CULLEN/FROST BANKERS, INC.
Form 10-K
February 06, 2019
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UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10-K
ý Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934
For the fiscal year ended: December 31, 2018
Or
¨ Transition Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934
For the transition period from to
Commission file number: 001-13221
CULLEN/FROST BANKERS, INC.
(Exact name of registrant as specified in its charter)

Texas	74-1751768
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
100 W. Houston Street, San Antonio, Texas	78205
(Address of principal executive offices)	(Zip code)

(210) 220-4011
(Registrant's telephone number, including area code)
Securities registered pursuant to Section 12(b) of the Act:

Common Stock, $.01 Par Value	The New York Stock Exchange, Inc.
5.375% Non-Cumulative Perpetual Preferred Stock, Series A	The New York Stock Exchange, Inc.
(Title of each class)	(Name of each exchange on which registered)

Securities registered pursuant to Section 12(g) of the Act: None
Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ý 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 ý
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 ý No ¨
Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ý No ¨
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ¨
Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company,"in Rule 12b-2 of the Exchange Act.

Large accelerated filer	ý	Accelerated filer	¨
Non-accelerated filer	¨	Smaller reporting company	¨
		Emerging growth company	¨

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

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

As of June 30, 2018, the last business day of the registrant's most recently completed second fiscal quarter, the aggregate market value of the shares of common stock held by non-affiliates, based upon the closing price per share of the registrant's common stock as reported on The New York Stock Exchange, Inc., was approximately $6.7 billion.

As of January 29, 2019, there were 62,992,082 shares of the registrant's common stock, $.01 par value, outstanding.

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DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Proxy Statement for the 2019 Annual Meeting of Shareholders of Cullen/Frost Bankers, Inc. to be held on April 24, 2019 are incorporated by reference in this Form 10-K in response to Part III, Items 10, 11, 12, 13 and 14.

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PART I

ITEM 1. BUSINESS

The disclosures set forth in this item are qualified by Item 1A. Risk Factors and the section captioned "Forward-Looking Statements and Factors that Could Affect Future Results" in Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations of this report and other cautionary statements set forth elsewhere in this report.

The Corporation

Cullen/Frost Bankers, Inc., a Texas business corporation incorporated in 1977, is a financial holding company and a bank holding company headquartered in San Antonio, Texas that provides, through its subsidiaries, a broad array of products and services throughout numerous Texas markets. The terms "Cullen/Frost," "the Corporation," "we," "us" and "our" mean Cullen/Frost Bankers, Inc. and its subsidiaries, when appropriate. We offer commercial and consumer banking services, as well as trust and investment management, insurance, brokerage, mutual funds, leasing, treasury management, capital markets advisory and item processing services. At December 31, 2018, Cullen/Frost had consolidated total assets of $32.3 billion and was one of the largest independent bank holding companies headquartered in the State of Texas.

Our philosophy is to grow and prosper, building long-term relationships based on top quality service, high ethical standards, and safe, sound assets. We operate as a locally-oriented, community-based financial services organization, augmented by experienced, centralized support in select critical areas. Our local market orientation is reflected in our regional management and regional advisory boards, which are comprised of local business persons, professionals and other community representatives that assist our regional management in responding to local banking needs. Despite this local market, community-based focus, we offer many of the products available at much larger money-center financial institutions.

We serve a wide variety of industries including, among others, energy, manufacturing, services, construction, retail, telecommunications, healthcare, military and transportation. Our customer base is similarly diverse. While our loan portfolio has a significant concentration of energy-related loans totaling approximately 11.4% of total loans at December 31, 2018, we are not dependent upon any single industry or customer.

Our operating objectives include expansion, diversification within our markets, growth of our fee-based income, and growth internally and through acquisitions of financial institutions, branches and financial services businesses. We generally seek merger or acquisition partners that are culturally similar and have experienced management and possess either significant market presence or have potential for improved profitability through financial management, economies of scale and expanded services. We regularly evaluate merger and acquisition opportunities and conduct due diligence activities related to possible transactions with other financial institutions and financial services companies. As a result, merger or acquisition discussions and, in some cases, negotiations may take place and future mergers or acquisitions involving cash, debt or equity securities may occur. Acquisitions typically involve the payment of a premium over book and market values, and, therefore, some dilution of our tangible book value and net income per common share may occur in connection with any future transaction. Our ability to engage in certain merger or acquisition transactions, whether or not any regulatory approval is required, will be dependent upon our bank regulators' views at the time as to the capital levels, quality of management and our overall condition and their assessment of a variety of other factors. Certain merger or acquisition transactions, including those involving the acquisition of a depository institution or the assumption of the deposits of any depository institution, require formal approval from various bank regulatory authorities, which will be subject to a variety of factors and considerations.

Although Cullen/Frost is a corporate entity, legally separate and distinct from its affiliates, bank holding companies such as Cullen/Frost are required to act as a source of financial strength for their subsidiary banks. The principal source of Cullen/Frost's income is dividends from its subsidiaries. There are certain regulatory restrictions on the extent to which these subsidiaries can pay dividends or otherwise supply funds to Cullen/Frost. See the section captioned "Supervision and Regulation" elsewhere in this item for further discussion of these matters.

Cullen/Frost's executive offices are located at 100 W. Houston Street, San Antonio, Texas 78205, and its telephone number is (210) 220-4011.

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Subsidiaries of Cullen/Frost

Frost Bank

Frost Bank, the principal operating subsidiary and sole banking subsidiary of Cullen/Frost, is a Texas-chartered bank primarily engaged in the business of commercial and consumer banking through approximately 131 financial centers across Texas in the Austin, Corpus Christi, Dallas, Fort Worth, Houston, Permian Basin, Rio Grande Valley and San Antonio regions. Frost Bank also operates over 1,200 automated-teller machines ("ATMs") throughout the State of Texas, approximately half of which are operated in connection with a branding arrangement to be the exclusive cash-machine provider for a convenience store chain in Texas. Frost Bank was originally chartered as a national banking association in 1899, but its origin can be traced to a mercantile partnership organized in 1868. At December 31, 2018, Frost Bank had consolidated total assets of $32.4 billion and total deposits of $27.2 billion and was one of the largest commercial banks headquartered in the State of Texas.

Significant services offered by Frost Bank include:

- Commercial Banking. Frost Bank provides commercial banking services to corporations and other business clients. Loans are made for a wide variety of general corporate purposes, including financing for industrial and commercial properties and to a lesser extent, financing for interim construction related to industrial and commercial properties, financing for equipment, inventories and accounts receivable, and acquisition financing. We also originate commercial leases and offer treasury management services.
- Consumer Services. Frost Bank provides a full range of consumer banking services, including checking accounts, savings programs, ATMs, overdraft facilities, installment and real estate loans, home equity loans and lines of credit, drive-in and night deposit services, safe deposit facilities and brokerage services.
- International Banking. Frost Bank provides international banking services to customers residing in or dealing with businesses located in Mexico. These services consist of accepting deposits (generally only in U.S. dollars), making loans (generally only in U.S. dollars), issuing letters of credit, handling foreign collections, transmitting funds, and to a limited extent, dealing in foreign exchange.
- Correspondent Banking. Frost Bank acts as correspondent for approximately 194 financial institutions, which are primarily banks in Texas. These banks maintain deposits with Frost Bank, which offers them a full range of services including check clearing, transfer of funds, fixed income security services, and securities custody and clearance services.
- Trust Services. Frost Bank provides a wide range of trust, investment, agency and custodial services for individual and corporate clients. These services include the administration of estates and personal trusts, as well as the management of investment accounts for individuals, employee benefit plans and charitable foundations. At December 31, 2018, the estimated fair value of trust assets was $33.3 billion, including managed assets of $14.7 billion and custody assets of $18.7 billion.
- Capital Markets - Fixed-Income Services. Frost Bank's Capital Markets Division supports the transaction needs of fixed-income institutional investors. Services include sales and trading, new issue underwriting, money market trading, advisory services and securities safekeeping and clearance.
- Global Trade Services. Frost Bank's Global Trade Services Division supports international business activities including foreign exchange, international letters of credit and export-import financing, among other things.

Frost Insurance Agency, Inc.

Frost Insurance Agency, Inc. is a wholly-owned subsidiary of Frost Bank that provides insurance brokerage services to individuals and businesses covering corporate and personal property and casualty insurance products, as well as group health and life insurance products.

Frost Brokerage Services, Inc.

Frost Brokerage Services, Inc. ("FBS") is a wholly-owned subsidiary of Frost Bank that provides brokerage services and performs other transactions or operations related to the sale and purchase of securities of all types. FBS is registered as a fully disclosed introducing broker-dealer under the Securities Exchange Act of 1934 and, as such, does not hold any customer accounts.

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Frost Investment Advisors, LLC

Frost Investment Advisors, LLC is a registered investment advisor and a wholly-owned subsidiary of Frost Bank that provides investment management services to Frost-managed mutual funds, institutions and individuals.

Frost Investment Services, LLC

Frost Investment Services, LLC is a registered investment advisor and a wholly-owned subsidiary of Frost Bank that provides investment management services to individuals.

Tri–Frost Corporation

Tri-Frost Corporation is a wholly-owned subsidiary of Frost Bank that primarily holds securities for investment purposes and the receipt of cash flows related to principal and interest on the securities until such time that the securities mature.

Main Plaza Corporation

Main Plaza Corporation is a wholly-owned subsidiary of Cullen/Frost that occasionally makes loans to qualified borrowers. Loans are funded with current cash or borrowings against internal credit lines. Main Plaza also holds severed mineral interests on certain oil producing properties. We receive royalties on these interests based upon production.

Cullen/Frost Capital Trust II and WNB Capital Trust I

Cullen/Frost Capital Trust II (“Trust II”) is a Delaware statutory business trust formed in 2004 for the purpose of issuing $120.0 million in trust preferred securities and lending the proceeds to Cullen/Frost. Cullen/Frost guarantees, on a limited basis, payments of distributions on the trust preferred securities and payments on redemption of the trust preferred securities.

WNB Capital Trust I (“WNB Trust”) is a Delaware statutory business trust formed in 2004 for the purpose of issuing $13.0 million in trust preferred securities and lending the proceeds to WNB Bancshares (“WNB”). Cullen/Frost, as WNB's successor, guarantees, on a limited basis, payments of distributions on the trust preferred securities and payments on redemption of the trust preferred securities.

Trust II and WNB Trust are variable interest entities for which we are not the primary beneficiary. As such, the accounts of Trust II and WNB Trust are not included in our consolidated financial statements. See our accounting policy related to consolidation in Note 1 - Summary of Significant Accounting Policies in the notes to consolidated financial statements included in Item 8. Financial Statements and Supplementary Data elsewhere in this report.

Although the accounts of Trust II and WNB Trust are not included in our consolidated financial statements, the $120.0 million in trust preferred securities issued by Trust II and the $13.0 million in trust preferred securities issued by WNB Trust were included in the regulatory capital of Cullen/Frost during the reported periods. See the section captioned “Supervision and Regulation - Capital Requirements” for a discussion of the regulatory capital treatment of our trust preferred securities.

Other Subsidiaries

Cullen/Frost has various other subsidiaries that are not significant to the consolidated entity.

Operating Segments

Our operations are managed along two reportable operating segments consisting of Banking and Frost Wealth Advisors. See the sections captioned “Results of Segment Operations” in Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations and Note 18 - Operating Segments in the notes to consolidated financial statements included in Item 8. Financial Statements and Supplementary Data elsewhere in this report.

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Competition

There is significant competition among commercial banks in our market areas. In addition, we also compete with other providers of financial services, such as savings and loan associations, credit unions, consumer finance companies, securities firms, insurance companies, insurance agencies, commercial finance and leasing companies, full service brokerage firms and discount brokerage firms. Some of our competitors have greater resources and, as such, may have higher lending limits and may offer other services that are not provided by us. We generally compete on the basis of customer service and responsiveness to customer needs, available loan and deposit products, the rates of interest charged on loans, the rates of interest paid for funds, and the availability and pricing of trust, brokerage and insurance services.

Supervision and Regulation

Cullen/Frost, Frost Bank and most of its non-banking subsidiaries are subject to extensive regulation under federal and state laws. The regulatory framework is intended primarily for the protection of depositors, federal deposit insurance funds and the banking system as a whole and not for the protection of shareholders and creditors.

Significant elements of the laws and regulations applicable to Cullen/Frost and its subsidiaries are described below. The description is qualified in its entirety by reference to the full text of the statutes, regulations and policies that are described. Also, such statutes, regulations and policies are continually under review by Congress and state legislatures and federal and state regulatory agencies. A change in statutes, regulations or regulatory policies applicable to Cullen/Frost and its subsidiaries could have a material effect on our business, financial condition or our results of operations.

Regulatory Agencies

Cullen/Frost is a legal entity separate and distinct from Frost Bank and its other subsidiaries. As a financial holding company and a bank holding company, Cullen/Frost is regulated under the Bank Holding Company Act of 1956, as amended (“BHC Act”), and it and its subsidiaries are subject to inspection, examination and supervision by the Federal Reserve Board. The BHC Act provides generally for “umbrella” regulation of financial holding companies such as Cullen/Frost by the Federal Reserve Board, and for functional regulation of banking activities by bank regulators, securities activities by securities regulators, and insurance activities by insurance regulators. Cullen/Frost is also under the jurisdiction of the Securities and Exchange Commission (“SEC”) and is subject to the disclosure and regulatory requirements of the Securities Act of 1933, as amended, and the Securities Exchange Act of 1934, as amended, as administered by the SEC. Cullen/Frost’s common stock is listed on the New York Stock Exchange (“NYSE”) under the trading symbol “CFR” and our 5.375% Non-Cumulative Perpetual Preferred Stock, Series A, is listed on the NYSE under the trading symbol “CFRpA.” Accordingly, Cullen/Frost is also subject to the rules of the NYSE for listed companies.

Frost Bank is a Texas state chartered bank and a member of the Federal Reserve System. Accordingly, the Texas Department of Banking and the Federal Reserve Board are the primary regulators of Frost Bank. Deposits at Frost Bank are insured by the Federal Deposit Insurance Corporation (“FDIC”) up to applicable limits.

All member banks of the Federal Reserve System, including Frost Bank, are required to hold stock in the Federal Reserve System's Reserve Banks in an amount equal to six percent of their capital stock and surplus (half paid to acquire the stock with the remainder held as a cash reserve). Member banks do not have any control over the Federal Reserve System as a result of owning the stock and the stock cannot be sold or traded. The annual dividend rate for member banks with total assets in excess of $10 billion, including Frost Bank, is tied to 10-year U.S. Treasuries with the maximum dividend rate capped at six percent. The total amount of stock dividends that Frost Bank received from the Federal Reserve totaled $1.0 million in 2018, $807 thousand in 2017 and $735 thousand in 2016.

Most of our non-bank subsidiaries also are subject to regulation by the Federal Reserve Board and other federal and state agencies. Frost Brokerage Services, Inc. is regulated by the SEC, the Financial Industry Regulatory Authority (“FINRA”) and state securities regulators. Frost Investment Advisors, LLC and Frost Investment Services, LLC are subject to the disclosure and regulatory requirements of the Investment Advisors Act of 1940, as administered by the SEC. Our insurance subsidiary is subject to regulation by applicable state insurance regulatory agencies. Other non-bank subsidiaries are subject to both federal and state laws and regulations. Frost Bank and its affiliates are also subject to supervision, regulation, examination and enforcement by the Consumer Financial Protection Bureau

("CFPB") with respect to consumer protection laws and regulations.

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Bank Holding Company Activities

In general, the BHC Act limits the business of bank holding companies to banking, managing or controlling banks and other activities that the Federal Reserve Board has determined to be so closely related to banking as to be a proper incident thereto. In addition, bank holding companies that qualify and elect to be financial holding companies may engage in any activity, or acquire and retain the shares of a company engaged in any activity, that is either (i) financial in nature or incidental to such financial activity (as determined by the Federal Reserve Board in consultation with the Secretary of the Treasury) or (ii) complementary to a financial activity and does not pose a substantial risk to the safety and soundness of depository institutions or the financial system generally (as solely determined by the Federal Reserve Board), without prior approval of the Federal Reserve Board. Activities that are financial in nature include securities underwriting and dealing, insurance underwriting and making merchant banking investments.

To maintain financial holding company status, a financial holding company and all of its depository institution subsidiaries must be “well capitalized” and “well managed.” A depository institution subsidiary is considered to be “well capitalized” if it satisfies the requirements for this status discussed in the section captioned “Capital Adequacy and Prompt Corrective Action,” elsewhere in this item. A depository institution subsidiary is considered “well managed” if it received a composite rating and management rating of at least “satisfactory” in its most recent examination. A financial holding company’s status will also depend upon it maintaining its status as “well capitalized” and “well managed’ under applicable Federal Reserve Board regulations. If a financial holding company ceases to meet these capital and management requirements, the Federal Reserve Board’s regulations provide that the financial holding company must enter into an agreement with the Federal Reserve Board to comply with all applicable capital and management requirements. Until the financial holding company returns to compliance, the Federal Reserve Board may impose limitations or conditions on the conduct of its activities, and the company may not commence any of the broader financial activities permissible for financial holding companies or acquire a company engaged in such financial activities without prior approval of the Federal Reserve Board. If the company does not return to compliance within 180 days, the Federal Reserve Board may require divestiture of the holding company’s depository institutions. Bank holding companies and banks must also be both well capitalized and well managed in order to acquire banks located outside their home state.

In order for a financial holding company to commence any new activity permitted by the BHC Act or to acquire a company engaged in any new activity permitted by the BHC Act, each insured depository institution subsidiary of the financial holding company must have received a rating of at least “satisfactory” in its most recent examination under the Community Reinvestment Act. See the section captioned “Community Reinvestment Act” elsewhere in this item.

The Federal Reserve Board has the power to order any bank holding company or its subsidiaries to terminate any activity or to terminate its ownership or control of any subsidiary when the Federal Reserve Board has reasonable grounds to believe that continuation of such activity or such ownership or control constitutes a serious risk to the financial soundness, safety or stability of any bank subsidiary of the bank holding company.

