(4,874)**	(4,933)	(7)
Dividends paid	**(144,105)**	(144,437)	(143,496)
Repurchase of common stock	**(117,938)**	(75,830)	(129,483)
Net cash used in financing activities	**(416,917)**	(225,200)	(272,986)
Net increase (decrease) in cash and cash equivalents	**46,842**	(30,974)	47,686
Cash and cash equivalents at beginning of period	**183,805**	214,779	167,093
Cash and cash equivalents at end of period	**$ 230,647**	$ 183,805	$ 214,779
Cash paid for interest	**$ 10,559**	$ 14,064	$ 15,099

(21) Subsequent Events

The Company evaluated events from the date of the Consolidated Financial Statements on December 31, 2021 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, 2021		
	Average Balance	Revenue/ Expense	Yield/ Rate
Assets			
Interest-bearing cash and cash equivalents	$ 816,425	$ 1,060	0.13 %
Trading securities	7,823,705	156,214	1.98 %
Investment securities	222,426	11,065	4.97 %
Available for sale securities	13,342,526	230,698	1.80 %
Fair value option securities	67,881	1,542	2.38 %
Restricted equity securities	195,488	5,703	2.92 %
Residential mortgage loans held for sale	188,888	5,465	2.93 %
Loans	21,495,156	777,124	3.62 %
Allowance for loan losses	(326,121)		
Loans, net of allowance	21,169,035	777,124	3.67 %
Total earning assets	43,826,374	1,188,871	2.74 %
Receivable on unsettled securities sales	667,149		
Cash and other assets	5,658,180		
Total assets	$ 50,151,703		
Liabilities and equity			
Interest-bearing deposits:			
Transaction	$ 21,673,472	$ 21,961	0.10 %
Savings	865,245	374	0.04 %
Time	1,876,901	11,149	0.59 %
Total interest-bearing deposits	24,415,618	33,484	0.14 %
Funds purchased and repurchase agreements	2,238,702	8,084	0.36 %
Other borrowings	2,599,861	9,793	0.38 %
Subordinated debentures	224,058	10,535	4.70 %
Total interest-bearing liabilities	29,478,239	61,896	0.21 %
Non-interest bearing demand deposits	13,505,359		
Due on unsettled securities purchases	800,667		
Other liabilities	1,013,050		
Total equity	5,354,388		
Total liabilities and equity	$ 50,151,703		
Tax-equivalent Net Interest Revenue		$ 1,126,975	2.53 %
Tax-equivalent Net Interest Revenue to Earning Assets			2.60 %
Less tax-equivalent adjustment		8,942	
Net Interest Revenue		1,118,033	
Provision for credit losses		(100,000)	
Other operating revenue		755,775	
Other operating expense		1,177,708	
Net income before taxes		796,100	
Federal and state income taxes		179,775	
Net income		616,325	
Net income attributable to non-controlling interests		(1,796)	
Net income attributable to BOK Financial Corporation shareholders		$ 618,121	
Earnings Per Average Common Share Equivalent:			
Net income:			
Basic		$ 8.95	
Diluted		$ 8.95	

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, 2020			December 31, 2019		
	Average Balance	Revenue/ Expense	Yield/ Rate	Average Balance	Revenue/ Expense	Yield/ Rate
Assets						
Interest-bearing cash and cash equivalents	$ 634,401	$ 2,830	0.45 %	$ 536,853	$ 12,214	2.28 %
Trading securities	3,078,075	67,942	2.75 %	1,772,660	61,960	3.55 %
Investment securities	265,455	12,760	4.81 %	319,451	14,417	4.51 %
Available for sale securities	12,420,678	261,404	2.21 %	10,108,409	254,101	2.58 %
Fair value option securities	769,760	18,475	2.39 %	1,145,800	32,936	2.95 %
Restricted equity securities	281,594	10,963	3.89 %	441,756	26,860	6.08 %
Residential mortgage loans held for sale	215,296	6,397	3.05 %	186,207	7,105	3.82 %
Loans	23,402,195	898,445	3.84 %	22,106,979	1,134,037	5.13 %
Allowance for loan losses	(368,820)			(204,679)		
Loans, net of allowance	23,033,375	898,445	3.90 %	21,902,300	1,134,037	5.18 %
Total earning assets	40,698,634	1,279,216	3.24 %	36,413,436	1,543,630	4.27 %
Receivable on unsettled securities sales	3,329,727			1,597,098		
Cash and other assets	4,676,029			4,083,813		
Total assets	$ 48,704,390			$ 42,094,347		
Liabilities and equity						
Interest-bearing deposits:						
Transaction	$ 18,676,146	$ 60,424	0.32 %	$ 13,072,914	$ 132,854	1.02 %
Savings	666,549	385	0.06 %	553,057	677	0.12 %
Time	2,220,749	29,187	1.31 %	2,215,405	42,007	1.90 %
Total interest-bearing deposits	21,563,444	89,996	0.42 %	15,841,376	175,538	1.11 %
Funds purchased and repurchase agreements	3,635,541	15,605	0.43 %	2,838,161	53,003	1.87 %
Other borrowings	4,659,453	41,011	0.88 %	7,147,356	175,425	2.45 %
Subordinated debentures	275,965	13,944	5.05 %	276,075	15,113	5.47 %
Total interest-bearing liabilities	30,134,403	160,556	0.53 %	26,102,968	419,079	1.61 %
Non-interest bearing demand deposits	11,201,554			9,809,905		
Due on unsettled securities purchases	1,081,674			702,450		
Other liabilities	1,193,445			801,474		
Total equity	5,093,314			4,677,550		
Total liabilities and equity	$ 48,704,390			$ 42,094,347		
Tax-equivalent Net Interest Revenue		$ 1,118,660	2.71 %		$ 1,124,551	2.66 %
Tax-equivalent Net Interest Revenue to Earning Assets			2.83 %			3.11 %
Less tax-equivalent adjustment		10,216			11,672	
Net Interest Revenue		1,108,444			1,112,879	
Provision for credit losses		222,592			44,000	
Other operating revenue		842,320			695,233	
Other operating expense		1,164,308			1,133,244	
Net income before taxes		563,864			630,868	
Federal and state income taxes		128,793			130,183	
Net income		435,071			500,685	
Net income attributable to non-controlling interests		41			(73)	
Net income attributable to BOK Financial Corporation shareholders		$ 435,030			$ 500,758	
Earnings Per Average Common Share Equivalent:						
Net income:						
Basic		$ 6.19			$ 7.03	
Diluted		$ 6.19			$ 7.03	