The BHC Act, the Bank Merger Act, the Texas Banking Code and other federal and state statutes regulate acquisitions of commercial banks and their parent holding companies. The BHC Act requires the prior approval of the Federal Reserve Board for the direct or indirect acquisition by a bank holding company of more than 5.0% of the voting shares of a commercial bank or its parent holding company. Under the Bank Merger Act, the prior approval of the Federal Reserve Board or other appropriate bank regulatory authority is required for a member bank to merge with another bank or purchase substantially all of the assets or assume any deposits of another bank. In reviewing applications seeking approval of merger and acquisition transactions, the bank regulatory authorities will consider, among other things, the competitive effect and public benefits of the transactions, the applicant's managerial and financial resources, the capital position of the combined organization, the risks to the stability of the U.S. banking or financial system, the applicant’s performance record under the Community Reinvestment Act (see the section captioned “Community Reinvestment Act” elsewhere in this item) and its compliance with fair housing and other consumer protection laws and the effectiveness of the subject organizations in combating money laundering activities.

Dividends and Stock Repurchases

The principal source of Cullen/Frost’s liquidity is dividends from Frost Bank. The prior approval of the Federal Reserve Board is required if the total of all dividends declared by a state-chartered member bank in any calendar year would exceed the sum of the bank’s net profits for that year and its retained net profits for the preceding two calendar years, less any required transfers to surplus or to fund the retirement of preferred stock. Federal law also prohibits a state-chartered, member bank from paying dividends that would be greater than the bank’s undivided profits. Frost

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Bank is also subject to limitations under Texas state law regarding the level of dividends that may be paid. Under the foregoing dividend restrictions, and while maintaining its "well capitalized" status, Frost Bank could pay aggregate dividends of approximately $631.3 million to Cullen/Frost, without obtaining affirmative governmental approvals, at December 31, 2018. This amount is not necessarily indicative of amounts that may be paid or available to be paid in future periods.

In addition, Cullen/Frost and Frost Bank are subject to other regulatory policies and requirements relating to the payment of dividends, including requirements to maintain adequate capital above regulatory minimums. The appropriate federal regulatory authority is authorized to determine under certain circumstances relating to the financial condition of a bank holding company or a bank that the payment of dividends would be an unsafe or unsound practice and to prohibit payment thereof. The appropriate federal regulatory authorities have stated that paying dividends that deplete a bank's capital base to an inadequate level would be an unsafe and unsound banking practice and that banking organizations should generally pay dividends only out of current operating earnings. In addition, in the current financial and economic environment, the Federal Reserve Board has indicated that bank holding companies should carefully review their dividend policy and has discouraged payment ratios that are at maximum allowable levels unless both asset quality and capital are very strong.

Under the capital adequacy rules applicable to Cullen/Frost and Frost Bank, any repurchase or redemption of a regulatory capital instrument is subject to approval by the Federal Reserve Board. Accordingly, Cullen/Frost may not repurchase its common stock without the prior approval of the Federal Reserve Board.

Transactions with Affiliates

Transactions between Frost Bank and its subsidiaries, on the one hand, and Cullen/Frost or any other subsidiary, on the other hand, are regulated under federal banking law. The Federal Reserve Act imposes quantitative and qualitative requirements and collateral requirements on covered transactions by Frost Bank with, or for the benefit of, its affiliates, and generally requires those transactions to be on terms at least as favorable to Frost Bank as if the transaction were conducted with an unaffiliated third party. Covered transactions are defined by statute to include a loan or extension of credit, as well as a purchase of securities issued by an affiliate, a purchase of assets (unless otherwise exempted by the Federal Reserve Board) from the affiliate, certain derivative transactions that create a credit exposure to an affiliate, the acceptance of securities issued by the affiliate as collateral for a loan, and the issuance of a guarantee, acceptance or letter of credit on behalf of an affiliate. In general, any such transaction by Frost Bank or its subsidiaries must be limited to certain thresholds on an individual and aggregate basis and, for credit transactions with any affiliate, must be secured by designated amounts of specified collateral.

Federal law also limits a bank's authority to extend credit to its directors, executive officers and 10% stockholders, as well as to entities controlled by such persons. Among other things, extensions of credit to insiders are required to be made on terms that are substantially the same as, and follow credit underwriting procedures that are not less stringent than, those prevailing for comparable transactions with unaffiliated persons. Also, the terms of such extensions of credit may not involve more than the normal risk of non-repayment or present other unfavorable features and may not exceed certain limitations on the amount of credit extended to such persons individually and in the aggregate.

Source of Strength Doctrine

Federal Reserve Board policy and federal law require bank holding companies to act as a source of financial and managerial strength to their subsidiary banks. Under this requirement, Cullen/Frost is expected to commit resources to support Frost Bank, including at times when Cullen/Frost may not be in a financial position to provide such resources. Any capital loans by a bank holding company to any of its subsidiary banks are subordinate in right of payment to depositors and to certain other indebtedness of such subsidiary banks. In the event of a bank holding company's bankruptcy, any commitment by the bank holding company to a federal bank regulatory agency to maintain the capital of a subsidiary bank will be assumed by the bankruptcy trustee and entitled to priority of payment.

Capital Requirements

Cullen/Frost and Frost Bank are each required to comply with applicable capital adequacy standards established by the Federal Reserve Board. The current risk-based capital standards applicable to Cullen/Frost and Frost Bank are based on the December 2010 final capital framework for strengthening international capital standards, known as Basel III, of the Basel Committee on Banking Supervision (the "Basel Committee"). In July 2013, the federal bank regulators approved final rules (the "Basel III Capital Rules") implementing the Basel III framework as well as certain provisions

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of the Dodd-Frank Act. The Basel III Capital Rules became effective for Cullen/Frost and Frost Bank on January 1, 2015 (subject to a phase-in period for certain provisions).

The Basel III Capital Rules, among other things, (i) include a new capital measure called "Common Equity Tier 1" ("CET1"), (ii) specify that Tier 1 capital consists of CET1 and "Additional Tier 1 capital" instruments meeting certain revised requirements, (iii) define CET1 narrowly by requiring that most deductions/adjustments to regulatory capital measures be made to CET1 and not to the other components of capital, and (iv) expand the scope of the deductions/adjustments to capital as compared to existing regulations.

Under the Basel III Capital Rules, the minimum capital ratios effective as of January 1, 2015 are:

- 4.5% CET1 to risk-weighted assets;
- 6.0% Tier 1 capital (that is, CET1 plus Additional Tier 1 capital) to risk-weighted assets;
- 8.0% Total capital (that is, Tier 1 capital plus Tier 2 capital) to risk-weighted assets; and
- 4.0% Tier 1 capital to average consolidated assets as reported on consolidated financial statements (known as the "leverage ratio").

The Basel III Capital Rules also require a "capital conservation buffer", composed entirely of CET1, on top of these minimum risk-weighted asset ratios. The implementation of the capital conservation buffer began on January 1, 2016 at the 0.625% level and increased by 0.625% on each subsequent January 1, until it reached 2.5% on January 1, 2019. The Basel III Capital Rules also provide for a "countercyclical capital buffer" that is only applicable to certain covered institutions and does not have any current applicability to Cullen/Frost or Frost Bank. The capital conservation buffer is designed to absorb losses during periods of economic stress and effectively increases the minimum required risk-weighted capital ratios. Banking institutions with a ratio of CET1 to risk-weighted assets below the effective minimum (4.5% plus the capital conservation buffer and, if applicable, the countercyclical capital buffer) will face constraints on dividends, equity repurchases and compensation based on the amount of the shortfall and the institution's "eligible retained income" (that is, four quarter trailing net income, net of distributions and tax effects not reflected in net income).

Since fully phased in on January 1, 2019, the Basel III Capital Rules require Cullen/Frost and Frost Bank to maintain an additional capital conservation buffer of 2.5% of CET1, effectively resulting in minimum ratios of (i) CET1 to risk-weighted assets of at least 7%, (ii) Tier 1 capital to risk-weighted assets of at least 8.5%, (iii) a minimum ratio of Total capital to risk-weighted assets of at least 10.5%; and (iv) a minimum leverage ratio of 4%.

The Basel III Capital Rules also provide for a number of deductions from and adjustments to CET1. These include, for example, the requirement that certain deferred tax assets and significant investments in non-consolidated financial entities be deducted from CET1 to the extent that any one such category exceeds 10% of CET1 or all such items, in the aggregate, exceed 15% of CET1. Implementation of the deductions and other adjustments to CET1 began on January 1, 2015 and were phased-in over a 4-year period (beginning at 40% on January 1, 2015 and an additional 20% per year thereafter).

In addition, under the general risk-based capital rules, the effects of accumulated other comprehensive income items included in capital were excluded for the purposes of determining regulatory capital ratios. Under the Basel III Capital Rules, the effects of certain accumulated other comprehensive income items are not excluded; however, non-advanced approaches banking organizations, including Cullen/Frost and Frost Bank, were able to make a one-time permanent election to continue to exclude these items. Both Cullen/Frost and Frost Bank made this election in order to avoid significant variations in the level of capital depending upon the impact of interest rate fluctuations on the fair value of their available-for-sale securities portfolio. Under the Basel III Capital Rules, trust preferred securities no longer included in our Tier 1 capital may nonetheless be included as a component of Tier 2 capital on a permanent basis without phase-out.

The Basel III Capital Rules prescribe a standardized approach for risk weightings that expanded the risk-weighting categories from the general risk-based capital rules to a much larger and more risk-sensitive number of categories, depending on the nature of the assets, generally ranging from 0% for U.S. government and agency securities, to 600% for certain equity exposures, and resulting in higher risk weights for a variety of asset categories.

With respect to Frost Bank, the Basel III Capital Rules also revise the "prompt corrective action" regulations pursuant to Section 38 of the Federal Deposit Insurance Act, as discussed below under "Prompt Corrective Action."

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Management believes that, as of December 31, 2018, Cullen/Frost and Frost Bank would meet all capital adequacy requirements under the Basel III Capital Rules on a fully phased-in basis as if such requirements had been in effect.

In September 2017, the federal bank regulators proposed to revise and simplify the capital treatment for certain deferred tax assets, mortgage servicing assets, investments in non-consolidated financial entities and minority interests for banking organizations, such as Cullen/Frost and Frost Bank, that are not subject to the advanced approaches requirements. In November 2017, the federal banking regulators revised the Basel III Capital Rules to extend the current transitional treatment of these items for non-advanced approaches banking organizations until the September 2017 proposal is finalized.

In December 2017, the Basel Committee published standards that it described as the finalization of the Basel III post-crisis regulatory reforms (the standards are commonly referred to as “Basel IV”). Among other things, these standards revise the Basel Committee's standardized approach for credit risk (including by recalibrating risk weights and introducing new capital requirements for certain “unconditionally cancellable commitments,” such as unused credit card lines of credit) and provides a new standardized approach for operational risk capital. Under the Basel framework, these standards will generally be effective on January 1, 2022, with an aggregate output floor phasing in through January 1, 2027. Under the current U.S. capital rules, operational risk capital requirements and a capital floor apply only to advanced approaches institutions, and not to Cullen/Frost or Frost Bank. The impact of Basel IV on us will depend on the manner in which it is implemented by the federal bank regulators.

In December 2018, the federal bank regulators issued a final rule that would provide an optional three-year phase-in period for the day-one regulatory capital effects of the adoption of Accounting Standards Update (“ASU”) 2016-13 “Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments,” as amended, on January 1, 2020. See Note 20 - Accounting Standards Updates in the notes to consolidated financial statements included in Item 8. Financial Statements and Supplementary Data elsewhere in this report for additional information.

Liquidity Requirements

Historically, the regulation and monitoring of bank and bank holding company liquidity has been addressed as a supervisory matter, without required formulaic measures. Liquidity risk management has become increasingly important since the financial crisis. The Basel III liquidity framework requires banks and bank holding companies to measure their liquidity against specific liquidity tests that, although similar in some respects to liquidity measures historically applied by banks and regulators for management and supervisory purposes, going forward would be required by regulation. One test, referred to as the liquidity coverage ratio (“LCR”), is designed to ensure that the banking entity maintains an adequate level of unencumbered high-quality liquid assets equal to the entity’s expected net cash outflow for a 30-day time horizon (or, if greater, 25% of its expected total cash outflow) under an acute liquidity stress scenario. The other test, referred to as the net stable funding ratio (“NSFR”), is designed to promote more medium- and long-term funding of the assets and activities of banking entities over a one-year time horizon.

In September 2014, the federal bank regulators approved final rules implementing the LCR for advanced approaches banking organizations (i.e., banking organizations with $250 billion or more in total consolidated assets or $10 billion or more in total on-balance sheet foreign exposure) and a modified version of the LCR for bank holding companies with at least $50 billion in total consolidated assets that are not advanced approach banking organizations, neither of which would apply to Cullen/Frost or Frost Bank. In the second quarter of 2016, the federal banking regulators issued a proposed rule that would implement the NSFR for certain U.S. banking organizations to ensure they have access to stable funding over a one-year time horizon. The proposed rule would not apply to U.S. banking organizations with less than $50 billion in total consolidated assets such as Cullen/Frost and Frost Bank.

Following the enactment of the Economic Growth, Regulatory Relief and Consumer Protection Act of 2018 (“EGRRCPA”), the Federal Reserve Board stated in July 2018 that it would no longer require bank holding companies with less than $100 billion in total consolidated assets to comply with the modified version of the LCR. In addition, in October 2018, the federal bank regulators proposed to revise their liquidity requirements so that banking organizations that are not global systemically important banks and have less than $250 billion in total consolidated assets and less than $75 billion in each of off-balance-sheet exposure, nonbank assets, cross-jurisdictional activity and short-term wholesale funding would not be subject to any LCR or NSFR requirements.

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Prompt Corrective Action

The Federal Deposit Insurance Act, as amended ("FDIA"), requires among other things, the federal banking agencies to take "prompt corrective action" in respect of depository institutions that do not meet minimum capital requirements. The FDIA includes the following five capital tiers: "well capitalized," "adequately capitalized," "undercapitalized," "significantly undercapitalized" and "critically undercapitalized." A depository institution's capital tier will depend upon how its capital levels compare with various relevant capital measures and certain other factors, as established by regulation. The relevant capital measures, which reflect changes under the Basel III Capital Rules that became effective on January 1, 2015, are the total capital ratio, the CET1 capital ratio, the Tier 1 capital ratio and the leverage ratio.

A bank will be (i) "well capitalized" if the institution has a total risk-based capital ratio of 10.0% or greater, a CET1 capital ratio of 6.5% or greater, a Tier 1 risk-based capital ratio of 8.0% or greater, and a leverage ratio of 5.0% or greater, and is not subject to any order or written directive by any such regulatory authority to meet and maintain a specific capital level for any capital measure; (ii) "adequately capitalized" if the institution has a total risk-based capital ratio of 8.0% or greater, a CET1 capital ratio of 4.5% or greater, a Tier 1 risk-based capital ratio of 6.0% or greater, and a leverage ratio of 4.0% or greater and is not "well capitalized"; (iii) "undercapitalized" if the institution has a total risk-based capital ratio that is less than 8.0%, a CET1 capital ratio less than 4.5%, a Tier 1 risk-based capital ratio of less than 6.0% or a leverage ratio of less than 4.0%; (iv) "significantly undercapitalized" if the institution has a total risk-based capital ratio of less than 6.0%, a CET1 capital ratio less than 3.0%, a Tier 1 risk-based capital ratio of less than 4.0% or a leverage ratio of less than 3.0%; and (v) "critically undercapitalized" if the institution's tangible equity is equal to or less than 2.0% of average quarterly tangible assets. An institution may be downgraded to, or deemed to be in, a capital category that is lower than indicated by its capital ratios if it is determined to be in an unsafe or unsound condition or if it receives an unsatisfactory examination rating with respect to certain matters. A bank's capital category is determined solely for the purpose of applying prompt corrective action regulations, and the capital category may not constitute an accurate representation of the bank's overall financial condition or prospects for other purposes.

In addition, the FDIA prohibits an insured depository institution from accepting brokered deposits or offering interest rates on any deposits significantly higher than the prevailing rate in the bank's normal market area or nationally (depending upon where the deposits are solicited), unless it is well capitalized or is adequately capitalized and receives a waiver from the FDIC. A depository institution that is adequately capitalized and accepts brokered deposits under a waiver from the FDIC may not pay an interest rate on any deposit in excess of 75 basis points over certain prevailing market rates.

The FDIA generally prohibits a depository institution from making any capital distributions (including payment of a dividend) or paying any management fee to its parent holding company if the depository institution would thereafter be "undercapitalized." "Undercapitalized" institutions are subject to growth limitations and are required to submit a capital restoration plan. The agencies may not accept such a plan without determining, among other things, that the plan is based on realistic assumptions and is likely to succeed in restoring the depository institution's capital. In addition, for a capital restoration plan to be acceptable, the depository institution's parent holding company must guarantee that the institution will comply with such capital restoration plan. The bank holding company must also provide appropriate assurances of performance. The aggregate liability of the parent holding company is limited to the lesser of (i) an amount equal to 5.0% of the depository institution's total assets at the time it became undercapitalized and (ii) the amount which is necessary (or would have been necessary) to bring the institution into compliance with all capital standards applicable with respect to such institution as of the time it fails to comply with the plan. If a depository institution fails to submit an acceptable plan, it is treated as if it is "significantly undercapitalized."

"Significantly undercapitalized" depository institutions may be subject to a number of requirements and restrictions, including orders to sell sufficient voting stock to become "adequately capitalized," requirements to reduce total assets, and cessation of receipt of deposits from correspondent banks. "Critically undercapitalized" institutions are subject to the appointment of a receiver or conservator.

The appropriate federal banking agency may, under certain circumstances, reclassify a well capitalized insured depository institution as adequately capitalized. The FDIA provides that an institution may be reclassified if the appropriate federal banking agency determines (after notice and opportunity for hearing) that the institution is in an unsafe or unsound condition or deems the institution to be engaging in an unsafe or unsound practice. The appropriate agency is also permitted to require an adequately capitalized or undercapitalized institution to comply with the supervisory provisions as if the institution were in the next lower category (but not treat a significantly undercapitalized institution as critically undercapitalized) based on supervisory information other than the capital levels of the institution.