Quarterly Financial Summary – Unaudited

Consolidated Daily Average Balances, Average Yields and Rates

(In Thousands, Except Per Share Data)	Three Months Ended					
	December 31, 2021			September 30, 2021		
	Average Balance	Revenue/ Expense	Yield/ Rate	Average Balance	Revenue/ Expense	Yield/ Rate
Assets						
Interest-bearing cash and cash equivalents	**$ 1,208,552**	**$ 483**	**0.16 %**	$ 682,788	$ 245	0.14 %
Trading securities	**9,260,778**	**44,537**	**1.89 %**	7,617,236	39,006	2.04 %
Investment securities	**213,188**	**2,661**	**4.99 %**	218,117	2,740	5.02 %
Available for sale securities	**13,247,607**	**55,638**	**1.72 %**	13,446,095	57,391	1.80 %
Fair value option securities	**46,458**	**302**	**2.71 %**	56,307	342	2.62 %
Restricted equity securities	**137,874**	**1,028**	**2.98 %**	245,485	1,565	2.55 %
Residential mortgage loans held for sale	**163,433**	**1,242**	**3.06 %**	167,620	1,274	3.06 %
Loans	**20,242,653**	**188,547**	**3.70 %**	20,848,608	193,117	3.68 %
Allowance for loan losses	**(271,794)**			(306,125)		
Loans, net of allowance	**19,970,859**	**188,547**	**3.75 %**	20,542,483	193,117	3.73 %
Total earning assets	**44,248,749**	**294,438**	**2.66 %**	42,976,131	295,680	2.78 %
Receivable on unsettled securities sales	**585,901**			632,539		
Cash and other assets	**5,769,406**			5,890,479		
Total assets	**$ 50,604,056**			$ 49,499,149		
Liabilities and equity						
Interest-bearing deposits:						
Transaction	**$ 22,326,401**	**$ 5,097**	**0.09 %**	$ 21,435,736	$ 5,002	0.09 %
Savings	**909,131**	**96**	**0.04 %**	888,011	96	0.04 %
Time	**1,747,715**	**2,351**	**0.53 %**	1,839,983	2,567	0.55 %
Total interest-bearing deposits	**24,983,247**	**7,544**	**0.12 %**	24,163,730	7,665	0.13 %
Funds purchased and repurchase agreements	**2,893,128**	**5,292**	**0.73 %**	1,448,800	722	0.20 %
Other borrowings	**880,837**	**1,091**	**0.49 %**	2,546,083	2,344	0.37 %
Subordinated debentures	**131,224**	**1,330**	**4.02 %**	214,654	2,505	4.63 %
Total interest-bearing liabilities	**28,888,436**	**15,257**	**0.21 %**	28,373,267	13,236	0.19 %
Non-interest bearing demand deposits	**14,818,841**			13,670,656		
Due on unsettled securities purchases	**629,642**			957,538		
Other liabilities	**898,848**			1,054,247		
Total equity	**5,368,289**			5,443,441		
Total liabilities and equity	**$ 50,604,056**			$ 49,499,149		
Tax-equivalent Net Interest Revenue		**$ 279,181**	**2.45 %**		$ 282,444	2.59 %
Tax-equivalent Net Interest Revenue to Earning Assets			**2.52 %**			2.66 %
Less tax-equivalent adjustment		**2,104**			2,217	
Net Interest Revenue		**277,077**			280,227	
Provision for credit losses		**(17,000)**			(23,000)	
Other operating revenue		**157,443**			229,832	
Other operating expense		**299,495**			291,277	
Net income before taxes		**152,025**			241,782	
Federal and state income taxes		**34,836**			54,061	
Net income		**117,189**			187,721	
Net income attributable to non-controlling interests		**(129)**			(601)	
Net income attributable to BOK Financial Corp. shareholders		**$ 117,318**			$ 188,322	
Earnings Per Average Common Share Equivalent:						
Basic		**$ 1.71**			$ 2.74	
Diluted		**$ 1.71**			$ 2.74	