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Cullen/Frost believes that, as of December 31, 2018, its bank subsidiary, Frost Bank, was "well capitalized" based on the aforementioned ratios. For further information regarding the capital ratios and leverage ratio of Cullen/Frost and Frost Bank see the discussion under the section captioned "Capital and Liquidity" included in Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations and Note 9 - Capital and Regulatory Matters in the notes to consolidated financial statements included in Item 8. Financial Statements and Supplementary Data, elsewhere in this report.

Safety and Soundness Standards

The FDIA requires the federal bank regulatory agencies to prescribe standards, by regulations or guidelines, relating to internal controls, information systems and internal audit systems, loan documentation, credit underwriting, interest rate risk exposure, asset growth, asset quality, earnings, stock valuation and compensation, fees and benefits, and such other operational and managerial standards as the agencies deem appropriate. Guidelines adopted by the federal bank regulatory agencies establish general standards relating to internal controls and information systems, internal audit systems, loan documentation, credit underwriting, interest rate exposure, asset growth and compensation, fees and benefits. In general, the guidelines require, among other things, appropriate systems and practices to identify and manage the risk and exposures specified in the guidelines. The guidelines 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 stockholder. In addition, the agencies adopted regulations that authorize, but do not require, an agency to order an institution that has been given notice by an agency that it is not satisfying any of such safety and soundness standards to submit a compliance plan. If, after being so notified, an institution fails to submit an acceptable compliance plan or fails in any material respect to implement an acceptable compliance plan, the agency must issue an order directing action to correct the deficiency and may issue an order directing other actions of the types to which an undercapitalized institution is subject under the "prompt corrective action" provisions of the FDIA. See "Prompt Corrective Action" above. If an institution fails to comply with such an order, the agency may seek to enforce such order in judicial proceedings and to impose civil money penalties.

Deposit Insurance

Substantially all of the deposits of Frost Bank are insured up to applicable limits by the Deposit Insurance Fund ("DIF") of the FDIC and Frost Bank is subject to deposit insurance assessments to maintain the DIF. Deposit insurance assessments are based on average total assets minus average tangible equity. For larger institutions, such as Frost Bank, the FDIC uses a performance score and a loss-severity score that are used to calculate an initial assessment rate. In calculating these scores, the FDIC uses a bank's capital level and supervisory ratings (its "CAMELS ratings") and certain financial measures to assess an institution's ability to withstand asset-related stress and funding-related stress. The FDIC has the ability to make discretionary adjustments to the total score based upon significant risk factors that are not adequately captured in the calculations.

In October 2010, the FDIC adopted a new DIF restoration plan to ensure that the fund reserve ratio reaches 1.35% by September 30, 2020, as required by the Dodd-Frank Act. In August 2016, the FDIC announced that the DIF reserve ratio had surpassed 1.15% as of June 30, 2016. As a result, beginning in the third quarter of 2016, the range of initial assessment ranges for all institutions were adjusted downward such that the initial base deposit insurance assessment rate ranges from 3 to 30 basis points on an annualized basis. After the effect of potential base-rate adjustments, the total base assessment rate could range from 1.5 to 40 basis points on an annualized basis. In March 2016, the FDIC adopted a final rule increasing the reserve ratio for the DIF to 1.35% of total insured deposits. The rule imposed a quarterly surcharge on the assessments of depository institutions with $10 billion or more in assets, including Frost Bank. The surcharges began in the third quarter of 2016 and continued through the third quarter of 2018 when the minimum reserve ratio of 1.35% was reached.

FDIC deposit insurance expense totaled $16.4 million, $20.1 million and $17.4 million in 2018, 2017 and 2016, respectively. FDIC deposit insurance expense includes deposit insurance assessments and Financing Corporation ("FICO") assessments related to outstanding FICO bonds. The FICO is a mixed-ownership government corporation established by the Competitive Equality Banking Act of 1987 whose sole purpose was to function as a financing vehicle for the now defunct Federal Savings & Loan Insurance Corporation.

Under the FDIA, the FDIC may terminate deposit insurance upon a finding that the institution has engaged in unsafe and unsound practices, is in an unsafe or unsound condition to continue operations, or has violated any applicable law, regulation, rule, order or condition imposed by the FDIC. In addition, the FDIC is authorized to conduct examinations of and require reporting by FDIC-insured institutions.

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Enhanced Prudential Standards

The Dodd-Frank Act, as amended by EGRRCPA, which was signed into law on May 24, 2018, directs the Federal Reserve Board to monitor emerging risks to financial stability and enact enhanced supervision and prudential standards applicable to bank holding companies with total consolidated assets of $250 billion or more and non-bank covered companies designated as systemically important by the Financial Stability Oversight Council (often referred to as systemically important financial institutions). The Dodd-Frank Act mandates that certain regulatory requirements applicable to systemically important financial institutions be more stringent than those applicable to other financial institutions. In general, EGRRCPA increased the statutory asset threshold above which the Federal Reserve is required to apply these enhanced prudential standards from $50 billion to $250 billion (subject to certain discretion by the Federal Reserve to apply any enhanced prudential standard requirement to any BHC with between $100 billion and $250 billion in total consolidated assets that would otherwise be exempt under EGRRCPA). BHCs with $250 billion or more in total consolidated assets remain fully subject to the Dodd-Frank Act's enhanced prudential standards requirements.

In February 2014, the Federal Reserve adopted rules to implement certain of these enhanced prudential standards. Beginning in 2015, the rules require publicly traded bank holding companies with $10 billion or more in total consolidated assets to establish risk committees and require bank holding companies with $50 billion or more in total consolidated assets to comply with enhanced liquidity and overall risk management standards. Cullen/Frost has established a risk committee and is in compliance with this requirement. In October 2018, the Federal Reserve and the other federal bank regulators proposed rules that would tailor the application of the enhanced prudential standards to BHCs and depository institutions pursuant to the EGRRCPA amendments, including by raising the asset threshold for application of many of these standards. For example, all publicly traded bank holding companies with $50 billion or more in total consolidated assets would be required to maintain a risk committee.

The Volcker Rule

The so-called Volcker Rule under the Dodd-Frank Act prohibits banks and their affiliates from engaging in proprietary trading and investing in and sponsoring hedge funds and private equity funds. The Volcker Rule, which became effective in July 2015, does not significantly impact the operations of Cullen/Frost and its subsidiaries, as we do not have any significant engagement in the businesses prohibited by the Volcker Rule.

Depositor Preference

The FDIA provides that, in the event of the "liquidation or other resolution" of an insured depository institution, the claims of depositors of the institution, including the claims of the FDIC as subrogee of insured depositors, and certain claims for administrative expenses of the FDIC as a receiver, will have priority over other general unsecured claims against the institution. If an insured depository institution fails, insured and uninsured depositors, along with the FDIC, will have priority in payment ahead of unsecured, non-deposit creditors, including depositors whose deposits are payable only outside of the United States and the parent bank holding company, with respect to any extensions of credit they have made to such insured depository institution.

Interchange Fees

Under the Durbin Amendment to the Dodd-Frank Act, the Federal Reserve adopted rules establishing standards for assessing whether the interchange fees that may be charged with respect to certain electronic debit transactions are "reasonable and proportional" to the costs incurred by issuers for processing such transactions.

Interchange fees, or "swipe" fees, are charges that merchants pay to us and other card-issuing banks for processing electronic payment transactions. Federal Reserve Board rules applicable to financial institutions that have assets of $10 billion or more provide that the maximum permissible interchange fee for an electronic debit transaction is the sum of 21 cents per transaction and 5 basis points multiplied by the value of the transaction. An upward adjustment of no more than 1 cent to an issuer's debit card interchange fee is allowed if the card issuer develops and implements policies and procedures reasonably designed to achieve certain fraud-prevention standards. The Federal Reserve Board also has rules governing routing and exclusivity that require issuers to offer two unaffiliated networks for routing transactions on each debit or prepaid product.

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

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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 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 Consumer Financial Protection Bureau ("CFPB") is a federal agency responsible for implementing, examining and enforcing compliance with federal consumer protection laws. 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. The CFPB has examination and enforcement authority over all banks with more than $10 billion in assets, as well as their affiliates. Banking regulators take into account compliance with consumer protection laws when considering approval of a proposed transaction.

Community Reinvestment Act

The Community Reinvestment Act of 1977 ("CRA") requires depository institutions to assist in meeting the credit needs of their market areas consistent with safe and sound banking practice. Under the CRA, each depository institution is required to help meet the credit needs of its market areas by, among other things, providing credit to low- and moderate-income individuals and communities. Depository institutions are periodically examined for compliance with the CRA and are assigned ratings. In order for a financial holding company to commence any new activity permitted by the BHC Act, or to acquire any company engaged in any new activity permitted by the BHC Act, each insured depository institution subsidiary of the financial holding company must have received a rating of at least "satisfactory" in its most recent examination under the CRA. Furthermore, banking regulators take into account CRA ratings when considering a request for an approval of a proposed transaction. Frost Bank received a rating of "satisfactory" in its most recent CRA examination in 2015. In April 2018, the U.S. Department of Treasury issued a memorandum to the federal banking regulators with recommended changes to the CRA's implementing regulations to reduce their complexity and associated burden on banks. We will continue to evaluate the impact of any changes to the regulations implementing the CRA.

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 nonaffiliated 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 nonaffiliated third party. These regulations affect how consumer information is transmitted through diversified financial companies and conveyed to outside vendors.

Anti-Money Laundering and the USA Patriot Act

A major focus of governmental policy on financial institutions in recent years has been aimed at combating money laundering and terrorist financing. The USA PATRIOT Act of 2001, or the USA Patriot Act, substantially broadened the scope of United States anti-money laundering laws and regulations by imposing significant new compliance and due diligence obligations, creating new crimes and penalties and expanding the extra-territorial jurisdiction of the United States. Financial institutions are also prohibited from entering into specified financial transactions and account

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relationships and must use enhanced due diligence procedures in their dealings with certain types of high-risk customers and implement a written customer identification program. Financial institutions must take certain steps to assist government agencies in detecting and preventing money laundering and report certain types of suspicious transactions. Regulatory authorities routinely examine financial institutions for compliance with these obligations, and failure of a financial institution to maintain and implement adequate programs to combat money laundering and terrorist financing, or to comply with all of the relevant laws or regulations, could have serious financial, legal and reputational consequences for the institution, including causing applicable bank regulatory authorities not to approve merger or acquisition transactions when regulatory approval is required or to prohibit such transactions even if approval is not required. Regulatory authorities have imposed cease and desist orders and civil money penalties against institutions found to be violating these obligations.

Office of Foreign Assets Control Regulation

The U.S. Treasury Department’s Office of Foreign Assets Control, or OFAC, administers and enforces economic and trade sanctions against targeted foreign countries and regimes, under authority of various laws, including designated foreign countries, nationals and others. OFAC publishes lists of specially designated targets and countries. We are responsible for, among other things, blocking accounts of, and transactions with, such targets and countries, prohibiting unlicensed trade and financial transactions with them and reporting blocked transactions after their occurrence. Failure to comply with these sanctions could have serious financial, legal and reputational consequences, including causing applicable bank regulatory authorities not to approve merger or acquisition transactions when regulatory approval is required or to prohibit such transactions even if approval is not required. Regulatory authorities have imposed cease and desist orders and civil money penalties against institutions found to be violating these obligations.

Incentive Compensation

The Federal Reserve Board reviews, as part of its regular, risk-focused examination process, the incentive compensation arrangements of banking organizations, such as Cullen/Frost, that are not “large, complex banking organizations.” These reviews are tailored to each organization based on the scope and complexity of the organization’s activities and the prevalence of incentive compensation arrangements. The findings of this supervisory initiative will be included in reports of examination. Deficiencies will be incorporated into the organization’s supervisory ratings, which can affect the organization’s ability to make acquisitions and take other actions. Enforcement actions may be taken against a banking organization if its incentive compensation arrangements, or related risk-management control or governance processes, pose a risk to the organization’s safety and soundness and the organization is not taking prompt and effective measures to correct the deficiencies.

In June 2010, the Federal Reserve Board, OCC and FDIC issued comprehensive final guidance on incentive compensation policies intended to ensure that the incentive compensation policies of banking organizations do not undermine the safety and soundness of such organizations by encouraging excessive risk-taking. The guidance, which covers all employees that have the ability to materially affect the risk profile of an organization, either individually or as part of a group, is based upon the key principles that a banking organization’s incentive compensation arrangements should (i) provide incentives that do not encourage risk-taking beyond the organization’s ability to effectively identify and manage risks, (ii) be compatible with effective internal controls and risk management, and (iii) be supported by strong corporate governance, including active and effective oversight by the organization’s board of directors.

During the second quarter of 2016, the U.S. financial regulators, including the Federal Reserve Board and the SEC, proposed revised rules on incentive-based payment arrangements at specified regulated entities having at least $1 billion in total assets (including Cullen/Frost and Frost Bank). The proposed revised rules would establish general qualitative requirements applicable to all covered entities, which would include (i) prohibiting incentive arrangements that encourage inappropriate risks by providing excessive compensation; (ii) prohibiting incentive arrangements that encourage inappropriate risks that could lead to a material financial loss; (iii) establishing requirements for performance measures to appropriately balance risk and reward; (iv) requiring board of director oversight of incentive arrangements; and (v) mandating appropriate record-keeping. Under the proposed rule, larger financial institutions with total consolidated assets of at least $50 billion would also be subject to additional requirements applicable to such institutions’ “senior executive officers” and “significant risk-takers.” These additional requirements would not be applicable to Cullen/Frost or Frost Bank, each of which currently have less than $50 billion in total consolidated assets.

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Cybersecurity

In March 2015, federal regulators issued two related statements regarding cybersecurity. One statement indicates that financial institutions should design multiple layers of security controls to establish lines of defense and to ensure that their risk management processes also address the risk posed by compromised customer credentials, including security measures to reliably authenticate customers accessing internet-based services of the financial institution. The other statement indicates that a financial institution's management is expected to maintain sufficient business continuity planning processes to ensure the rapid recovery, resumption and maintenance of the institution's operations after a cyber-attack involving destructive malware. A financial institution is also expected to develop appropriate processes to enable recovery of data and business operations and address rebuilding network capabilities and restoring data if the institution or its critical service providers fall victim to this type of cyber-attack. If we fail to observe the regulatory guidance, we could be subject to various regulatory sanctions, including financial penalties.

State regulators have also been increasingly active in implementing privacy and cybersecurity standards and regulations. Recently, several states have adopted regulations requiring certain financial institutions to implement cybersecurity programs and providing detailed requirements with respect to these programs, including data encryption requirements. Many states have also recently implemented or modified their data breach notification and data privacy requirements. We expect this trend of state-level activity in those areas to continue, and are continually monitoring developments in the states in which our customers are located.

In the ordinary course of business, we rely on electronic communications and information systems to conduct our operations and to store sensitive data. We employ an in-depth, layered, defensive approach that leverages people, processes and technology to manage and maintain cybersecurity controls. We employ a variety of preventative and detective tools to monitor, block, and provide alerts regarding suspicious activity, as well as to report on any suspected advanced persistent threats. Notwithstanding the strength of our defensive measures, the threat from cyber attacks is severe, attacks are sophisticated and increasing in volume, and attackers respond rapidly to changes in defensive measures. While to date, other than as described below, we have not detected a significant compromise, significant data loss or any material financial losses related to cybersecurity attacks, our systems and those of our customers and third-party service providers are under constant threat and it is possible that we could experience a significant event in the future. Risks and exposures related to cybersecurity attacks are expected to remain high for the foreseeable future due to the rapidly evolving nature and sophistication of these threats, as well as due to the expanding use of Internet banking, mobile banking and other technology-based products and services by us and our customers. See Item 1A. Risk Factors for a further discussion of risks related to cybersecurity.

During 2018, we experienced a data security incident that resulted in unauthorized access to a third-party lockbox software program used by certain of our commercial lockbox customers to store digital images. We have stopped the identified unauthorized access and are working with a leading cybersecurity firm. We have reported the incident to, and are cooperating with, law-enforcement authorities. We have contacted each of the affected commercial customers and are working with them to support them in taking appropriate actions. The identified incident did not impact other Frost systems. Out-of-pocket costs incurred related to this incident totaled $2.1 million.

Future Legislation and Regulation

Congress may enact legislation from time to time that affects the regulation of the financial services industry, and state legislatures may enact legislation from time to time affecting the regulation of financial institutions chartered by or operating in those states. Federal and state regulatory agencies also periodically propose and adopt changes to their regulations or change the manner in which existing regulations are applied. The substance or impact of pending or future legislation or regulation, or the application thereof, cannot be predicted, although any change could impact the regulatory structure under which we or our competitors operate and may significantly increase costs, impede the efficiency of internal business processes, require an increase in regulatory capital, require modifications to our business strategy, and limit our ability to pursue business opportunities in an efficient manner. It could also affect our competitors differently than us, including in a manner that would make them more competitive. A change in statutes, regulations or regulatory policies applicable to Cullen/Frost or any of its subsidiaries could have a material, adverse effect on our business, financial condition and results of operations.

Employees

At December 31, 2018, we employed 4,370 full-time equivalent employees. None of our employees are represented by collective bargaining agreements. We believe our employee relations to be good.

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Executive Officers of the Registrant

The names, ages as of December 31, 2018, recent business experience and positions or offices held by each of the executive officers of Cullen/Frost are as follows:

Name and Position Held	Age	Recent Business Experience
Phillip D. Green Chairman of the Board, Chief Executive Officer and Director of Cullen/Frost	64	Officer of Frost Bank since July 1980. Group Executive Vice President, Chief Financial Officer of Cullen/Frost from October 1995 to January 2015. President of Cullen/Frost from January 2015 to March 2016. Chairman of the Board and Chief Executive Officer of Cullen/Frost since April 2016.
Patrick B. Frost Director of Cullen/Frost, President of Frost Bank, Group Executive Vice President, Frost Wealth Advisors of Frost Bank and President of Frost Insurance	58	Officer of Frost Bank since 1985. President of Frost Bank from August 1993 to present. Director of Cullen/Frost from May 1997 to present. Group Executive Vice President, Frost Wealth Advisors of Frost Bank from April 2016 to present. President of Frost Insurance since October 2014.
Jerry Salinas Group Executive Vice President, Chief Financial Officer of Cullen/Frost	60	Officer of Frost Bank since March 1986. Senior Executive Vice President, Treasurer of Cullen/Frost from 1997 to January 2015. Group Executive Vice President, Chief Financial Officer of Cullen/Frost since January 2015.
Annette Alonzo Group Executive Vice President, Chief Human Resources Officer of Frost Bank	50	Officer of Frost Bank since 1993. Executive Vice President, Human Resources of Frost Bank from July 2006 to January 2015. Senior Executive Vice President, Human Resources of Frost Bank from January 2015 to July 2015. Group Executive Vice President, Human Resources of Frost Bank from July 2015 to March 2016. Group Executive Vice President, Chief Human Resources Officer of Frost Bank since April 2016.
Robert A. Berman Group Executive Vice President, Research and Strategy of Frost Bank	56	Officer of Frost Bank since January 1989. Group Executive Vice President, Research and Strategy of Frost Bank since May 2001.
Paul H. Bracher President of Cullen/Frost and Group	62	Officer of Frost Bank since January 1982. President, State Regions of Frost Bank from February 2001 to January 2015. Group Executive Vice President, Chief Banking Officer of Frost Bank from January 2015 to present. President of Cullen/Frost since April 2016.

Executive Vice President, Chief Banking Officer of Frost Bank		
William L. Perotti Group Executive Vice President, Chief Credit Officer of Frost Bank	61	Officer of Frost Bank since December 1982. Group Executive Vice President, Chief Credit Officer of Frost Bank from May 2001 to January 2015. Group Executive Vice President, Chief Risk Officer of Frost Bank from April 2005 to January 2019. Chief Credit Officer of Frost Bank since January 2019.
Michael E. Russell Group Executive Vice President, Chief Operations Officer of Frost Bank	62	Officer of Frost Bank since December 2017. Group Executive Vice President, Chief Operations Officer since January 2018. Prior to joining Frost, Mr. Russell was a management consultant and former corporate technology executive.
Carol Severyn Group Executive Vice President, Chief Risk Officer of Frost Bank	54	Officer of Frost Bank since December 1993. Executive Vice President and Auditor of Frost Bank from January 2004 to January 2019. Group Executive Vice President, Chief Risk Officer of Frost Bank since January 2019.
Jimmy Stead Group Executive Vice President, Chief Consumer Banking Officer of Frost Bank	43	Officer of Frost Bank since July 2001. Senior Vice President Electronic Commerce Operations of Frost Bank from October 2007 to December 2015, Executive Vice President, Electronic Commerce Operations of Frost Bank from January 2016 to January 2017. Group Executive Vice President, Chief Consumer Banking Officer of Frost Bank since January 2017.
James L. Waters Group Executive Vice President, General Counsel and Secretary of Cullen/Frost	52	Officer of Frost Bank since March 2018. Group Executive Vice President, General Counsel and Secretary of Cullen/Frost since March 2018. Prior to joining Frost, Mr. Waters was a partner at the law firm Haynes and Boone LLP.
Candace Wolfshohl Group Executive Vice President, Culture and People Development of Frost Bank	58	Officer of Frost Bank since 1989. Executive Vice President, Staff Development of Frost Bank from January 2008 to January 2015. Senior Executive Vice President, Staff Development of Frost Bank from January 2015 to July 2015. Group Executive Vice President, Culture and People Development of Frost Bank since July 2015.

There are no arrangements or understandings between any executive officer of Cullen/Frost and any other person pursuant to which such executive officer was or is to be selected as an officer.

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Available Information

Under the Securities Exchange Act of 1934, we are required to file annual, quarterly and current reports, proxy statements and other information with the Securities and Exchange Commission (“SEC”). The SEC maintains a website at http://www.sec.gov that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. We file electronically with the SEC.

We make available, free of charge through our website, our reports on Forms 10-K, 10-Q and 8-K, and amendments to those reports, as soon as reasonably practicable after such reports are filed with or furnished to the SEC. Additionally, we have adopted and posted on our website a code of ethics that applies to our principal executive officer, principal financial officer and principal accounting officer. Our website also includes our corporate governance guidelines and the charters for our audit committee, our compensation and benefits committee, our risk committee, and our corporate governance and nominating committee. The address for our website is http://www.frostbank.com. We will provide a printed copy of any of the aforementioned documents to any requesting shareholder.

ITEM 1A. RISK FACTORS

An investment in our common stock is subject to risks inherent to our business. The material risks and uncertainties that management believes affect us are described below. Before making an investment decision, you should carefully consider the risks and uncertainties described below together with all of the other information included or incorporated by reference in this report. The risks and uncertainties described below are not the only ones facing us. Additional risks and uncertainties that management is not aware of or focused on or that management currently deems immaterial may also impair our business operations. This report is qualified in its entirety by these risk factors.

If any of the following risks actually occur, our business, financial condition and results of operations could be materially and adversely affected. If this were to happen, the market price of our common stock could decline significantly, and you could lose all or part of your investment.

Risks Related To Our Business

Our Business May Be Adversely Affected By Conditions In The Financial Markets and Economic and Political Conditions Generally

Our success depends, to a certain extent, upon local, national and global economic and political conditions, as well as governmental monetary policies. Our financial performance generally, and in particular the ability of borrowers to pay interest on and repay principal of outstanding loans and the value of collateral securing those loans, as well as demand for loans and other products and services we offer, is highly dependent upon the business environment in the markets where we operate, in the State of Texas and in the United States as a whole. A favorable business environment is generally characterized by, among other factors, economic growth, efficient capital markets, low inflation, low unemployment, high business and investor confidence, and strong business earnings. Unfavorable or uncertain economic and market conditions can be caused by declines in economic growth, business activity or investor or business confidence; limitations on the availability or increases in the cost of credit and capital; increases in inflation or interest rates; high unemployment, natural disasters; or a combination of these or other factors. In recent years, economic growth and business activity across a wide range of industries and regions in the U.S. has been slow and uneven. In addition, oil price volatility, the level and rating of U.S. debt and global economic conditions have had a destabilizing effect on financial markets. While economic conditions in the State of Texas, the United States and worldwide have improved, there can be no assurance that this improvement will continue. Economic pressure on consumers and uncertainty regarding continuing economic improvement may result in changes in consumer and business spending, borrowing and savings habits. Such conditions, as well as further oil price volatility, could have a material adverse effect on the credit quality of our loans and our business, financial condition and results of operations.

We Are Subject To Lending Risk and Lending Concentration Risk

There are inherent risks associated with our lending activities. These risks include, among other things, the impact of changes in interest rates and changes in the economic conditions in the markets where we operate as well as those across the State of Texas and the United States. Increases in interest rates and/or weakening economic conditions could adversely impact the ability of borrowers to repay outstanding loans or the value of the collateral securing these loans. We are also subject to various laws and regulations that affect our lending activities. Failure to comply with applicable

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laws and regulations could subject us to regulatory enforcement action that could result in the assessment of significant civil money penalties against us.

As of December 31, 2018, approximately 88.0% of our loan portfolio consisted of commercial and industrial, energy, construction and commercial real estate mortgage loans. These types of loans are generally viewed as having more risk of default and are typically larger than residential real estate loans or consumer loans. Because our loan portfolio contains a significant number of commercial and industrial, energy, construction and commercial real estate loans with relatively large balances, the deterioration of one or a few of these loans could cause a significant increase in non-performing loans. An increase in non-performing loans could result in a net loss of earnings from these loans, an increase in the provision for loan losses and an increase in loan charge-offs, all of which could have a material adverse effect on our business, financial condition and results of operations.

See the section captioned “Loans” in Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations elsewhere in this report for further discussion related to commercial and industrial, energy, construction and commercial real estate loans.

We Are Subject To Interest Rate Risk

Our earnings and cash flows are largely dependent upon our net interest income. Net interest income is the difference between interest income earned on interest-earning assets such as loans and securities and interest expense paid on interest-bearing liabilities such as deposits and borrowed funds. Interest rates are highly sensitive to many factors that are beyond our control, including general economic conditions and policies of various governmental and regulatory agencies and, in particular, the Federal Open Market Committee. Changes in monetary policy, including changes in interest rates, could influence not only the interest we receive on loans and securities and the amount of interest we pay on deposits and borrowings, but such changes could also affect (i) our ability to originate loans and obtain deposits, (ii) the fair value of our financial assets and liabilities, and (iii) the average duration of our mortgage-backed securities portfolio. If the interest rates paid on deposits and other borrowings increase at a faster rate than the interest rates received on loans and other investments, our net interest income, and therefore earnings, could be adversely affected. Earnings could also be adversely affected if the interest rates received on loans and other investments fall more quickly than the interest rates paid on deposits and other borrowings. Any substantial, unexpected, prolonged change in market interest rates could have a material adverse effect on our business, financial condition and results of operations.

See Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations under the section captioned “Net Interest Income” and Item 7A. Quantitative and Qualitative Disclosures About Market Risk elsewhere in this report for further discussion related to interest rate sensitivity and our management of interest rate risk.

We May Be Adversely Impacted By The Transition From LIBOR As A Reference Rate

In 2017, the United Kingdom’s Financial Conduct Authority announced that after 2021 it would no longer compel banks to submit the rates required to calculate the London Interbank Offered Rate (“LIBOR”). This announcement indicates that the continuation of LIBOR on the current basis cannot and will not be guaranteed after 2021. Consequently, at this time, it is not possible to predict whether and to what extent banks will continue to provide submissions for the calculation of LIBOR. Similarly, it is not possible to predict whether LIBOR will continue to be viewed as an acceptable market benchmark, what rate or rates may become accepted alternatives to LIBOR, or what the effect of any such changes in views or alternatives may be on the markets for LIBOR-indexed financial instruments.

We have a significant number of loans, derivative contracts, borrowings and other financial instruments with attributes that are either directly or indirectly dependent on LIBOR. The transition from LIBOR could create considerable costs and additional risk. Since proposed alternative rates are calculated differently, payments under contracts referencing new rates will differ from those referencing LIBOR. The transition will change our market risk profiles, requiring changes to risk and pricing models, valuation tools, product design and hedging strategies. Furthermore, failure to adequately manage this transition process with our customers could adversely impact our reputation. Although we are currently unable to assess what the ultimate impact of the transition from LIBOR will be, failure to adequately manage the transition could have a material adverse effect on our business, financial condition and results of operations.

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Our Allowance For Loan Losses May Be Insufficient

We maintain an allowance for loan losses, which is a reserve established through a provision for loan losses charged to expense, which represents management's best estimate of inherent losses that have been incurred within the existing portfolio of loans. The allowance, in the judgment of management, is necessary to reserve for estimated loan losses and risks inherent in the loan portfolio. The level of the allowance reflects management's continuing evaluation of industry concentrations; specific credit risks; loan loss experience; current loan portfolio quality; present economic, political and regulatory conditions and unidentified losses inherent in the current loan portfolio. The determination of the appropriate level of the allowance for loan losses inherently involves a high degree of subjectivity and requires us to make significant estimates of current credit risks and future trends, all of which may undergo material changes. Continuing deterioration in economic conditions affecting borrowers, new information regarding existing loans, identification of additional problem loans and other factors, both within and outside of our control, may require an increase in the allowance for loan losses. In addition, bank regulatory agencies periodically review our allowance for loan losses and may require an increase in the provision for loan losses or the recognition of further loan charge-offs, based on judgments different than those of management. Furthermore, if charge-offs in future periods exceed the allowance for loan losses, we will need additional provisions to increase the allowance for loan losses. Any increases in the allowance for loan losses will result in a decrease in net income and, possibly, capital, and may have a material adverse effect on our business, financial condition and results of operations.

See the section captioned "Allowance for Loan Losses" in Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations elsewhere in this report for further discussion related to our process for determining the appropriate level of the allowance for loan losses.

In addition, the adoption of ASU 2016-13, as amended, on January 1, 2020 could result in an increase in the allowance for loan losses as a result of changing from an "incurred loss" model, which encompasses allowances for current known and inherent losses within the portfolio, to an "expected loss" model, which encompasses allowances for losses expected to be incurred over the life of the portfolio. Furthermore, ASU 2016-13 will necessitate that we establish an allowance for expected credit losses for certain debt securities and other financial assets. Although we are currently unable to reasonably estimate the impact of adopting ASU 2016-13, we expect that the impact of adoption will be significantly influenced by the composition, characteristics and quality of our loan and securities portfolios as well as the prevailing economic conditions and forecasts as of the adoption date. In December 2018, the federal banking regulators issued a final rule that would provide an optional three-year phase-in period for the day-one regulatory capital effects of the adoption of ASU 2016-13. The impact of this rule on Cullen/Frost and Frost Bank will depend on whether we elect to phase in the impact of the standard. See Note 20 - Accounting Standards Updates in the notes to consolidated financial statements included in Item 8. Financial Statements and Supplementary Data elsewhere in this report.

Our Profitability Depends Significantly On Economic Conditions In The State Of Texas

Our success depends primarily on the general economic conditions of the State of Texas and the specific local markets in which we operate. Unlike larger national or other regional banks that are more geographically diversified, we provide banking and financial services to customers across Texas through financial centers in the Austin, Corpus Christi, Dallas, Fort Worth, Houston, Permian Basin, Rio Grande Valley and San Antonio regions. The local economic conditions in these areas have a significant impact on the demand for our products and services as well as the ability of our customers to repay loans, the value of the collateral securing loans and the stability of our deposit funding sources. Moreover, approximately 98.4% of the securities in our municipal bond portfolio were issued by political subdivisions or agencies within the State of Texas. A significant decline in general economic conditions in Texas, whether caused by recession, inflation, unemployment, changes in oil prices, changes in securities markets, acts of terrorism, outbreak of hostilities or other international or domestic occurrences or other factors could impact these local economic conditions and, in turn, have a material adverse effect on our business, financial condition and results of operations.

We May Be Adversely Affected By Volatility In Crude Oil Prices

As of December 31, 2018, energy loans comprised approximately 11.4% of our loan portfolio. Furthermore, energy production and related industries represent a large part of the economies in some of our primary markets. In recent years, actions by certain members of the Organization of Petroleum Exporting Countries ("OPEC") impacting crude oil production levels have led to increased global oil supplies which has resulted in significant declines in market oil prices. Decreased market oil prices compressed margins for many U.S. and Texas-based oil producers, particularly those that utilize higher-cost production technologies such as hydraulic fracking and horizontal drilling, as well as oilfield service providers, energy equipment manufacturers and transportation suppliers, among others. The price per barrel of crude oil was approximately $45 at December 31, 2018 down from $60 at December 31, 2017. We have experienced increased losses within our energy portfolio in recent years as a result of oil price volatility, relative to our historical experience. Though oil prices have recovered from recent low-levels, future oil price volatility could have a negative impact on the U.S. economy and, in particular, the economies of energy-dominant states such as Texas and, accordingly, could have a material adverse effect on our business, financial condition and results of operations.

We May Be Adversely Affected By Weaknesses In The Commercial Real Estate Market

As of December 31, 2018, commercial real estate mortgage loans comprised approximately 29.2% of our loan portfolio. Commercial real estate mortgage loans generally involve a greater degree of credit risk than residential real estate mortgage loans because they typically have larger balances and are more affected by adverse conditions in the economy. Because payments on loans secured by commercial real estate often depend upon the successful operation and management of the properties and the businesses which operate from within them, repayment of such loans may be affected by factors outside the borrower’s control, such as adverse conditions in the real estate market or the economy or changes in government regulations. In recent years, commercial real estate markets have been experiencing substantial growth, and increased competitive pressures have contributed significantly to historically low capitalization rates and rising property values. Commercial real estate prices, according to many U.S. commercial real estate indices, are currently above the 2007 peak levels that contributed to the financial crisis. Accordingly, the federal banking regulatory agencies have expressed concerns about weaknesses in the current commercial real estate market. Our failure to have adequate risk management policies, procedures and controls could adversely affect our ability to increase this portfolio going forward and could result in an increased rate of delinquencies in, and increased losses from, this portfolio, which, accordingly, could have a material adverse effect on our business, financial condition and results of operations.

We May Be Adversely Affected By The Soundness Of Other Financial Institutions

Financial services institutions are interrelated as a result of trading, clearing, counterparty, or other relationships. We have exposure to many different industries and counterparties, and routinely execute transactions with counterparties in the financial services industry, including commercial banks, brokers and dealers, investment banks, and other institutional clients. Many of these transactions expose us to credit risk in the event of a default by a counterparty or client. In addition, our credit risk may be exacerbated when the collateral held by us cannot be realized upon or is liquidated at prices not sufficient to recover the full amount of the credit or derivative exposure due to us. Any such losses could have a material adverse effect on our business, financial condition and results of operations.

We Operate In A Highly Competitive Industry and Market Area

We face substantial competition in all areas of our operations from a variety of different competitors, many of which are larger and may have more financial resources. Such competitors primarily include national, regional, and community banks within the various markets where we operate. We also face competition from many other types of financial institutions, including, without limitation, savings and loans, credit unions, finance companies, brokerage firms, insurance companies and other financial intermediaries. The financial services industry could become even more competitive as a result of legislative, regulatory and technological changes and continued consolidation. Also, technology and other changes have lowered barriers to entry and made it possible for non-banks to offer products and services traditionally provided by banks. For example, consumers can maintain funds that would have historically been held as bank deposits in brokerage accounts or mutual funds. Consumers can also complete transactions such as paying bills and/or transferring funds directly without the assistance of banks. The process of eliminating banks as intermediaries, known as “disintermediation,” could result in the loss of fee income, as well as the loss of customer deposits and the related income generated from those deposits. Further, many of our competitors have fewer regulatory constraints and may have lower cost structures. Additionally, due to their size, many competitors may be able to achieve economies of scale and, as a result, may offer a broader range of products and services as well as better pricing for those products and services than we can.

Our ability to compete successfully depends on a number of factors, including, among other things:

- The ability to develop, maintain and build long-term customer relationships based on top quality service, high ethical standards and safe, sound assets.

- The ability to expand our market position.
- The scope, relevance and pricing of products and services offered to meet customer needs and demands.
- The rate at which we introduce new products and services relative to our competitors.

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- Customer satisfaction with our level of service.
- Industry and general economic trends.