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, 2021			March 31, 2021			December 31, 2020		
Average Balance	Revenue /Expense	Yield / Rate	Average Balance	Revenue / Expense	Yield / Rate	Average Balance	Revenue / Expense	Yield / Rate
$ 659,312	$ 158	0.10 %	$ 711,047	$ 174	0.10 %	$ 643,926	$ 158	0.10 %
7,430,217	36,702	1.95 %	6,963,617	35,969	2.06 %	6,888,189	35,848	2.02 %
221,401	2,771	5.01 %	237,313	2,893	4.88 %	251,863	3,071	4.88 %
13,243,542	58,989	1.85 %	13,433,767	58,680	1.84 %	12,949,702	60,885	1.98 %
64,864	402	2.60 %	104,662	496	1.95 %	122,329	671	2.27 %
208,692	1,751	3.36 %	189,921	1,359	2.86 %	280,428	2,276	3.25 %
218,200	1,569	2.91 %	207,013	1,380	2.71 %	229,631	1,549	2.75 %
22,167,089	195,871	3.54 %	22,757,007	199,589	3.55 %	23,447,518	216,976	3.68 %
(345,269)			(382,734)			(414,225)		
21,821,820	195,871	3.60 %	22,374,273	199,589	3.62 %	23,033,293	216,976	3.75 %
43,868,048	298,213	2.75 %	44,221,613	300,540	2.78 %	44,399,361	321,434	2.92 %
716,700			735,482			1,094,198		
5,612,174			5,353,538			4,893,605		
$ 50,196,922			$ 50,310,633			$ 50,387,164		
$ 21,491,145	$ 5,539	0.10 %	$ 21,433,406	$ 6,323	0.12 %	$ 20,718,390	$ 7,047	0.14 %
872,618	96	0.04 %	789,656	86	0.04 %	737,360	87	0.05 %
1,936,510	2,790	0.58 %	1,986,425	3,441	0.70 %	1,930,808	4,300	0.89 %
24,300,273	8,425	0.14 %	24,209,487	9,850	0.17 %	23,386,558	11,434	0.19 %
1,790,490	722	0.16 %	2,830,378	1,348	0.19 %	2,153,254	1,526	0.28 %
3,608,369	3,084	0.34 %	3,392,346	3,274	0.39 %	5,193,656	5,453	0.42 %
276,034	3,353	4.87 %	276,015	3,347	4.92 %	275,998	3,377	4.87 %
29,975,166	15,584	0.21 %	30,708,226	17,819	0.24 %	31,009,466	21,790	0.28 %
13,189,954			12,312,629			12,136,071		
701,495			915,410			957,642		
1,000,662			1,100,203			1,055,623		
5,329,645			5,274,165			5,228,362		
$ 50,196,922			$ 50,310,633			$ 50,387,164		
	$ 282,629	2.54 %		$ 282,721	2.54 %		$ 299,644	2.64 %
		2.60 %			2.62 %			2.72 %
	2,320			2,301			2,414	
	280,309			280,420			297,230	
	(35,000)			(25,000)			(6,500)	
	191,446			177,054			198,789	
	291,152			295,784			302,672	
	215,603			186,690			199,847	
	48,496			42,382			45,138	
	167,107			144,308			154,709	
	686			(1,752)			485	
	$ 166,421			$ 146,060			$ 154,224	
	$ 2.40			$ 2.10			$ 2.21	
	$ 2.40			$ 2.10			$ 2.21	

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 2022 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 2021 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 2022 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 2022 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 2022 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 2022 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, 2021, 2020 and 2019
Consolidated Statements of Comprehensive Income for the years ended December 31, 2021, 2020 and 2019
Consolidated Balance Sheets as of December 31, 2021 and 2020
Consolidated Statements of Changes in Equity for the years ended December 31, 2021, 2020 and 2019
Consolidated Statements of Cash Flows for the years ended December 31, 2021, 2020 and 2019
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, 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 of BOK Financial are set forth in its Certificate of Incorporation.
4.3	Form of Subordinated Notes Indenture, to be dated as of June 25, 2015 between CoBiz Financial Inc. and U.S. Bank National Association, as trustee, incorporated by reference to Exhibit 4.1 to CoBiz Financial Inc. Form 8-K filed June 25, 2015.
4.4	Form of 5.625% Subordinated Notes due June 25, 2030, incorporated by reference to Exhibit 4.2 to CoBiz Financial Inc. Form 8-K filed June 25, 2015.
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 January 1, 2022) between BOK Financial and Stacy C. Kymes.
10.4.11	Employment Agreement between BOK Financial and Scott B. Grauer dated December 18, 2013.
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.
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.
10.7.14	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.

Exhibit Number	Description of Exhibit
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 Williams Headquarters Building LLC and BOKF, NA dated July 1, 2019.
10.8.1	First Amendment to Lease Agreement between Williams Headquarters Building LLC and BOKF, NA dated November 8th, 2019.
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 Cover Page, (ii) the Consolidated Balance Sheets, (iii) the Consolidated Statements of Earnings, (iv) the Consolidated Statements of Changes in Equity, (v) the Consolidated Statement of Cash Flows and (vi) the Notes to the Consolidated Financial Statements, filed herewith. The XBRL instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101).

(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 23, 2022

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 23, 2022, by the following persons on behalf of the registrant and in the capacities indicated.

OFFICERS

/s/ George B. Kaiser	/s/ Stacy C. Kymes
George B. Kaiser Chairman of the Board of Directors	Stacy C. Kymes Director, President and Chief Executive Officer
/s/ Steven E. Nell	/s/ John C. Morrow
Steven E. Nell Director, Executive Vice President and Chief Financial Officer	John C. Morrow Senior Vice President and Chief Accounting Officer

DIRECTORS

/s/ Alan S. Armstrong
Alan S. Armstrong

/s/ C. Frederick Ball, Jr.
C. Frederick Ball, Jr.

/s/ Steve Bangert
Steve Bangert

Steven G. Bradshaw

Chester E. Cadieux, III

/s/ John W. Coffey
John W. Coffey

/s/ Joseph W. Craft, III
Joseph W. Craft, III

/s/ David F. Griffin
David F. Griffin

/s/ V. Burns Hargis
V. Burns Hargis

/s/ Douglas D. Hawthorne
Douglas D. Hawthorne

/s/ Kimberley D. Henry
Kimberley D. Henry

/s/ E. Carey Joullian, IV
E. Carey Joullian, IV

/s/ Stanley A. Lybarger
Stanley A. Lybarger

Steven J. Malcolm

Emmet C. Richards

Claudia San Pedro

Peggy Simmons

/s/ Michael C. Turpen
Michael C. Turpen

/s/ Rose M. Washington
Rose M. Washington

AMENDED AND RESTATED EMPLOYMENT AGREEMENT

January 1, 2022

This Amended and Restated Employment Agreement ("Agreement") is made this 1st day of January 2022 (the "Agreement Date") between the following parties ("Parties"):

(i) BOK Financial Corporation, an Oklahoma corporation ("BOK Financial"); and,

(ii) Stacy C. Kymes, an individual currently residing in Tulsa, Oklahoma (the "Executive").

BOK Financial and Executive, in consideration of the promises and covenants set forth herein (the receipt and adequacy of which are hereby acknowledged) and intending to be legally bound hereby, agree as follows:

(1) Purpose of This Agreement. The purpose of this Agreement is as follows:

(a) BOK Financial is a financial holding company, subject to regulation by the Board of Governors of the Federal Reserve System. The subsidiaries of BOK Financial include BOKF, NA, a national association engaged in banking and BOSC, Inc., a registered broker-dealer.

(b) The Executive has extensive prior experience in financial services and banking and is currently employed as an Executive Vice-President of BOK Financial and BOKF, NA, reporting to the Chief Executive Officer.

(c) The purpose of this Agreement is to set forth the terms and conditions on which BOK Financial shall employ the Executive and the Executive shall serve as an officer of BOK Financial, BOKF, NA, and other of their affiliates.

(2) Prior Agreement Superseded. This agreement supersedes, from and after the Effective Date, any employment agreement between Executive and BOK Financial and/or BOKF, NA (excluding, for avoidance of doubt, any rights of Executive arising under the BOK Financial 2003 Stock Option Plan, the BOK Financial 2009 Omnibus Incentive Plan, and the BOK Financial 2011 True-Up Plan).

(3) Employment. Effective as of the Agreement Date, BOK Financial hereby employs the Executive, and the Executive hereby accepts employment with BOK Financial, on the following terms and conditions:

(a) Executive shall serve as a member of the Board of Directors and as President and Chief Executive Officer of BOK Financial and BOKF, NA.

(b) Executive shall devote all time and attention reasonably necessary to the affairs of BOK Financial and BOKF, NA and shall serve BOK Financial and BOKF, NA diligently, loyally, and to the best of his ability.

(c) Executive shall serve in such other or additional positions as an officer and/or director of BOK Financial and BOKF, NA or any of their affiliates as the Chief Executive Officer of BOK Financial may reasonably request; provided, however, Executive's residence and place of work shall be in the Tulsa, Oklahoma area.

(d) Notwithstanding anything herein to the contrary, Executive shall not be precluded from engaging in any charitable, civic, political or community activity or membership in any professional organization.

(4) Compensation. As the sole, full and complete compensation to the Executive for the performance of all duties of Executive under this Agreement and for all services rendered by Executive to BOK Financial and/or to any affiliate of BOK Financial:

(a) BOK Financial shall pay the Executive an annual salary (the "Annual Salary") in an amount not less than Executive's Annual Salary in effect as of the Agreement Date during the Term (as hereafter defined). The Annual Salary shall be payable in installments in arrears, less usual and customary payroll deductions for FICA, federal and state withholding, and the like, at the times and in the manner in effect in accordance with the usual and customary payroll policies generally in effect from time to time at BOK Financial.

(b) The Annual Salary shall not be decreased at any time during the Term of this Agreement. The Annual Salary may be increased annually in accordance with BOK Financial's compensation review practices in effect from time to time for senior executives.

(c) BOK Financial shall pay and provide to Executive pension, thrift, medical insurance, disability insurance plan benefits, and other fringe benefits, on the same terms and conditions generally in effect for senior executive employees of the BOK Financial and its affiliates (the "Additional Benefits").

(d) BOK Financial may, from time to time in BOK Financial's sole discretion consistent with the practices generally in effect for senior executive employees of the BOK Financial and its affiliates, pay or provide, or agree to pay or provide Executive a bonus, stock option, restricted stock, other incentive or performance based compensation.

(i) BOKF Financial shall provide annual incentive and long term incentive awards to Executive in accordance with BOK Financial's Executive Incentive Compensation Plan as adopted by the BOK Financial's Board of Directors from time to time and BOK Financial's existing True-Up Plan.

(ii) All such bonus, stock option, restricted stock, or other incentive or performance based compensation, regardless of its nature (hereinafter called "Performance Compensation") shall not constitute Annual Salary.

(e) BOK Financial shall reimburse Executive for reasonable and necessary entertainment, travel and other expenses in accordance with BOK Financial's standard policies in general effect for senior executives of BOK Financial.

(f) Executive shall be allowed vacation, holidays, and other employee benefits not described above in accordance with BOK Financial's standard policy in general effect for BOK Financial's senior executives. Executive shall be entitled to four weeks paid vacation each year.

(g) BOK Financial shall permit Executive to participate in a deferred compensation plan on the terms and conditions established by BOK Financial for senior executives.

(h) Executive hereby agrees to accept the foregoing compensation as the sole, full and complete compensation to Executive for the performance of all duties of Executive under this Agreement and for all services rendered by Executive to BOK Financial or any affiliate of BOK Financial.

(5) Term of Employment. The term (the "Term") of Executive's employment ("Employment") pursuant to this Agreement shall commence on the Agreement Date (the "Commencement") and shall continue thereafter provided that upon ninety days prior written notice, either Party may terminate this Agreement.