Failure to perform in any of these areas could significantly weaken our competitive position, which could adversely affect our growth and profitability, which, in turn, could have a material adverse effect on our business, financial condition and results of operations.

We Are Subject To Extensive Government Regulation and Supervision and Possible Enforcement and Other Legal Actions

We, primarily through Cullen/Frost, Frost Bank and certain non-bank subsidiaries, are subject to extensive federal and state regulation and supervision, which vests a significant amount of discretion in the various regulatory authorities. Banking regulations are primarily intended to protect depositors' funds, federal deposit insurance funds and the banking system as a whole, not security holders. These regulations and supervisory guidance affect our lending practices, capital structure, investment practices, dividend policy and growth, among other things. Congress and federal regulatory agencies continually review banking laws, regulations and policies for possible changes. The Dodd-Frank Act, enacted in July 2010, instituted major changes to the banking and financial institutions regulatory regimes. Other changes to statutes, regulations or regulatory policies or supervisory guidance, including changes in interpretation or implementation of statutes, regulations, policies or supervisory guidance, could affect us in substantial and unpredictable ways. Such changes could subject us to additional costs, limit the types of financial services and products we may offer and/or increase the ability of non-banks to offer competing financial services and products, among other things. Failure to comply with laws, regulations, policies or supervisory guidance could result in enforcement and other legal actions by Federal or state authorities, including criminal and civil penalties, the loss of FDIC insurance, the revocation of a banking charter, other sanctions by regulatory agencies, civil money penalties and/or reputational damage. In this regard, government authorities, including the bank regulatory agencies, are pursuing aggressive enforcement actions with respect to compliance and other legal matters involving financial activities, which heightens the risks associated with actual and perceived compliance failures. Directives issued to enforce such actions may be confidential and thus, in some instances, we are not permitted to publicly disclose these actions. Any of the foregoing could have a material adverse effect on our business, financial condition and results of operations.

See the sections captioned "Supervision and Regulation" included in Item 1. Business and Note 9 - Capital and Regulatory Matters in the notes to consolidated financial statements included in Item 8. Financial Statements and Supplementary Data elsewhere in this report.

Our Accounting Estimates and Risk Management Processes Rely On Analytical and Forecasting Models

The processes we use to estimate our inherent loan losses and to measure the fair value of financial instruments, as well as the processes used to estimate the effects of changing interest rates and other market measures on our financial condition and results of operations, depends upon the use of analytical and forecasting models. These models reflect assumptions that may not be accurate, particularly in times of market stress or other unforeseen circumstances. Even if these assumptions are adequate, the models may prove to be inadequate or inaccurate because of other flaws in their design or their implementation. If the models we use for interest rate risk and asset-liability management are inadequate, we may incur increased or unexpected losses upon changes in market interest rates or other market measures. If the models we use for determining our probable loan losses are inadequate, the allowance for loan losses may not be sufficient to support future charge-offs. If the models we use to measure the fair value of financial instruments are inadequate, the fair value of such financial instruments may fluctuate unexpectedly or may not accurately reflect what we could realize upon sale or settlement of such financial instruments. Any such failure in our analytical or forecasting models could have a material adverse effect on our business, financial condition and results of operations.

Changes In Accounting Standards Could Materially Impact Our Financial Statements

From time to time accounting standards setters change the financial accounting and reporting standards that govern the preparation of our financial statements. These changes can be difficult to predict and can materially impact how we record and report our financial condition and results of operations. In some cases, we could be required to apply a new or revised standard retroactively, resulting in changes to previously reported financial results or a cumulative charge to retained earnings. See Note 20 - Accounting Standards Updates in the notes to consolidated financial statements included in Item 8. Financial Statements and Supplementary Data elsewhere in this report.

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The Repeal Of Federal Prohibitions On Payment Of Interest On Demand Deposits Could Increase Our Interest Expense

All federal prohibitions on the ability of financial institutions to pay interest on demand deposit accounts were repealed as part of the Dodd-Frank Act beginning on July 21, 2011. As a result, some financial institutions have commenced offering interest on demand deposits to compete for customers. We do not yet know what interest rates other institutions may offer as market interest rates increase. Our interest expense will increase and our net interest margin will decrease if we begin offering interest on demand deposits to attract additional customers or maintain current customers, which could have a material adverse effect on our business, financial condition and results of operations.

We May Need To Raise Additional Capital In The Future, and Such Capital May Not Be Available When Needed Or At All

We may need to raise additional capital in the future to provide us with sufficient capital resources and liquidity to meet our commitments and business needs, particularly if our asset quality or earnings were to deteriorate significantly. Our ability to raise additional capital, if needed, will depend on, among other things, conditions in the capital markets at that time, which are outside of our control, and our financial condition. Economic conditions and the loss of confidence in financial institutions may increase our cost of funding and limit access to certain customary sources of capital, including inter-bank borrowings, repurchase agreements and borrowings from the discount window of the Federal Reserve.

We cannot assure that such capital will be available on acceptable terms or at all. Any occurrence that may limit our access to the capital markets, such as a decline in the confidence of debt purchasers, depositors of Frost Bank or counterparties participating in the capital markets, or a downgrade of Cullen/Frost’s or Frost Bank’s debt ratings, may adversely affect our capital costs and our ability to raise capital and, in turn, our liquidity. Moreover, if we need to raise capital in the future, we may have to do so when many other financial institutions are also seeking to raise capital and would have to compete with those institutions for investors. An inability to raise additional capital on acceptable terms when needed could have a materially adverse effect on our business, financial condition and results of operations.

The Value Of Our Goodwill and Other Intangible Assets May Decline In The Future

As of December 31, 2018, we had $658.6 million of goodwill and other intangible assets. A significant decline in our expected future cash flows, a significant adverse change in the business climate, slower growth rates or a significant and sustained decline in the price of Cullen/Frost’s common stock may necessitate taking charges in the future related to the impairment of our goodwill and other intangible assets. If we were to conclude that a future write-down of goodwill and other intangible assets is necessary, we would record the appropriate charge, which could have a material adverse effect on our business, financial condition and results of operations.

Our Controls and Procedures May Fail Or Be Circumvented

Our internal controls, disclosure controls and procedures, and corporate governance policies and procedures are based in part on certain assumptions and can provide only reasonable, not absolute, assurances that the objectives of the system are met. Any failure or circumvention of our controls and procedures; failure to comply with regulations related to controls and procedures; and failure to comply with our corporate governance policies and procedures could have a material adverse effect on our reputation, business, financial condition and results of operations.

New Lines Of Business Or New Products and Services May Subject Us To Additional Risks

From time to time, we may implement new lines of business or offer new products and services within existing lines of business. There are substantial risks and uncertainties associated with these efforts, particularly in instances where the markets are not fully developed. In developing and marketing new lines of business and/or new products and services we may invest significant time and resources. Initial timetables for the introduction and development of new lines of business and/or new products or services may not be achieved and price and profitability targets may not prove feasible. External factors, such as compliance with regulations, competitive alternatives, and shifting market preferences, may also impact the successful implementation of a new line of business or a new product or service. Furthermore, any new line of business and/or new product or service could have a significant impact on the effectiveness of our system of internal controls. Failure to successfully manage these risks in the development and implementation of new lines of business or new products or services could have a material adverse effect on our business, financial condition and results of operations.

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Negative Publicity Could Damage Our Reputation and Our Business

Reputation risk, or the risk to our earnings and capital from negative public opinion, is inherent in our business. Negative public opinion could adversely affect our ability to keep and attract customers and expose us to adverse legal and regulatory consequences. Negative public opinion could result from our actual or alleged conduct in any number of activities, including lending practices, corporate governance, regulatory compliance, mergers and acquisitions, and disclosure, sharing or inadequate protection of customer information, and from actions taken by government regulators and community organizations in response to that conduct. Negative public opinion could also result from adverse news or publicity that impairs the reputation of the financial services industry generally. Because we conduct most of our business under the “Frost” brand, negative public opinion about one business could affect our other businesses.

Changes in Customer Behavior May Adversely Impact Our Business, Financial Condition and Results Of Operations

Individual, economic, political, industry-specific conditions and other factors outside of our control, such as fuel prices, energy costs, real estate values or other factors that affect customer income levels, could alter anticipated customer behavior, including borrowing, repayment, investment and deposit practices. Such a change in these practices could materially adversely affect our ability to anticipate business needs and meet regulatory requirements. Further, difficult economic conditions may negatively affect consumer confidence levels. A decrease in consumer confidence levels would likely aggravate the adverse effects of these difficult market conditions on us, our customers and others in the financial institutions industry.

Cullen/Frost Relies On Dividends From Its Subsidiaries For Most Of Its Revenue

Cullen/Frost is a separate and distinct legal entity from its subsidiaries. It receives substantially all of its revenue from dividends from its subsidiaries. These dividends are the principal source of funds to pay dividends on Cullen/Frost’s common stock and preferred stock and interest and principal on Cullen/Frost’s debt. Various federal and state laws and regulations limit the amount of dividends that Frost Bank and certain non-bank subsidiaries may pay to Cullen/Frost. Also, Cullen/Frost’s right to participate in a distribution of assets upon a subsidiary’s liquidation or reorganization is subject to the prior claims of the subsidiary’s creditors. In the event Frost Bank is unable to pay dividends to Cullen/Frost, Cullen/Frost may not be able to service debt, pay obligations or pay dividends on our common stock or our preferred stock. The inability to receive dividends from Frost Bank could have a material adverse effect on our business, financial condition and results of operations.

See the section captioned “Supervision and Regulation” in Item 1. Business and Note 9 - Capital and Regulatory Matters in the notes to consolidated financial statements included in Item 8. Financial Statements and Supplementary Data elsewhere in this report.

Potential Acquisitions May Disrupt Our Business and Dilute Stockholder Value

We generally seek merger or acquisition partners that are culturally similar and have experienced management and possess either significant market presence or have potential for improved profitability through financial management, economies of scale or expanded services. Acquiring other banks, businesses, or branches involves various risks commonly associated with acquisitions, including, among other things:

- Potential exposure to unknown or contingent liabilities of the target company.
- Exposure to potential asset quality issues of the target company.
- Potential disruption to our business.
- Potential diversion of our management’s time and attention.
- The possible loss of key employees and customers of the target company.
- Difficulty in estimating the value of the target company.
- Potential changes in banking or tax laws or regulations that may affect the target company.

Acquisitions typically involve the payment of a premium over book and market values, and, therefore, some dilution of our tangible book value and net income per common share may occur in connection with any future transaction. Furthermore, failure to realize the expected revenue increases, cost savings, increases in geographic or product presence, and/or other projected benefits from an acquisition could have a material adverse effect on our business, financial condition and results of operations.

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Acquisitions May Be Delayed, Impeded, Or Prohibited Due To Regulatory Issues

Acquisitions by financial institutions, including us, are subject to approval by a variety of federal and state regulatory agencies (collectively, “regulatory approvals”). The process for obtaining these required regulatory approvals has become substantially more difficult in recent years. Regulatory approvals could be delayed, impeded, restrictively conditioned or denied due to existing or new regulatory issues we have, or may have, with regulatory agencies, including, without limitation, issues related to Bank Secrecy Act compliance, Community Reinvestment Act issues, fair lending laws, fair housing laws, consumer protection laws, unfair, deceptive, or abusive acts or practices regulations and other similar laws and regulations. We may fail to pursue, evaluate or complete strategic and competitively significant acquisition opportunities as a result of our inability, or perceived or anticipated inability, to obtain regulatory approvals in a timely manner, under reasonable conditions or at all. Difficulties associated with potential acquisitions that may result from these factors could have a material adverse effect on our business, financial condition and results of operations.

We Are Subject To Liquidity Risk

We require liquidity to meet our deposit and debt obligations as they come due. Our access to funding sources in amounts adequate to finance our activities or on terms that are acceptable to us could be impaired by factors that affect us specifically or the financial services industry or economy generally. Factors that could reduce our access to liquidity sources include a downturn in the Texas economy, difficult credit markets or adverse regulatory actions against us. Our access to deposits may also be affected by the liquidity needs of our depositors. In particular, a substantial majority of our liabilities are demand, savings, interest checking and money market deposits, which are payable on demand or upon several days’ notice, while by comparison, a substantial portion of our assets are loans, which cannot be called or sold in the same time frame. We may not be able to replace maturing deposits and advances as necessary in the future, especially if a large number of our depositors sought to withdraw their accounts, regardless of the reason. A failure to maintain adequate liquidity could have a material adverse effect on our business, financial condition and results of operations.

We May Not Be Able To Attract and Retain Skilled People

Our success depends, in large part, on our ability to attract and retain key people. Competition for the best people in most activities engaged in by us can be intense and we may not be able to hire people or to retain them. We do not currently have employment agreements or non-competition agreements with any of our senior officers. The unexpected loss of services of key personnel could have a material adverse impact on our business, financial condition and results of operations because of their customer relationships, skills, knowledge of our market, years of industry experience and the difficulty of promptly finding qualified replacement personnel. In addition, the scope and content of U.S. banking regulators' policies on incentive compensation, as well as changes to these policies, could adversely affect our ability to hire, retain and motivate our key employees.

Our Information Systems May Experience Failure, Interruption Or Breach In Security

In the ordinary course of business, we rely on electronic communications and information systems to conduct our operations and to store sensitive data. Any failure, interruption or breach in security of these systems could result in significant disruption to our operations. Information security breaches and cybersecurity-related incidents may include, but are not limited to, attempts to access information, including customer and company information, malicious code, computer viruses and denial of service attacks that could result in unauthorized access, misuse, loss or destruction of data (including confidential customer information), account takeovers, unavailability of service or other events. These types of threats may derive from human error, fraud or malice on the part of external or internal parties, or may result from accidental technological failure. Further, to access our products and services our customers may use computers and mobile devices that are beyond our security control systems. Our technologies, systems, networks and software, and those of other financial institutions have been, and are likely to continue to be, the target of cybersecurity threats and attacks, which may range from uncoordinated individual attempts to sophisticated and targeted measures directed at us. The risk of a security breach or disruption, particularly through cyber attack or cyber intrusion, has increased as the number, intensity and sophistication of attempted attacks and intrusions from around the world have increased.

Our business requires the collection and retention of large volumes of customer data, including personally identifiable information in various information systems that we maintain and in those maintained by third parties with whom we contract to provide data services. We also maintain important internal company data such as personally identifiable information about our employees and information relating to our operations. The integrity and protection of that customer

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and company data is important to us. Our collection of such customer and company data is subject to extensive regulation and oversight.

Our customers and employees have been, and will continue to be, targeted by parties using fraudulent e-mails and other communications in attempts to misappropriate passwords, bank account information or other personal information or to introduce viruses or other malware through "Trojan horse" programs to our information systems and/or our customers' computers. Though we endeavor to mitigate these threats through product improvements, use of encryption and authentication technology and customer and employee education, such cyber attacks against us or our merchants and our third party service providers remain a serious issue. The pervasiveness of cybersecurity incidents in general and the risks of cyber crime are complex and continue to evolve. More generally, publicized information concerning security and cyber-related problems could inhibit the use or growth of electronic or web-based applications or solutions as a means of conducting commercial transactions.

Although we make significant efforts to maintain the security and integrity of our information systems and have implemented various measures to manage the risk of a security breach or disruption, there can be no assurance that our security efforts and measures will be effective or that attempted security breaches or disruptions would not be successful or damaging. Even the most well protected information, networks, systems and facilities remain potentially vulnerable because attempted security breaches, particularly cyber attacks and intrusions, or disruptions will occur in the future, and because the techniques used in such attempts are constantly evolving and generally are not recognized until launched against a target, and in some cases are designed not to be detected and, in fact, may not be detected. Accordingly, we may be unable to anticipate these techniques or to implement adequate security barriers or other preventative measures, and thus it is virtually impossible for us to entirely mitigate this risk. While we maintain specific "cyber" insurance coverage, which would apply in the event of various breach scenarios, the amount of coverage may not be adequate in any particular case. Furthermore, because cyber threat scenarios are inherently difficult to predict and can take many forms, some breaches may not be covered under our cyber insurance coverage.

A security breach or other significant disruption of our information systems or those related to our customers, merchants and our third party vendors, including as a result of cyber attacks, could (i) disrupt the proper functioning of our networks and systems and therefore our operations and/or those of certain of our customers; (ii) result in the unauthorized access to, and destruction, loss, theft, misappropriation or release of confidential, sensitive or otherwise valuable information of ours or our customers; (iii) result in a violation of applicable privacy, data breach and other laws, subjecting us to additional regulatory scrutiny and exposing us to civil litigation, governmental fines and possible financial liability; (iv) require significant management attention and resources to remedy the damages that result; or (v) harm our reputation or cause a decrease in the number of customers that choose to do business with us. The occurrence of any of the foregoing could have a material adverse effect on our business, financial condition and results of operations.

During 2018, we experienced a data security incident that resulted in unauthorized access to a third-party lockbox software program used by certain of our commercial lockbox customers to store digital images. We have stopped the identified unauthorized access and are working with a leading cybersecurity firm. We have reported the incident to, and are cooperating with, law-enforcement authorities. We have contacted each of the affected commercial customers and are working with them to support them in taking appropriate actions. The identified incident did not impact other Frost systems.

Our Operations Rely On Certain External Vendors

We rely on certain external vendors to provide products and services necessary to maintain our day-to-day operations. These third party vendors are sources of operational and informational security risk to us, including risks associated with operational errors, information system interruptions or breaches and unauthorized disclosures of sensitive or confidential client or customer information. If these vendors encounter any of these issues, or if we have difficulty communicating with them, we could be exposed to disruption of operations, loss of service or connectivity to customers, reputational damage, and litigation risk that could have a material adverse effect on our business and, in turn, our financial condition and results of operations.

In addition, our operations are exposed to risk that these vendors will not perform in accordance with the contracted arrangements under service level agreements. Although we have selected these external vendors carefully, we do not control their actions. The failure of an external vendor to perform in accordance with the contracted arrangements under service level agreements, because of changes in the vendor's organizational structure, financial condition, support for existing products and services or strategic focus or for any other reason, could be disruptive to our operations, which could have a material adverse effect on our business and, in turn, our financial condition and results of operations. Replacing these external vendors could also entail significant delay and expense.