(6) Termination of Employment. Notwithstanding the provisions of paragraph 5 of this Agreement, the Employment may be terminated on the following terms and conditions:

(a) Termination by BOK Financial Without Cause. In the event BOK Financial terminates Employment of Executive without cause during the Term or upon termination of this Agreement as provided in Paragraph 5:

(i) BOK Financial shall forthwith upon such termination (A) pay to Executive BOK Financial's standard severance pay for senior executives in effect at the time of termination and, in addition, an amount equal to Executive's then Annual Salary payable in one lump sum payment, (B) the Executive shall be entitled to receive any Additional Benefits accrued through, but not beyond the effective date of such termination which are payable under the terms and provisions of benefit plans then in effect in accordance with paragraph 4(c) above, (C) Executive shall be entitled to receive pay for vacation in accordance with BOK Financial's then existing policy for terminating senior executives, (D) options held by Executive under the BOKF 2003 Stock Option Plan and the BOKF 2009 Omnibus Incentive Plan shall vest shall be exercisable for a period of ninety days following such termination as provided in such plans, (E) Restricted stock held by Executive shall continue to be owned by the Executive, but shall remain subject to all restrictions applicable to the restricted stock as provided under the Executive Incentive Plan and the 2009 Omnibus Incentive Plan, and (F) Executive shall be entitled to receive those amounts due Executive pursuant to paragraph 8(b) and shall be bound by the Non-Solicitation Agreement (as hereafter defined).

(ii) If Executive is terminated for any reason other than for cause following a Change of Control (as hereafter defined), BOK Financial shall pay Executive upon such termination in one lump sum payment an amount equal to two times Executive's then Annual Salary at the time of termination in addition to an amount equal to Executive's then Annual Salary through, but not beyond the effective date of the termination. This payment shall be in lieu of any payment that would otherwise be paid pursuant to paragraph 6(a)(i)(A), but Executive shall be entitled to the benefit of the other provisions of paragraph 6(a)(i). As used herein, a Change of Control shall be deemed to have occurred if, and only if:

(A) George B. Kaiser, affiliates of George B. Kaiser, George B. Kaiser Foundation, George Kaiser Family Foundation, and/or members of the family of George B. Kaiser collectively cease to own more shares of the voting capital stock of BOK Financial than any other shareholder (or group of shareholders acting in concert to control BOK Financial to the exclusion of George B. Kaiser, affiliates of George B. Kaiser, George B. Kaiser Foundation, George Kaiser Family Foundation, and/or members of the family of George B. Kaiser); or,

(B) BOK Financial shall cease to own directly and indirectly more than fifty percent (50%) of the voting capital stock of BOKF, NA.

(b) Termination by BOK Financial for Cause. BOK Financial may terminate the Employment for cause on the following terms and conditions:

(i) BOK Financial shall be deemed to have cause to terminate Executive's Employment only in one or more of the following events:

(A) The Executive shall fail to substantially perform his obligations under this Agreement (except as a result of Executive's incapacity due to physical or mental illness) after having first received notice of such failure and thirty days within which to correct the failure;

(B) The Executive commits any act which is reasonably deemed to have been intended by Executive to injure BOK Financial or any of its affiliates;

(C) The Executive is charged, indicted or convicted of any criminal act or act involving moral turpitude which BOK Financial reasonably deems adversely affects the suitability of Executive to serve BOK Financial or any of its affiliates;

(D) The Executive commits any dishonest or fraudulent act which BOK Financial reasonably deems material to BOK Financial or any of its affiliates, including the reputation of BOK Financial or any of its affiliates; or,

(E) Any refusal by Executive to obey orders or instructions of the Chief Executive Officer of BOK Financial or BOKF, NA, unless such instructions would require Executive to commit an illegal act, could subject Executive to personal liability, would require Executive to violate the terms of this Agreement, are inconsistent with recognized ethical standards, or would otherwise be inconsistent with the duties of an officer of a bank.

(ii) BOK Financial shall be deemed to have cause to terminate Executive's Employment only when a majority of the members of the Board of Directors of BOK Financial finds that, in the good faith opinion of such majority, the Executive committed one or more of the acts set forth in clauses (A) through (E) of the preceding subparagraph, such finding to have been made after at least twenty (20) business days' notice to the Executive and an opportunity for the Executive, together with his counsel, to be heard before such majority. The determination of such majority, made as set forth above, shall be binding upon BOK Financial and the Executive.

(iii) The effective date of a termination for cause shall be the date of the action of such majority finding the termination was with cause. In the event BOK Financial terminates Executive's Employment for cause, (A) BOK Financial shall pay Executive the Executive's then Annual Salary through, but not beyond, the effective date of the termination and (B) the Executive shall receive those Additional Benefits accrued through but not beyond the effective date of such termination which are payable under the terms and provisions of benefit plans then in effect in accordance with paragraph 4(c) above, (C) BOK Financial shall pay the Executive for vacation in accordance with BOK Financial's then existing policy for senior executives, and (D)Executive shall be entitled to receive those amounts due Executive pursuant to paragraph 8(b) and Executive shall be bound by the provisions of the Non-Solicitation Agreement.

(7) Provisions Respecting Illness and Death. In the event Executive becomes disabled as defined in Section 409A(a)(2)(C) of the Internal Revenue Code, BOK Financial may terminate Executive's Employment without further or additional compensation being due the Executive from BOK Financial except Annual Salary accrued through the date of termination, Additional Benefits accrued through the date of such termination under benefit plans then in effect in accordance with paragraph 4(c) above, and vacation in accordance with BOK Financial's then existing policy for senior executives, and the provisions of paragraph 8 shall apply. Without limiting the generality of paragraph 4(c), Executive shall upon such termination receive those benefits provided in BOK Financial's long term disability policy then in effect. In the event of the death of the Executive, the Employment of the Executive shall automatically terminate as of the date of death without further or additional compensation being due the Executive, except BOK Financial shall pay to the estate of the Executive the Annual Salary in effect on the date of death and accrued through the date of termination and the Additional Benefits accrued through the date of such termination under benefit plans then in effect in accordance with paragraph 4(c) above. BOK Financial shall make the payments due Executive in one lump sum within forty-five days following the date of termination.

(8) Agreement Not to Solicit. The provisions of this paragraph are hereafter called the "Non-Solicitation Agreement".

(a) Executive agrees that, for a period of two (2) years following any termination of the Employment for cause, and for a period of one (1) year following any termination of the Employment for any reason other than cause (including expiration of the Term), Executive shall not directly or indirectly (whether as an officer, director, employee, partner, stockholder, creditor or agent, or representative of other persons or entities) contact or solicit, in any manner indirectly or directly, individuals or entities who were at any time during the original or any extended Term clients of BOK Financial or any of its affiliates for the purpose of providing banking, trust, investment, or other services provided by BOK Financial or any of its affiliates during the Term or contact or solicit employees of BOK Financial or any affiliates of BOK Financial to seek employment with any person or entity except BOK Financial and its affiliates. This Non-Solicitation Agreement shall not apply to ownership by Executive of up to ten percent (10%) of the common stock of a corporation traded on the facilities of a national securities exchange engaged in the banking business of which Executive is not a director, officer, employee, agent or representative.

(b) BOK Financial shall pay Executive, in addition to any other amounts which may be due Executive, during each year in which the Non-Solicitation Agreement is in effect, $3,000 payable in installments in arrears, less usual and customary payroll deductions for FICA, federal and state withholding, and the like, at the times and in the manner in effect in accordance with the usual and customary payroll policies generally in effect from time to time at BOK Financial. Notwithstanding the foregoing, the amounts due for the first six months of the Non-Competition Agreement shall be paid in a lump sum as soon administratively possible following such six month period if Executive is determined to be a "specified employee as defined in Section 409A(a)(2)(B)(i).

(c) Executive agrees that the Non-Solicitation Agreement and all the restrictions set forth in this Non-Solicitation Agreement are fair and reasonable.

(d) Executive agrees that (i) any remedy at law for any breach of this NonAgreement would be inadequate, (ii) in the event of any breach of this NonSolicitation Agreement, the terms of this Non-Solicitation Agreement shall constitute incontrovertible evidence of irreparable injury to BOK Financial, and (iii) BOK Financial shall be entitled to both immediate and permanent injunctive relief without the necessity of establishing or posting any bond therefor to preclude any such breach (in addition to any remedies of law to which BOK Financial may be entitled).

(9) Confidential Information. All references in this Section 9 to BOK Financial shall include BOK Financial's affiliates.

(a) Executive acknowledges that, during the Term and prior to the Term, Executive has had and will have access to Confidential Information (as hereinafter defined), all of which shall be made accessible to Executive only in strict confidence; that unauthorized disclosure of Confidential Information will damage BOK Financial's business; that Confidential Information would be susceptible to immediate competitive application by a competitor of BOK Financial; that BOK Financial's business is substantially dependent on access to and the continuing secrecy of Confidential Information; that Confidential Information is unique to BOK Financial and known only to Executive and certain key employees and contractors of BOK Financial; that BOK Financial shall at all times retain ownership and control of all Confidential Information; and that the restrictions contained in this Section 9 are reasonable and necessary for the protection of BOK Financial 's business.

(b) All documents or other records containing or reflecting Confidential Information ("Confidential Documents") prepared by or to which Executive has access are and shall remain the property of BOK Financial. Executive shall not copy or use any Confidential Document for any purpose not relating directly to Executive's Employment on BOK Financial's behalf, or use or disclose any Confidential Document to any party other than BOK Financial or its employees and shall not sell Confidential Documents to any party. Upon the termination of this Agreement or upon BOK Financial's request before or after such termination, Executive shall immediately deliver to BOK Financial or its designee (and shall not keep in Executive's possession or deliver to anyone else) all Confidential Documents and all other property belonging to BOK Financial. This paragraph shall not bar Employee from complying with any subpoena or court order, provided that Executive shall at the earliest practicable date provide a copy of the subpoena or court order to BOK Financial's Chief Executive Officer.

(c) During the Term and for a period of four (4) years thereafter, regardless of the reason for termination of Executive's employment, (i) Executive shall not disclose any Confidential Information to any third party and (ii) Executive shall use Confidential Information only in connection with and in furtherance of Executive's Employment by BOK Financial and on behalf of its affiliates.

(d) As used herein, Confidential Information means all nonpublic information concerning or arising from BOK Financial's business, including particularly but not by way of limitation trade secrets used, developed or acquired by BOK Financial in connection with its business; information concerning the manner and details of BOK Financial's operations, organization and management; financial information and/or documents and nonpublic policies, procedures and other printed or written material generated or used in connection with BOK Financial's business; BOK Financial's business plans and strategies; electronic files or documents prepared by BOK Financial or Executive containing the identities of BOK Financial's customers (including their addresses and telephone numbers), the nature and amounts of their assets and liabilities, and the specific individual customer needs being addressed by BOK Financial; the nature of fees and charges assessed by BOK Financial; nonpublic forms, contracts and other documents used in BOK Financial's business; the nature and content of any proprietary computer software used in BOK Financial's business, whether owned by BOK Financial or used by BOK Financial under license from a third party; and all other nonpublic information concerning BOK Financial's concepts, prospects, customers, employees, contractors, earnings, products, services, equipment, systems, and/or prospective and executed contracts and other business arrangements. Confidential Information shall not include (i) general skills and general knowledge of the industry obtained by reason of Executive's association with BOK Financial; (ii) information that is or becomes public knowledge through no fault or action of Executive; (iii) any information received from an independent third party who is under no duty of confidentiality with respect to the information; or (iv) any information that, on advice of counsel, Executive is required to disclose by law or regulation.