We Continually Encounter Technological Change

The financial services industry is continually undergoing rapid technological change with frequent introductions of new technology-driven products and services. The effective use of technology increases efficiency and enables financial institutions to better serve customers and to reduce costs. Our future success depends, in part, upon our ability to address the needs of our customers by using technology to provide products and services that will satisfy customer demands, as well as to create additional efficiencies in our operations. Many of our competitors have substantially greater resources to invest in technological improvements. We may not be able to effectively implement new technology-driven products and services or be successful in marketing these products and services to our customers. Failure to successfully keep pace with technological change affecting the financial services industry could have a material adverse effect on our business, financial condition and results of operations.

We Are Subject To Litigation Risk Pertaining To Fiduciary Responsibility

From time to time, customers make claims and take legal action pertaining to our performance of our fiduciary responsibilities. Whether customer claims and legal action related to our performance of our fiduciary responsibilities are founded or unfounded, if such claims and legal actions are not resolved in a manner favorable to us they may result in significant financial liability and/or adversely affect the market perception of us and our products and services as well as impact customer demand for those products and services. Any financial liability or reputational damage could have a material adverse effect on our business, financial condition and results of operations.

We Are Subject To Litigation Risk Pertaining To Intellectual Property

Banking and other financial services companies, including us, rely on technology companies to provide information technology products and services necessary to support day-to-day operations. Technology companies frequently enter into litigation based on allegations of patent infringement or other violations of intellectual property rights. In addition, patent holding companies seek to monetize patents they have purchased or otherwise obtained. Competitors of our vendors, or other individuals or companies, have from time to time claimed to hold intellectual property sold to us by our vendors. Such claims may increase in the future as the financial services sector becomes more reliant on information technology vendors. The plaintiffs in these actions frequently seek injunctions and substantial damages. Regardless of the scope or validity of such patents or other intellectual property rights, or the merits of any claims by potential or actual litigants, we may have to engage in protracted litigation. Such litigation is often expensive, time-consuming, disruptive to our operations and distracting to management. If we are found to infringe upon one or more patents or other intellectual property rights, we may be required to pay substantial damages or royalties to a third-party. In certain cases, we may consider entering into licensing agreements for disputed intellectual property, although no assurance can be given that such licenses can be obtained on acceptable terms or that litigation will not occur. These licenses may also significantly increase our operating expenses. If legal matters related to intellectual property claims were resolved against us or settled, we could be required to make payments in amounts that could have a material adverse effect on our business, financial condition and results of operations.

We Are Subject To Environmental Liability Risk Associated With Lending Activities

A significant portion of our loan portfolio is secured by real property. During the ordinary course of business, we may foreclose on and take title to properties securing certain loans. In doing so, there is a risk that hazardous or toxic substances could be found on these properties. If hazardous or toxic substances are found, we may be liable for remediation costs, as well as for personal injury and property damage. Environmental laws may require us to incur substantial expenses and may materially reduce the affected property’s value or limit our ability to use or sell the affected property. In addition, future laws or more stringent interpretations or enforcement policies with respect to existing laws may increase our exposure to environmental liability. Environmental reviews of real property before initiating foreclosure actions may not be sufficient to detect all potential environmental hazards. The remediation costs and any other financial liabilities associated with an environmental hazard could have a material adverse effect on our business, financial condition and results of operations.

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Severe Weather, Natural Disasters, Acts Of War Or Terrorism and Other External Events Could Significantly Impact Our Business

Severe weather, natural disasters, acts of war or terrorism and other adverse external events could have a significant impact on our ability to conduct business. In addition, such events could affect the stability of our deposit base, impair the ability of borrowers to repay outstanding loans, impair the value of collateral securing loans, cause significant property damage, result in loss of revenue and/or cause us to incur additional expenses. The occurrence of any such event in the future could have a material adverse effect on our business, which, in turn, could have a material adverse effect on our business, financial condition and results of operations.

Financial Services Companies Depend On The Accuracy and Completeness Of Information About Customers and Counterparties

In deciding whether to extend credit or enter into other transactions, we may rely on information furnished by or on behalf of customers and counterparties, including financial statements, credit reports and other financial information. We may also rely on representations of those customers, counterparties or other third parties, such as independent auditors, as to the accuracy and completeness of that information. Reliance on inaccurate or misleading financial statements, credit reports or other financial information could have a material adverse impact on our business, financial condition and results of operations.

Changes In The Federal, State Or Local Tax Laws May Negatively Impact Our Financial Performance

We are subject to changes in tax law that could increase our effective tax rates. These law changes may be retroactive to previous periods and as a result could negatively affect our current and future financial performance. Furthermore, the full impact of the Tax Cuts and Jobs Act, which was enacted on December 22, 2017, on us and our customers remains uncertain, creating uncertainty and risk related to our customers' future demand for credit and our future results. Increased economic activity expected to result from the decrease in federal income tax rates on businesses generally could spur additional economic activity that would encourage additional borrowing. At the same time, some customers may elect to use their additional cash flow from lower taxes to fund their existing levels of activity, decreasing borrowing needs. The elimination of the federal income tax deductibility of business interest expense for a significant number of our customers effectively increases the cost of borrowing and could make equity or hybrid funding relatively more attractive. This could have a long-term negative impact on business customer borrowing. There is no assurance that presently anticipated benefits of federal income tax reform for us will be realized.

We Are Subject To Examinations and Challenges By Tax Authorities

We are subject to federal and applicable state tax regulations. Such tax regulations are often complex and require interpretation and changes in these regulations could negatively impact our results of operations. In the normal course of business, we are routinely subject to examinations and challenges from federal and applicable state tax authorities regarding the amount of taxes due in connection with investments we have made and the businesses in which we have engaged. Recently, federal and state taxing authorities have become increasingly aggressive in challenging tax positions taken by financial institutions. These tax positions may relate to tax compliance, sales and use, franchise, gross receipts, payroll, property and income tax issues, including tax base, apportionment and tax credit planning. The challenges made by tax authorities may result in adjustments to the timing or amount of taxable income or deductions or the allocation of income among tax jurisdictions. If any such challenges are made and are not resolved in our favor, they could have a material adverse effect on our business, financial condition and results of operations.

Risks Associated With Our Common Stock

Our Stock Price Can Be Volatile

Stock price volatility may make it more difficult for you to resell your common stock when you want and at prices you find attractive. Our stock price can fluctuate significantly in response to a variety of factors including, among other things:

- Actual or anticipated variations in quarterly results of operations.
- Recommendations by securities analysts.
- Operating and stock price performance of other companies that investors deem comparable to us.
- News reports relating to trends, concerns and other issues in the financial services industry.

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- Perceptions in the marketplace regarding us and/or our competitors.
- New technology used, or services offered, by competitors.
- The issuance by us of additional securities, including common stock and securities that are convertible into or exchangeable for, or that represent the right to receive, common stock.
- Sales of a large block of shares of our common stock or similar securities in the market after an equity offering, or the perception that such sales could occur.
- Significant acquisitions or business combinations, strategic partnerships, joint ventures or capital commitments by or involving us or our competitors.
- Failure to integrate acquisitions or realize anticipated benefits from acquisitions.
- Changes in government regulations.
- Geopolitical conditions such as acts or threats of terrorism or military conflicts.

General market fluctuations, including real or anticipated changes in the strength of the Texas economy; industry factors and general economic and political conditions and events, such as economic slowdowns or recessions; interest rate changes, oil price volatility or credit loss trends could also cause our stock price to decrease regardless of operating results.

The Trading Volume In Our Common Stock Is Less Than That Of Other Larger Financial Services Companies

Although our common stock is listed for trading on the New York Stock Exchange (NYSE), the trading volume in our common stock is less than that of other, larger financial services companies. A public trading market having the desired characteristics of depth, liquidity and orderliness depends on the presence in the marketplace of willing buyers and sellers of our common stock at any given time. This presence depends on the individual decisions of investors and general economic and market conditions over which we have no control. Given the lower trading volume of our common stock, significant sales of our common stock, or the expectation of these sales, could cause our stock price to fall.

Cullen/Frost May Not Continue To Pay Dividends On Its Common Stock In The Future

Holders of Cullen/Frost common stock are only entitled to receive such dividends as its board of directors may declare out of funds legally available for such payments. Although Cullen/Frost has historically declared cash dividends on its common stock, it is not required to do so and may reduce or eliminate its common stock dividend in the future. This could adversely affect the market price of Cullen/Frost’s common stock. Also, Cullen/Frost is a bank holding company, and its ability to declare and pay dividends is dependent on certain federal regulatory considerations, including the guidelines of the Federal Reserve Board regarding capital adequacy and dividends.

As more fully discussed in Note 9 - Capital and Regulatory Matters in the notes to consolidated financial statements included in Item 8. Financial Statements and Supplementary Data elsewhere in this report, our ability to declare or pay dividends on our common stock may also be subject to certain restrictions in the event that we elect to defer the payment of interest on our junior subordinated deferrable interest debentures or do not declare and pay dividends on our Series A Preferred Stock.

An Investment In Our Common Stock Is Not An Insured Deposit

Our common stock is not a bank deposit and, therefore, is not insured against loss by the Federal Deposit Insurance Corporation (FDIC), any other deposit insurance fund or by any other public or private entity. Investment in our common stock is inherently risky for the reasons described in this “Risk Factors” section and elsewhere in this report and is subject to the same market forces that affect the price of common stock in any company. As a result, if you acquire our common stock, you could lose some or all of your investment.

Certain Banking Laws May Have An Anti-Takeover Effect

Provisions of federal banking laws, including regulatory approval requirements, could make it more difficult for a third party to acquire us, even if doing so would be perceived to be beneficial to our shareholders. These provisions effectively inhibit a non-negotiated merger or other business combination, which, in turn, could adversely affect the market price of our common stock.

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ITEM 1B. UNRESOLVED STAFF COMMENTS

None

ITEM 2. PROPERTIES

Our headquarters is located in downtown San Antonio, Texas. These facilities, which we lease, house our executive and primary administrative offices, as well as the principal banking headquarters of Frost Bank. We also own or lease other facilities within our primary market areas in the regions of Austin, Corpus Christi, Dallas, Fort Worth, Houston, Permian Basin, Rio Grande Valley and San Antonio. We consider our properties to be suitable and adequate for our present needs.

ITEM 3. LEGAL PROCEEDINGS

We are subject to various claims and legal actions that have arisen in the course of conducting business. Management does not expect the ultimate disposition of these matters to have a material adverse effect on our business, financial condition and results of operations.

ITEM 4. MINE SAFETY DISCLOSURES

None

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PART II

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

Market for Our Common Stock

Our common stock is traded on the New York Stock Exchange, Inc. ("NYSE") under the symbol "CFR". As of December 31, 2018, there were 62,985,842 shares of our common stock outstanding held by 1,183 holders of record. The closing price per share of common stock on December 31, 2018, the last trading day of our fiscal year, was $87.94.

Stock-Based Compensation Plans

Information regarding stock-based compensation awards outstanding and available for future grants as of December 31, 2018, segregated between stock-based compensation plans approved by shareholders and stock-based compensation plans not approved by shareholders, is presented in the table below. Additional information regarding stock-based compensation plans is presented in Note 11 - Employee Benefit Plans in the notes to consolidated financial statements included in Item 8. Financial Statements and Supplementary Data elsewhere in this report.

Plan Category	Number of Shares to be Issued Upon Exercise of Outstanding Awards		Weighted-Average Exercise Price of Outstanding Awards		Number of Shares Available for Future Grants
Plans approved by shareholders	2,894,734	(1)	$ 63.55	(2)	1,264,277
Plans not approved by shareholders	—		—		—
Total	2,894,734		63.55		1,264,277

(1) Includes 2,352,008 shares related to stock options, 368,007 shares related to non-vested stock units, 48,910 shares related to director deferred stock units and 125,809 shares related to performance stock units (assuming attainment of the maximum payout rate as set forth by the performance criteria).

(2) Excludes outstanding stock units which are exercised for no consideration.

Stock Repurchase Plans

From time to time, our board of directors has authorized stock repurchase plans. In general, stock repurchase plans allow us to proactively manage our capital position and return excess capital to shareholders. Shares purchased under such plans also provide us with shares of common stock necessary to satisfy obligations related to stock compensation awards. On October 24, 2017, our board of directors authorized a $150.0 million stock repurchase program, allowing us to repurchase shares of our common stock over a two-year period from time to time at various prices in the open market or through private transactions. Under this plan, we repurchased 1,027,292 shares at a total cost of $100.0 million during 2018. Under a prior plan, we repurchased 1,134,966 shares at a total cost of $100.0 million during 2017.

The following table provides information with respect to purchases made by or on behalf of us or any "affiliated purchaser" (as defined in Rule 10b-18(a)(3) under the Securities Exchange Act of 1934), of our common stock during the fourth quarter of 2018.

Period	Total Number of Shares Purchased	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans	Maximum Number (or Approximate Dollar Value) of Shares That May Yet Be Purchased Under the Plans at the End of the Period

October 1, 2018 to October 31, 2018	278,204 [1]	$ 95.33	268,115	$ 124,418
November 1, 2018 to November 30, 2018	492,591	100.09	492,591	75,116
December 1, 2018 to December 31, 2018	266,586	94.21	266,586	50,000
Total	1,037,381	$ 97.30	1,027,292	

(1) Includes 10,089 shares related to repurchases made in connection with the vesting of certain share awards at an average price of $93.17 per share.

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Performance Graph

The performance graph below compares the cumulative total shareholder return on Cullen/Frost Common Stock with the cumulative total return on the equity securities of companies included in the Standard & Poor’s 500 Stock Index and the Standard and Poor’s 500 Bank Index, measured at the last trading day of each year shown. The graph assumes an investment of $100 on December 31, 2013 and reinvestment of dividends on the date of payment without commissions. The performance graph represents past performance and should not be considered to be an indication of future performance.

	2013	2014	2015	2016	2017	2018
Cullen/Frost	$100.00	$97.46	$85.34	$129.72	$142.59	$135.69
S&P 500	100.00	113.69	115.26	129.05	157.22	150.33
S&P 500 Banks	100.00	115.51	116.49	144.81	177.47	148.30

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ITEM 6. SELECTED FINANCIAL DATA

The following consolidated selected financial data is derived from our audited financial statements as of and for the five years ended December 31, 2018. The following consolidated financial data should be read in conjunction with Management's Discussion and Analysis of Financial Condition and Results of Operations and the Consolidated Financial Statements and related notes included elsewhere in this report. Beginning in 2018, a new accounting standard requires us to report network costs associated with debit card and ATM transactions netted against the related interchange and debit card fee income from such transactions. Previously, such network costs were reported as a component of other non-interest expense. The operating results of companies acquired during the periods presented are included with our results of operations since their respective dates of acquisition. Dollar amounts, except per share data, and common shares outstanding are in thousands.

	Year Ended December 31,				
	2018	2017	2016	2015	2014
Consolidated Statements of Income					
Interest income:					
Loans, including fees	$669,002	$534,804	$458,094	$433,872	$440,958
Securities	319,728	315,599	313,943	307,394	249,705
Interest-bearing deposits	56,968	41,608	16,103	8,123	10,725
Federal funds sold and resell agreements	5,500	936	272	107	83
Total interest income	1,051,198	892,947	788,412	749,496	701,471
Interest expense:					
Deposits	75,337	17,188	7,248	9,024	11,022
Federal funds purchased and repurchase agreements	8,021	1,522	204	167	134
Junior subordinated deferrable interest debentures	5,291	3,955	3,281	2,725	2,488
Subordinated notes payable and other borrowings	4,657	3,860	1,343	948	893
Total interest expense	93,306	26,525	12,076	12,864	14,537
Net interest income	957,892	866,422	776,336	736,632	686,934
Provision for loan losses	21,613	35,460	51,673	51,845	16,314
Net interest income after provision for loan losses	936,279	830,962	724,663	684,787	670,620
Non-interest income:					
Trust and investment management fees	119,391	110,675	104,240	105,512	106,237
Service charges on deposit accounts	85,186	84,182	81,203	81,350	81,946
Insurance commissions and fees	48,967	46,169	47,154	48,926	45,115
Interchange and debit card transaction fees	13,877	23,232	21,369	19,666	18,372
Other charges, commissions and fees	37,231	39,931	39,623	37,551	36,180
Net gain (loss) on securities transactions	(156)	(4,941)	14,975	69	38
Other	46,790	37,222	41,144	35,656	32,256
Total non-interest income	351,286	336,470	349,708	328,730	320,144
Non-interest expense:					
Salaries and wages	350,312	337,068	318,665	310,504	292,349
Employee benefits	77,323	74,575	72,615	69,746	60,151
Net occupancy	76,788	75,971	71,627	65,690	55,745
Technology, furniture and equipment	83,102	74,335	71,208	64,373	62,087
Deposit insurance	16,397	20,128	17,428	14,519	13,232
Intangible amortization	1,424	1,703	2,429	3,325	3,520
Other	173,538	175,289	178,988	165,561	167,656
Total non-interest expense	778,884	759,069	732,960	693,718	654,740
Income before income taxes	508,681	408,363	341,411	319,799	336,024
Income taxes	53,763	44,214	37,150	40,471	58,047
Net income	454,918	364,149	304,261	279,328	277,977

Preferred stock dividends	8,063	8,063	8,063	8,063	8,063
Net income available to common shareholders	$446,855	$356,086	$296,198	$271,265	$269,914

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	As of or for the Year Ended December 31,				
	2018	2017	2016	2015	2014
Per Common Share Data					
Net income - basic	$6.97	$5.56	$4.73	$4.31	$4.32
Net income - diluted	6.90	5.51	4.70	4.28	4.29
Cash dividends declared and paid	2.58	2.25	2.15	2.10	2.03
Book value	51.19	49.68	45.03	44.30	42.87
Common Shares Outstanding					
Period-end	62,986	63,476	63,474	61,982	63,149
Weighted-average shares - basic	63,705	63,694	62,376	62,758	62,072
Dilutive effect of stock compensation	982	968	593	715	902
Weighted - average shares - diluted	64,687	64,662	62,969	63,473	62,974
Performance Ratios					
Return on average assets	1.44 %	1.17 %	1.03 %	0.97 %	1.05 %
Return on average common equity	14.23	11.76	10.16	9.86	10.51
Net interest income to average earning assets	3.64	3.69	3.56	3.45	3.41
Dividend pay-out ratio	37.03	40.49	45.54	48.72	47.12
Balance Sheet Data					
Period-end:					
Loans	$14,099,733	$13,145,665	$11,975,392	$11,486,531	$10,987,535
Earning assets	29,894,185	29,595,375	28,025,439	26,431,176	26,052,339
Total assets	32,292,966	31,747,880	30,196,319	28,565,942	28,276,421
Non-interest-bearing demand deposits	10,997,494	11,197,093	10,513,369	10,270,233	10,149,061
Interest-bearing deposits	16,151,710	15,675,296	15,298,206	14,073,362	13,986,869
Total deposits	27,149,204	26,872,389	25,811,575	24,343,595	24,135,930
Long-term debt and other borrowings	234,950	234,736	236,117	235,939	235,761
Shareholders' equity	3,368,917	3,297,863	3,002,528	2,890,343	2,851,403
Average:					
Loans	$13,617,940	$12,460,148	$11,554,823	$11,267,402	$10,299,025
Earning assets	28,899,578	28,359,131	26,717,013	25,954,510	23,877,476
Total assets	31,029,850	30,450,207	28,832,093	28,060,626	25,766,301
Non-interest-bearing demand deposits	10,756,808	10,819,426	10,034,319	10,179,810	9,125,030
Interest-bearing deposits	15,532,258	15,085,492	14,477,525	13,860,948	12,927,729
Total deposits	26,289,066	25,904,918	24,511,844	24,040,758	22,052,759
Long-term debt and other borrowings	234,850	226,194	236,033	235,856	230,170
Shareholders' equity	3,284,376	3,173,264	3,058,896	2,895,192	2,712,226
Asset Quality					
Allowance for loan losses	$132,132	$155,364	$153,045	$135,859	$99,542
Allowance for losses to year-end loans	0.94 %	1.18 %	1.28 %	1.18 %	0.91 %
Net loan charge-offs	$44,845	$33,141	$34,487	$15,528	$9,210
Net loan charge-offs to average loans	0.33 %	0.27 %	0.30 %	0.14 %	0.09 %
Non-performing assets	$74,914	$157,292	$102,591	$85,722	$65,176
Non-performing assets to:					
Total loans plus foreclosed assets	0.53 %	1.20 %	0.86 %	0.75 %	0.59 %
Total assets	0.23	0.50	0.34	0.30	0.23
Consolidated Capital Ratios					
Common equity tier 1 risk-based ratio	12.65 %	12.42 %	12.52 %	11.37 %	N/A
Tier 1 risk-based ratio	13.34	13.16	13.33	12.38	13.68 %

Total risk-based ratio	15.09	15.15	14.93	13.85	14.55
Leverage ratio	9.06	8.46	8.14	7.79	8.16
Average shareholders’ equity to average total assets	10.58	10.42	10.61	10.32	10.53

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The following tables set forth unaudited consolidated selected quarterly statement of operations data for the years ended December 31, 2018 and 2017. Dollar amounts are in thousands, except per share data.

	Year Ended December 31, 2018			
	4th Quarter	3rd Quarter	2nd Quarter	1st Quarter
Interest income	$281,205	$268,716	$257,951	$243,326
Interest expense	31,996	27,051	20,681	13,578
Net interest income	249,209	241,665	237,270	229,748
Provision for loan losses	3,767	2,650	8,251	6,945
Non-interest income[(1)]	87,118	87,657	85,066	91,445
Non-interest expense	199,697	193,668	188,908	196,611
Income before income taxes	132,863	133,004	125,177	117,637
Income taxes	13,610	15,160	13,836	11,157
Net income	119,253	117,844	111,341	106,480
Preferred stock dividends	2,016	2,016	2,015	2,016
Net income available to common shareholders	$117,237	$115,828	$109,326	$104,464
Net income per common share:				
Basic	$1.84	$1.80	$1.70	$1.63
Diluted	1.82	1.78	1.68	1.61

	Year Ended December 31, 2017			
	4th Quarter	3rd Quarter	2nd Quarter	1st Quarter
Interest income	$234,295	$227,586	$219,274	$211,792
Interest expense	10,381	8,375	4,486	3,283
Net interest income	223,914	219,211	214,788	208,509
Provision for loan losses	8,102	10,980	8,426	7,952
Non-interest income[(2)]	90,075	81,615	81,080	83,700
Non-interest expense	196,280	186,823	188,051	187,915
Income before income taxes	109,607	103,023	99,391	96,342
Income taxes	9,083	9,892	13,838	11,401
Net income	100,524	93,131	85,553	84,941
Preferred stock dividends	2,016	2,016	2,015	2,016
Net income available to common shareholders	$98,508	$91,115	$83,538	$82,925
Net income per common share:				
Basic	$1.54	$1.43	$1.30	$1.29
Diluted	1.53	1.41	1.29	1.28

(1) Includes net losses on securities transactions of $19 thousand, $60 thousand, $34 thousand and $43 thousand during the first, second, third and fourth quarters of 2018, respectively.

(2) Includes net losses on securities transactions of $50 thousand, $4.9 million and $24 thousand during the second, third and fourth quarters of 2017, respectively.

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ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Forward-Looking Statements and Factors that Could Affect Future Results

Certain statements contained in this Annual Report on Form 10-K that are not statements of historical fact constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 (the "Act"), notwithstanding that such statements are not specifically identified as such. In addition, certain statements may be contained in our future filings with the SEC, in press releases, and in oral and written statements made by us or with our approval that are not statements of historical fact and constitute forward-looking statements within the meaning of the Act. Examples of forward-looking statements include, but are not limited to: (i) projections of revenues, expenses, income or loss, earnings or loss per share, the payment or nonpayment of dividends, capital structure and other financial items; (ii) statements of plans, objectives and expectations of Cullen/Frost or its management or Board of Directors, including those relating to products, services or operations; (iii) statements of future economic performance; and (iv) statements of assumptions underlying such statements. Words such as "believes", "anticipates", "expects", "intends", "targeted", "continue", "remain", "will", "should", "may" and other similar expressions are intended to ic forward-looking statements but are not the exclusive means of identifying such statements.

Forward-looking statements involve risks and uncertainties that may cause actual results to differ materially from those in such statements. Factors that could cause actual results to differ from those discussed in the forward-looking statements include, but are not limited to:

- Local, regional, national and international economic conditions and the impact they may have on us and our customers and our assessment of that impact.
- Volatility and disruption in national and international financial and commodity markets.
- Government intervention in the U.S. financial system.
- Changes in the mix of loan geographies, sectors and types or the level of non-performing assets and charge-offs.
- Changes in estimates of future reserve requirements based upon the periodic review thereof under relevant regulatory and accounting requirements.
- The effects of and changes in trade and monetary and fiscal policies and laws, including the interest rate policies of the Federal Reserve Board.
- Inflation, interest rate, securities market and monetary fluctuations.
- The effect of changes in laws and regulations (including laws and regulations concerning taxes, banking, securities and insurance) with which we and our subsidiaries must comply.
- The soundness of other financial institutions.
- Political instability.
- Impairment of our goodwill or other intangible assets.
- Acts of God or of war or terrorism.
- The timely development and acceptance of new products and services and perceived overall value of these products and services by users.
- Changes in consumer spending, borrowings and savings habits.
- Changes in the financial performance and/or condition of our borrowers.
- Technological changes.
- The cost and effects of failure, interruption, or breach of security of our systems.
- Acquisitions and integration of acquired businesses.
- Our ability to increase market share and control expenses.
- Our ability to attract and retain qualified employees.
- Changes in the competitive environment in our markets and among banking organizations and other financial service providers.
- The effect of changes in accounting policies and practices, as may be adopted by the regulatory agencies, as well as the Public Company Accounting Oversight Board, the Financial Accounting Standards Board and other accounting standard setters.

- Changes in the reliability of our vendors, internal control systems or information systems.
- Changes in our liquidity position.
- Changes in our organization, compensation and benefit plans.

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- The costs and effects of legal and regulatory developments, the resolution of legal proceedings or regulatory or other governmental inquiries, the results of regulatory examinations or reviews and the ability to obtain required regulatory approvals.
- Greater than expected costs or difficulties related to the integration of new products and lines of business.
- Our success at managing the risks involved in the foregoing items.

Forward-looking statements speak only as of the date on which such statements are made. We do not undertake any obligation to update any forward-looking statement to reflect events or circumstances after the date on which such statement is made, or to reflect the occurrence of unanticipated events.

Application of Critical Accounting Policies and Accounting Estimates

We follow accounting and reporting policies that conform, in all material respects, to accounting principles generally accepted in the United States and to general practices within the financial services industry. The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. While we base estimates on historical experience, current information and other factors deemed to be relevant, actual results could differ from those estimates.

We consider accounting estimates to be critical to reported financial results if (i) the accounting estimate requires management to make assumptions about matters that are highly uncertain and (ii) different estimates that management reasonably could have used for the accounting estimate in the current period, or changes in the accounting estimate that are reasonably likely to occur from period to period, could have a material impact on our financial statements.

Accounting policies related to the allowance for loan losses are considered to be critical, as these policies involve considerable subjective judgment and estimation by management. The allowance for loan losses is a reserve established through a provision for loan losses charged to expense, which represents management’s best estimate of probable losses that have been incurred within the existing portfolio of loans. The allowance, in the judgment of management, is necessary to reserve for estimated loan losses and risks inherent in the loan portfolio. Our allowance for loan loss methodology includes allowance allocations calculated in accordance with Accounting Standards Codification (ASC) Topic 310, “Receivables” and allowance allocations calculated in accordance with ASC Topic 450, “Contingencies.” The level of the allowance reflects management’s continuing evaluation of industry concentrations, specific credit risks, loan loss experience, current loan portfolio quality, present economic, political and regulatory conditions and unidentified losses inherent in the current loan portfolio, as well as trends in the foregoing. Portions of the allowance may be allocated for specific credits; however, the entire allowance is available for any credit that, in management’s judgment, should be charged off. While management utilizes its best judgment and information available, the ultimate adequacy of the allowance is dependent upon a variety of factors beyond our control, including the performance of our loan portfolio, the economy, changes in interest rates and the view of the regulatory authorities toward loan classifications. See the section captioned “Allowance for Loan Losses” elsewhere in this discussion and Note 3 - Loans in the notes to consolidated financial statements included in Item 8. Financial Statements and Supplementary Data elsewhere in this report for further details of the risk factors considered by management in estimating the necessary level of the allowance for loan losses.

Overview

The following discussion and analysis presents the more significant factors that affected our financial condition as of December 31, 2018 and 2017 and results of operations for each of the years in the three-year period ended December 31, 2018. Certain reclassifications have been made to make prior periods comparable. This discussion and analysis should be read in conjunction with our consolidated financial statements, notes thereto and other financial information appearing elsewhere in this report. During 2014, we acquired WNB Bancshares, Inc., a privately-held bank holding company headquartered in Odessa, Texas (“WNB”). From time to time, we have also acquired various small businesses through our insurance subsidiary. None of these acquisitions had a significant impact on our financial statements. We account for acquisitions using the acquisition method, and as such, the results of operations of acquired companies are included from the date of acquisition.

Taxable-equivalent adjustments are the result of increasing income from tax-free loans and investments by an amount equal to the taxes that would be paid if the income were fully taxable, thus making tax-exempt yields comparable to taxable asset yields. Taxable equivalent adjustments were based upon a 21% income tax in 2018 and a 35% income

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tax rate for prior years. The decrease in the income tax rate in 2018 was the result of the Tax Cuts and Jobs Act which was enacted on December 22, 2017.

Dollar amounts in tables are stated in thousands, except for per share amounts.

Results of Operations

Net income available to common shareholders totaled $446.9 million, or $6.90 diluted per common share, in 2018 compared to $356.1 million, or $5.51 diluted per common share, in 2017 and $296.2 million, or $4.70 diluted per common share, in 2016.

Selected income statement data, returns on average assets and average equity and dividends per share for the comparable periods were as follows:

	2018	2017	2016
Taxable-equivalent net interest income	$1,052,564	$1,043,431	$939,958
Taxable-equivalent adjustment	94,672	177,009	163,622
Net interest income	957,892	866,422	776,336
Provision for loan losses	21,613	35,460	51,673
Non-interest income	351,286	336,470	349,708
Non-interest expense	778,884	759,069	732,960
Income before income taxes	508,681	408,363	341,411
Income taxes	53,763	44,214	37,150
Net income	454,918	364,149	304,261
Preferred stock dividends	8,063	8,063	8,063
Net income available to common shareholders	$446,855	$356,086	$296,198
Earnings per common share - basic	$6.97	$5.56	$4.73
Earnings per common share - diluted	6.90	5.51	4.70
Dividends per common share	2.58	2.25	2.15
Return on average assets	1.44 %	1.17 %	1.03 %
Return on average common equity	14.23	11.76	10.16
Average shareholders' equity to average assets	10.58	10.42	10.61

Net income available to common shareholders increased $90.8 million for 2018 compared to 2017. The increase was primarily the result of a $91.5 million increase in net interest income, a $14.8 million increase in non-interest income and a $13.8 million decrease in the provision for loan losses partly offset by a $19.8 million increase in non-interest expense and a $9.5 million increase in income tax expense. Net income available to common shareholders increased $59.9 million for 2017 compared to 2016. The increase was primarily the result of a $90.1 million increase in net interest income and a $16.2 million decrease in the provision for loan losses partly offset by a $26.1 million increase in non-interest expense, a $13.2 million decrease in non-interest income and a $7.1 million increase in income tax expense. Income tax expense during the comparable periods was impacted by the enactment of the Tax Cuts and Jobs Act on December 22, 2017, as further discussed below.

Details of the changes in the various components of net income are further discussed below.

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Net Interest Income

Net interest income is the difference between interest income on earning assets, such as loans and securities, and interest expense on liabilities, such as deposits and borrowings, which are used to fund those assets. Net interest income is our largest source of revenue, representing 73.2% of total revenue during 2018. Net interest margin is the ratio of taxable-equivalent net interest income to average earning assets for the period. The level of interest rates and the volume and mix of earning assets and interest-bearing liabilities impact net interest income and net interest margin.

The Federal Reserve influences the general market rates of interest, including the deposit and loan rates offered by many financial institutions. Our loan portfolio is significantly affected by changes in the prime interest rate. The prime interest rate, which is the rate offered on loans to borrowers with strong credit, remained at 3.50% during most of 2016. In December 2016, the prime rate increased 25 basis points to end the year at 3.75%. During 2017, the prime rate increased 75 basis points (25 basis points in each of March, June and December) to end the year at 4.50%. During 2018, the prime rate increased 100 basis points (25 basis points in each of March, June, September, and December) to end the year at 5.50%. Our loan portfolio is also significantly impacted, by changes in the London Interbank Offered Rate (LIBOR). At December 31, 2018, the one-month and three-month U.S. dollar LIBOR rates were 2.50% and 2.81%, respectively, while at December 31, 2017, the one-month and three-month U.S. dollar LIBOR rates were 1.56% and 1.69%, respectively and at December 31, 2016, the one-month and three-month U.S. dollar LIBOR rates were 0.77% and 1.00%, respectively. The effective federal funds rate, which is the cost of immediately available overnight funds, remained at 0.50% during most of 2016. In December 2016, the effective federal funds rate increased 25 basis points to end the year at 0.75%. During 2017, the effective federal funds rate increased 75 basis points (25 basis points in each of March, June and December) to end the year at 1.50%. During 2018, the effective federal funds rate increased 100 basis points (25 basis points in each of March, June, September and December) to end the period at 2.50%.

We are primarily funded by core deposits, with non-interest-bearing demand deposits historically being a significant source of funds. This lower-cost funding base is expected to have a positive impact on our net interest income and net interest margin in a rising interest rate environment. Federal prohibitions on the payment of interest on demand deposits were repealed in 2011. Nonetheless, we have not experienced any significant additional costs as a result. However, as market interest rates have increased, we have increased the interest rates we pay on most of our interest-bearing deposit products. See Item 7A. Quantitative and Qualitative Disclosures About Market Risk elsewhere in this report for information about our sensitivity to interest rates. Further analysis of the components of our net interest margin is presented below.

The following table presents the changes in taxable-equivalent net interest income and identifies the changes due to differences in the average volume of earning assets and interest-bearing liabilities and the changes due to changes in the average interest rate on those assets and liabilities. The changes in net interest income due to changes in both average volume and average interest rate have been allocated to the average volume change or the average interest rate change in proportion to the absolute amounts of the change in each. The comparison between 2018 and 2017 includes an additional change factor detailing the effect of the reduction in the U.S. statutory federal income tax rate under the Tax Cuts and Jobs Act, which was enacted on December 22, 2017. See the section captioned “Income Taxes” elsewhere in this discussion for information regarding the Tax Cuts and Jobs Act. The comparison between 2017 and 2016 includes an additional change factor that shows the effect of the difference in the number of days in each period for assets and liabilities that accrue interest based upon the actual number of days in the period, as further discussed below. Our consolidated average balance sheets along with an analysis of taxable-equivalent net interest income are presented in Item 8. Financial Statements and Supplementary Data of this report.