(10) Surrender of Records and Property. Upon termination of Executive's employment with BOK Financial for whatever reason, in addition to Executive's obligations pursuant to Paragraph 9(b), Executive shall deliver promptly to BOK Financial all records, manuals, books, blank forms, documents, letters, memoranda, notes, notebooks, reports, data, tables, calculations or copies thereof that relate in any way to the business, products, practices or techniques of BOK Financial or any of its affiliates, and all other information of BOK Financial or any of its affiliates, including, but not limited to, all documents that in whole or in part contain any information which is defined in this Agreement as Confidential Information and which is in the possession or under the control of Executive.

(11) Compliance with Section 409A. This Agreement is subject to the following provisions in order to ensure compliance with Section 409A of the Internal Revenue Code of 1986, as amended (Section 409A").

(a) If any payment, compensation or other benefit provided to the Executive in connection with his employment termination is determined, in whole or in part, to constitute "nonqualified deferred compensation" within the meaning of Section 409A and the Executive is a specified employee as defined in Section 409A(2)(B)(i), no part of such payments shall be paid before the day that is six (6) months plus one (l) day after the date of termination.

(b) The Parties acknowledge and agree that Section 409A and its application, if any, to the terms of this Agreement may be subject to change as additional guidance and regulations become available. Anything to the contrary herein notwithstanding, all benefits or payments provided by the Company to the Executive that would be deemed to constitute "nonqualified deferred compensation" within the meaning of Section 409A are intended to comply with Section 409A. If, however, any such benefit or payment is deemed to not comply with Section 409A, the Company and the Executive agree to renegotiate in good faith any such benefit or payment (including, without limitation, as to the timing of any severance payments payable hereof) so that either (i) Section 409A will not apply or (ii) compliance with Section 409A will be achieved.

(c) All payments required to be made by Bank hereunder to the Executive may be adjusted to the withholding of such amounts, if any, relating to tax and other payroll deductions as the Bank may reasonably determine should be withheld pursuant to any applicable law or regulation.

(12) Miscellaneous Provisions. The following miscellaneous provisions shall apply to this Agreement:

(a) All notices or advices required or permitted to be given by or pursuant to this Agreement, shall be given in writing. All such notices and advices shall be (i) delivered personally or (ii) delivered for overnight delivery by a nationally recognized overnight courier service. Such notices and advices shall be deemed to have been given (i) the first business day following the date of delivery if delivered personally or (ii) on the date of receipt if delivered for overnight delivery by a nationally recognized overnight courier service. All such notices and advices and all other communications related to this Agreement shall be given as follows:

If to BOK Financial:

BOK Financial Corporation
Attn: Steven G. Bradshaw
Bank of Oklahoma Tower
P.O. Box 2300
Tulsa, Oklahoma 74192
Telephone No.: (918) 588-6000
sbradshaw@bokf.com and

Chief Human Resources Officer
Attn: Kelley Weil
Bank of Oklahoma Tower
P.O. Box 2300
Tulsa, Oklahoma 74192
Telephone No.: (918) 588-6000

With a Copy to:

Frederic Dorwart
Old City Hall
124 East Fourth Street
Tulsa, OK 74103-5010
Telephone No.: (918) 583-9945
Facsimile No.: (918) 583-8251
FDorwart@FDLaw.com

If to Executive:

Stacy C. Kymes
7706 S. Jamestown Ave.
Tulsa, Oklahoma 74136
Telephone No.: (918) 588-6542
skymes@bokf.com

or to such other address as the Party may have furnished to the other Parties in accordance herewith, except that notice of change of addresses shall be effective only upon receipt.

(b) This Agreement is made and executed in Tulsa, Oklahoma and all actions or proceedings with respect to, arising directly or indirectly in connection with, out of, related to or from this Agreement, shall be litigated in courts having situs in Tulsa, Oklahoma.

(c) This Agreement shall be subject to, and interpreted by and in accordance with, the laws of the State of Oklahoma without regard to its conflict of law provisions.

(d) This Agreement is the entire Agreement of the Parties respecting the subject matter hereof. There are no other agreements, representations or warranties, whether oral or written, respecting the subject matter hereof, except as stated in this Agreement.

(e) This Agreement, and all the provisions of this Agreement, shall be deemed drafted by all of the Parties hereto.

(f) This Agreement shall not be interpreted strictly for or against any Party, but solely in accordance with the fair meaning of the provisions hereof to effectuate the purposes and interest of this Agreement.

(g) Each Party hereto has entered into this Agreement based solely upon the agreements, representations and warranties expressly set forth herein and upon her or his own knowledge and investigation. Neither Party has relied upon any representation or warranty of any other Party hereto except any such representations or warranties as are expressly set forth herein.

(h) Each of the persons signing below on behalf of a Party hereto represents and warrants that he or she has full requisite power and authority to execute and deliver this Agreement on behalf of the Parties for whom he or she is signing and to bind such Party to the terms and conditions of this Agreement.

(i) This Agreement may be executed in counterparts, each of which shall be deemed an original. This Agreement shall become effective only when all of the Parties hereto shall have executed the original or counterpart hereof. This Agreement may be executed and delivered by a facsimile transmission of a counterpart signature page hereof.

(j) In any action brought by a Party hereto to enforce the obligations of any other Party hereto, the prevailing Party shall be entitled to collect from the opposing Party to such action such Party's reasonable litigation costs and attorneys fees and expenses (including court costs, reasonable fees of accountants and experts, and other expenses incidental to the litigation).

(k) This Agreement shall be binding upon and shall inure to the benefit of the Parties and their respective heirs, personal representatives, successors and assigns.

(l) This is not a third party beneficiary contract, except BOK Financial (including each affiliate thereof) shall be a third party beneficiary of this Agreement.

(m) This Agreement may be amended or modified only in a writing, as agreed to by the Parties hereto, which specifically references this Agreement.

(n) A Party to this Agreement may decide or fail to require full or timely performance of any obligation arising under this Agreement. The decision or failure of a Party hereto to require full or timely performance of any obligation arising under this Agreement (whether on a single occasion or on multiple occasions) shall not be deemed a waiver of any such obligation. No such decisions or failures shall give rise to any claim of estoppel, laches, course of dealing, amendment of this Agreement by course of dealing, or other defense of any nature to any obligation arising hereunder.

(o) In the event any provision of this Agreement, or the application of such provision to any person or set of circumstances, shall be determined to be invalid, unlawful, or unenforceable to any extent for any reason, the remainder of this Agreement, and the application of such provision to persons or circumstances other than those as to which it is determined to be invalid, unlawful, or unenforceable, shall not be affected and shall continue to be enforceable to the fullest extent permitted by law.

(p) None of the compensation or other payments to Executive provided for in, or that may be made pursuant to, this Agreement are intended by the Parties to be deferred compensation within the meaning of Section 409A. If, however, the Executive is a " specified employee" as defined in Section 409A(a)(2)(B)(i), then the other provisions of this Agreement notwithstanding, no compensation that is "deferred compensation" within the meaning of Section 409A shall be paid to Executive sooner than six months and one day following the date of Executive s separation from service from the Company, as such date is determined in accordance with Section 409A.

Dated as of the Agreement Date.

BOK Financial Corporation

/s/ Steven G. Bradshaw
Name: Steven G. Bradshaw
Title: President and Chief Executive Officer

Executive

/s/ Stacy C. Kymes
Individually

Exhibit 21

BOK FINANCIAL CORPORATION

SUBSIDIARIES OF THE REGISTRANT

Banking Subsidiaries

BOKF, National Association (1)

Other subsidiaries of BOK Financial Corporation

BOK Capital Services Corporation

BOKF Capital Corporation

BOKF-CC (Collision Works), LLC

BOKFCC (FIXED INCOME I), LLC

BOKFCC (Fixed Income II), LLC

BOKF-CC (FSE), LLC

BOKF-CC (HD Repair), LLC

BOKF-CC (IPS), LLC

BOKF-CC (O2 Concepts), LLC

BOKF-CC (QRC), LLC

BOKF-CC (SSP), LLC

BOKF-CC (Switchgrass), LLC

BOKF-CC (VFP), LLC

BOKFCC Merchant Banking Fund I, LLC

BOKFCC MB II, LLC

BOKFCC MB III, LLC

BOKF Energy Fund Investment I, LLC

BOKF Equity, LLC

BOKF Private Equity Limited Partnership II

BOK Financial Insurance, Inc. (5)

BOK Financial Private Wealth, Inc. (5)

BOK Financial Securities, Inc.

Cavanal Hill Distributors, Inc.

Industrial Pipe & Supply , LLC

RMA Holdings, Inc. (5)

Switchgrass I, LLC

Switchgrass II, LLC

Switchgrass III, LLC

Switchgrass IV, LLC

Switchgrass V, LLC

Switchgrass VI, LLC

Switchgrass Holdings, LLC

Switchgrass Management, LLC

Switchgrass Properties, LLC

Switchgrass Properties II, LLC

Subsidiaries of BOKF, National Association (1)

Affiliated BancServices, Inc.

Affiliated Financial Holding Co.

Affiliated Financial Insurance Agency, Inc.

AWREI, Inc. (5)

BancOklahoma Agri-Service Corporation

BOK Delaware, Inc. (3)

BOK Financial Asset Management, Inc. (2)

BOK Financial Equipment Finance, Inc.

BOK Financial Public Finance, Inc. (5)

BOK Funding Trust (3)

BOKF Community Development Fund, LLC

BOKF Community Development Fund II

BOKF Community Development Corporation

BOKF Investment Fund II, LLC

BOKF Petro Holding, LLC

BOKF Petro Holdings II, LLC

BOKF Petro Holdings III, LLC

BOKF Petro Holdings IV, LLC

BOKF Real Estate Holdings, LLC

BOKF Special Assets I, LLC

BOSC Agency, Inc. (Oklahoma)

BOSC Agency, Inc. (New Mexico) (4)

BOSC Agency, Inc. (Texas) (2)

Cavanal Hill Investment Management, Inc.

Cottonwood Valley Ventures, Inc.

CVV Management, Inc.

CVV Partnership, an Oklahoma General Partnership

Remora Holdings, LLC (3)

Western Real Estate Investors, Inc. (5)

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

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. 333-62578) 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-4, No. 333-226211) pertaining to the Registration Statement for the registration of BOK Financial Corporation's common stock.

of our reports dated February 23, 2022, 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 (Form 10-K) of BOK Financial Corporation for the year ended December 31, 2021.

/s/ Ernst & Young LLP

Tulsa, Oklahoma

February 23, 2022

Exhibit 31.1

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

I, Stacy C. Kymes, 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 23, 2022

/s/ Stacy C. Kymes
Stacy C. Kymes
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. 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 23, 2022

/s/ Steven E. Nell
Steven E. Nell
Executive Vice President
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 period ending December 31, 2021 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), we, Stacy C. Kymes 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 23, 2022

/s/ Stacy C. Kymes
Stacy C. Kymes
President
Chief Executive Officer
BOK Financial Corporation

/s/ Steven E. Nell
Steven E. Nell
Executive Vice President
Chief Financial Officer
BOK Financial Corporation