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	2018 vs. 2017 Increase (Decrease) Due to Change in				2017 vs. 2016 Increase (Decrease) Due to Change in			
	Rate	Volume	Tax Rate	Total	Rate	Volume	Number of Days	Total
Interest-bearing deposits	$23,680	$(8,320)	$—	$15,360	$22,369	$3,180	$(44)	$25,505
Federal funds sold and resell agreements	869	3,695	—	4,564	385	280	(1)	664
Securities:								
Taxable	5,131	(11,740)		(6,609)	(4,482)	(5,358)	(206)	(10,046)
Tax-exempt	(11,283)	28,033	(85,625)	(68,875)	(8,741)	31,136	—	22,395
Loans, net of unearned discounts	81,949	53,525	(4,000)	131,474	42,509	38,161	(1,266)	79,404
Total earning assets	100,346	65,193	(89,625)	75,914	52,040	67,399	(1,517)	117,922
Savings and interest checking	4,005	61	—	4,066	—	252	(3)	249
Money market deposit accounts	46,205	249	—	46,454	8,040	21	(13)	8,048
Time accounts	4,620	57	—	4,677	475	(38)	(4)	433
Public funds	2,990	(38)	—	2,952	1,216	(5)	(1)	1,210
Federal funds purchased and repurchase agreements	6,367	132	—	6,499	1,241	78	(1)	1,318
Junior subordinated deferrable interest debentures	1,334	2	—	1,336	673	1	—	674
Subordinated notes payable and other notes	408	389	—	797	2,599	(82)	—	2,517
Total interest-bearing liabilities	65,929	852	—	66,781	14,244	227	(22)	14,449
Net change	$34,417	$64,341	$(89,625)	$9,133	$37,796	$67,172	$(1,495)	$103,473

Taxable-equivalent net interest income for 2018 increased $9.1 million, or 0.9%, compared to 2017. Taxable-equivalent net interest income for 2018 was impacted by the reduction in the U.S. federal statutory income tax rate from 35% to 21% under the Tax Cuts and Jobs Act enacted on December 22, 2017. Taxable-equivalent net interest income for 2017 would have been lower by approximately $89.6 million, based on a 21% tax rate rather than the 35% tax rate then in effect. Excluding the effect of the tax rate reduction whereby a 21% tax rate is used for each year, taxable-equivalent net interest income effectively increased approximately $98.8 million during 2018, compared to 2017. The taxable-equivalent net interest margin decreased 5 basis points from 3.69% during 2017 to 3.64% during 2018. The taxable-equivalent net interest margin for 2018 was also impacted by the aforementioned reduction in the U.S. federal statutory income tax rate. The taxable-equivalent net interest margin for 2017 would have been lower by approximately 32 basis points based on a 21% tax rate rather than the 35% tax rate then in effect. Excluding the effect of the tax rate reduction whereby a 21% tax rate is used for each year, the taxable-equivalent net interest margin effectively increased 27 basis points during 2018 compared to 2017. The effective increases in taxable-equivalent net interest income and the taxable-equivalent net interest margin were primarily related to increases in the average yields on loans, interest-bearing deposits and taxable securities combined with increases in the average volumes of loans, tax-exempt securities and federal funds sold and resell agreements. The impact of these items was partly offset by increases in the average rates paid on interest-bearing deposits and other borrowed funds, decreases in the average volume of taxable securities and interest bearing deposits and a decrease in the average yield on tax-exempt securities, notwithstanding the effect of the tax rate reduction.

Taxable-equivalent net interest income for 2017 increased $103.5 million, or 11.0%, compared to 2016. Taxable-equivalent net interest income for 2017 included 365 days compared to 366 days for the same period in 2016 as a result of the leap year. The additional day added approximately $1.5 million to taxable-equivalent net interest income during 2016. Excluding the impact of the additional day results in an effective increase in taxable-equivalent net interest income of approximately $105.0 million during 2017. The increase in taxable-equivalent net interest income during 2017, excluding the effect of the aforementioned additional day, was primarily related to the impact of increases in the average volume of loans, tax-exempt securities and interest-bearing deposits as well as increases in the average yields on loans and interest-bearing deposits partly offset by the impact of decreases in the average yields on tax-exempt and taxable securities, a decrease in the average volume of taxable securities and the impact of an increase in the average rate paid on interest-bearing liabilities. These changes also impacted the taxable-equivalent net interest margin which increased 13 basis points from 3.56% during 2016 to 3.69% during 2017.

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The average volume of interest-earning assets for 2018 increased $540.4 million, or 1.9%, compared to 2017. The increase in earning assets included a $1.2 billion increase in average loans, a $489.5 million increase in average tax-exempt securities and a $191.9 million increase in average federal funds sold and resell agreements, partly offset by a $670.1 million decrease in average taxable securities and a $628.6 million decrease in interest-bearing deposits. The average volume of interest-earning assets for 2017 increased $1.6 billion, or 6.1%, compared to 2016. The increase in earning assets included a $905.3 million increase in average loans, a $548.3 million increase in average federal funds sold, resell agreements and interest-bearing deposits and a $546.8 million increase in average tax-exempt securities, partly offset by a $358.4 million decrease in average taxable securities. The average taxable-equivalent yield on interest-earning assets increased 17 basis points from 3.79% during 2017 (or 49 basis points from 3.47% assuming a 21% tax rate in 2017) to 3.96% during 2018 while the average rate paid on interest-bearing liabilities increased 39 basis points from 0.16% during 2017 to 0.55% during 2018. The average yield on interest-earning assets increased 19 basis points to 3.79% during 2017 from 3.60% during 2016 while the average rate paid on interest-bearing liabilities increased 8 basis points to 0.16% during 2017 from 0.08% during 2016. The average yield on interest-earning assets and the average rate paid on interest-bearing liabilities are primarily impacted by changes in market interest rates as well as changes in the volume and relative mix of the underlying assets and liabilities, as further discussed below.

The average taxable-equivalent yield on loans was 4.95% during 2018 compared to 4.36% during 2017 and 4.01% during 2016, increasing 59 basis points during 2018 compared to 2017 and 35 basis points during 2017 compared to 2016. The average taxable-equivalent yield on loans was positively impacted by the increases in market interest rates discussed above. Due to the relative proportion of our tax-exempt loan portfolio to total loans, the reduction in the U.S. federal statutory income tax rate did not significantly impact the overall average taxable-equivalent yield on loans during 2018. The average volume of loans increased $1.2 billion, or 9.3%, in 2018 compared to 2017 and increased $905.3 million, or 7.8%, in 2017 compared to 2016. Loans made up approximately 47.1% of average interest-earning assets during 2018 compared to 43.9% during 2017 and 43.2% in 2016.

The average taxable-equivalent yield on securities was 3.38% during 2018 compared to 3.99% during 2017 and 4.02% during 2016. The decreases in the average taxable-equivalent yield on securities during 2018 and 2017 were primarily related to decreases in the average taxable-equivalent yield on tax exempt securities partly offset by increases in the relative proportion of higher-yielding tax exempt securities to total securities. The decrease in 2018 was also partly offset, to a lesser extent, by an increase in the average yield on taxable securities. The average yield on taxable securities was 2.03% during 2018 compared to 1.92% during 2017 and 2.01% during 2016 while the average yield on tax exempt securities was 4.11% during 2018 compared to 5.37% during 2017 and 5.57% during 2016. The average taxable-equivalent yield on tax-exempt securities decreased 126 basis points during 2018 compared to 2017 and decreased 20 basis points during 2017 compared to 2016. The decrease during 2018 compared to 2017 was primarily related to the aforementioned reduction in the U.S. federal statutory income tax rate. The taxable-equivalent yield on tax exempt securities for 2017 would have been 118 basis points lower based on a 21% tax rate rather than the 35% tax rate then in effect. Excluding the effect of the tax rate reduction whereby a 21% tax rate is used for each period, the taxable-equivalent yield on tax exempt securities effectively decreased 8 basis points during 2018 compared to the same period in 2017. The average yield on taxable securities increased 11 basis points during 2018 compared to 2017 and decreased 9 basis points during 2017 compared to 2016. Tax exempt securities made up approximately 65.0% of total average securities during 2018, compared to 60.0% during 2017 and 56.4% during 2016. The average volume of total securities decreased $180.7 million, or 1.5%, during 2018 compared to 2017 and increased $188.5 million, or 1.6%, during 2017 compared to 2016. Securities made up approximately 41.7% of average interest-earning assets in 2018 compared to 43.2% in 2017 and 45.1% in 2016.

Average interest-bearing deposits, federal funds sold and resell agreements during 2018 decreased $436.7 million, or 12.0%, compared to 2017 and increased $548.3 million, or 17.7%, in 2017 compared to 2016. The decrease in average interest-bearing deposits, federal funds sold and resell agreements during 2018 compared to 2017 was primarily related to growth in average loans. The increase in average interest-bearing deposits, federal funds sold and resell agreements during 2017 compared to 2016 was primarily related to growth in average deposits. Federal funds sold and resell agreements and interest-bearing deposits made up approximately 11.1% of average interest-earning assets during 2018 compared to approximately 12.9% in 2017 and 11.6% in 2016. The combined average yield on federal funds sold and resell agreements and interest-bearing deposits was 1.94% during 2018, 1.16% during 2017, and 0.53% during 2016. As discussed above, since the end of 2016, there have been seven separate 25 basis point increases in the expected federal funds rate.

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The average rate paid on interest-bearing liabilities was 0.55% during 2018, increasing 39 basis points from 0.16% during 2017. Average deposits increased $384.1 million, or 1.5%, in 2018 compared to 2017 and $1.4 billion, or 5.7%, in 2017 compared to 2016. Average interest-bearing deposits increased $446.8 million in 2018 compared to 2017 and increased $608.0 million in 2017 compared to 2016, while average non-interest-bearing deposits decreased $62.6 million in 2018 compared to 2017 and increased $785.1 million in 2017 compared to 2016. The ratio of average interest-bearing deposits to total average deposits was 59.1% in 2018 compared to 58.2% in 2017 and 59.1% in 2016. The average cost of deposits is primarily impacted by changes in market interest rates as well as changes in the volume and relative mix of interest-bearing deposits. The average rate paid on interest-bearing deposits and total deposits was 0.49% and 0.29% in 2018 compared to 0.11% and 0.07% in 2017 and 0.05% and 0.03% in 2016. The increases in the average cost of deposits during 2018 and 2017 were related to increases in interest rates paid on most of our interest-bearing deposit products as a result of the aforementioned increases in market interest rates.

Our taxable-equivalent net interest spread, which represents the difference between the average rate earned on earning assets and the average rate paid on interest-bearing liabilities, was 3.41% in 2018 compared to 3.63% in 2017 and 3.52% in 2016. The taxable-equivalent net interest spread for 2018 was impacted by the aforementioned reduction in the U.S. federal statutory income tax rate. The taxable-equivalent net interest spreads for 2017 and 2016 would have been 3.31% and 3.21%, respectively, based on a 21% tax rate rather than the 35% tax rate then in effect. The net interest spread, as well as the net interest margin, will be impacted by future changes in short-term and long-term interest rate levels, as well as the impact from the competitive environment. A discussion of the effects of changing interest rates on net interest income is set forth in Item 7A. Quantitative and Qualitative Disclosures About Market Risk elsewhere in this report.

Our hedging policies permit the use of various derivative financial instruments, including interest rate swaps, swaptions, caps and floors, to manage exposure to changes in interest rates. Details of our derivatives and hedging activities are set forth in Note 15 - Derivative Financial Instruments in the accompanying notes to consolidated financial statements elsewhere in this report. Information regarding the impact of fluctuations in interest rates on our derivative financial instruments is set forth in Item 7A. Quantitative and Qualitative Disclosures About Market Risk elsewhere in this report.

Provision for Loan Losses

The provision for loan losses is determined by management as the amount to be added to the allowance for loan losses after net charge-offs have been deducted to bring the allowance to a level which, in management's best estimate, is necessary to absorb inherent losses within the existing loan portfolio. The provision for loan losses totaled $21.6 million in 2018 compared to $35.5 million in 2017 and $51.7 million in 2016. See the section captioned "Allowance for Loan Losses" elsewhere in this discussion for further analysis of the provision for loan losses.

Non-Interest Income

The components of non-interest income were as follows:

	2018	2017	2016
Trust and investment management fees	$119,391	$110,675	$104,240
Service charges on deposit accounts	85,186	84,182	81,203
Insurance commissions and fees	48,967	46,169	47,154
Interchange and debit card transaction fees	13,877	23,232	21,369
Other charges, commissions and fees	37,231	39,931	39,623
Net gain (loss) on securities transactions	(156)	(4,941)	14,975
Other	46,790	37,222	41,144
Total	$351,286	$336,470	$349,708

Total non-interest income for 2018 increased $14.8 million, or 4.4%, compared to 2017 while total non-interest income for 2017 decreased $13.2 million, or 3.8%, compared to 2016. Changes in the various components of non-interest income are discussed in more detail below.

Trust and Investment Management Fees. Trust and investment management fee income for 2018 increased $8.7 million, or 7.9%, compared to 2017 while trust and investment management fee income for 2017 increased $6.4 million, or 6.2%, compared to 2016. Investment fees are the most significant component of trust and investment management

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fees, making up approximately 83%, 84% and 82% of total trust and investment management fees in 2018, 2017 and 2016, respectively. Investment and other custodial account fees are generally based on the market value of assets within a trust account. Volatility in the equity and bond markets impacts the market value of trust assets and the related investment fees.

The increase in trust and investment management fees during 2018 compared to 2017 was primarily the result of an increase in trust investment fees (up $6.0 million,) and an increase in oil and gas fees (up $2.9 million). The increase in trust investment fees during 2018 was due to higher average equity valuations. The increase in oil and gas fees during 2018 was related to higher average energy prices and new business, partly driven by enhancements to our service offering.

The increase in trust and investment management fees during 2017 compared to the same period in 2016 was primarily the result of an increase in trust investment fees (up $6.8 million). The increase in trust investment fees during 2017 was due to higher average equity valuations on managed accounts. Trust and investment management fees during 2017 also included an increase in real estate fees (up $225 thousand) and a decrease in estate fees (down $618 thousand) compared to 2016. The decrease in estate fees during 2017 was related to a decrease in the aggregate value of estates settled compared to 2016.

At December 31, 2018, trust assets, including both managed assets and custody assets, were primarily composed of equity securities (47.8% of trust assets), fixed income securities (37.6% of trust assets) and cash equivalents (9.2% of trust assets). The estimated fair value of trust assets was $33.3 billion (including managed assets of $14.7 billion and custody assets of $18.7 billion) at December 31, 2018 compared to $32.8 billion (including managed assets of $14.1 billion and custody assets of $18.7 billion) at December 31, 2017.

Service Charges on Deposit Accounts. Service charges on deposit accounts for 2018 increased $1.0 million, or 1.2%, compared to 2017. The increase was primarily related to increases in overdraft/insufficient funds charges on consumer and commercial accounts (up $2.8 million and $692 thousand, respectively) and consumer service charges (up $641 thousand) partly offset by a decrease in commercial service charges (down $3.1 million). Service charges on deposit accounts for 2017 increased $3.0 million, or 3.7%, compared to 2016. The increase was primarily due to an increase in overdraft/insufficient funds charges on consumer and commercial accounts (up $1.9 million and $511 thousand, respectively) and consumer service charges (up $1.0 million) partly offset by a decrease in commercial service charges (down $428 thousand). Overdraft/insufficient funds charges totaled $38.4 million during 2018 compared to $34.9 million during 2017 and $32.5 million in 2016. Overdraft/insufficient funds charges included $29.8 million, $27.0 million and $25.0 million related to consumer accounts during 2018, 2017 and 2016, respectively, and $8.7 million, $8.0 million and $7.5 million related to commercial accounts during 2018, 2017 and 2016, respectively.

Insurance Commissions and Fees. Insurance commissions and fees for 2018 increased $2.8 million, or 6.1%, compared to 2017. The increase was primarily related to increases in commission income (up $2.1 million) resulting from increases in commissions on property and casualty policies and benefit plan commissions due to increased business volumes. The increase was also partly related to an increase in contingent income (up $741 thousand), as further discussed below.

Insurance commissions and fees for 2017 decreased $985 thousand, or 2.1%, compared to 2016. The decrease was related to a decrease in contingent income (down $2.9 million), as further discussed below, partly offset by an increase in commission income (up $1.9 million), which was primarily related to an increase in benefit plan commissions due to increased business volumes partly offset by a decrease in commissions on property and casualty policies.

Insurance commissions and fees include contingent commissions totaling $4.3 million in 2018, $3.6 million in 2017 and $6.5 million 2016. Contingent income primarily consists of amounts received from various property and casualty insurance carriers related to the loss performance of insurance policies previously placed. These performance related contingent payments are seasonal in nature and are mostly received during the first quarter of each year. This performance related contingent income totaled $3.2 million in 2018, $2.1 million in 2017 and $4.9 million in 2016. The increase in performance related contingent income during 2018 was related to growth within the portfolio and improvement in the loss performance of insurance policies previously placed. The decrease in performance related contingent income during 2017 was related to a lack of growth within the portfolio and a deterioration in the loss performance of insurance policies during 2016. Contingent commissions also include amounts received from various benefit plan insurance companies related to the volume of business generated and/or the subsequent retention of such business. These commissions totaled $1.2 million in 2018, $1.5 million in 2017 and $1.7 million in 2016.

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Interchange and Debit Card Transaction Fees. Interchange fees, or “swipe” fees, are charges that merchants pay to us and other card-issuing banks for processing electronic payment transactions. Interchange and debit card transaction fees consist of income from check card usage, point of sale income from PIN-based debit card transactions and ATM service fees. Beginning in 2018, in connection with the adoption of Accounting Standards Update (“ASU”) No. 2014-09, “Revenue from Contracts with Customers (Topic 606),” interchange and debit card transaction fees are reported net of related network costs. See Note 1 - Significant Accounting Policies in the accompanying notes to consolidated financial statements elsewhere in this report. Previously, such network costs were reported as a component of other non-interest expense. Interchange and debit card transaction fees for 2018 reported on a net basis totaled $13.9 million, while interchange and debit card transaction fees for 2017 and 2016 reported on a gross basis totaled $23.2 million and $21.4 million, respectively. A comparison of gross and net interchange and debit card transaction fees for the reported periods is presented in the table below:

	2018	2017	2016
Income from debit card transactions	$21,844	$19,440	$17,899
ATM service fees	3,925	3,792	3,470
Gross interchange and debit card transaction fees	25,769	23,232	21,369
Network costs	11,892	11,943	12,896
Net interchange and debit card transaction fees	$13,877	$11,289	$8,473

The increases in interchange and debit card transaction fees during comparable periods, on a net basis, were primarily related to increased transaction volumes.

Federal Reserve Board rules applicable to financial institutions that have assets of $10 billion or more provide that the maximum permissible interchange fee for an electronic debit transaction is the sum of 21 cents per transaction and 5 basis points multiplied by the value of the transaction. An upward adjustment of no more than 1 cent to an issuer's debit card interchange fee is allowed if the card issuer develops and implements policies and procedures reasonably designed to achieve certain fraud-prevention standards. The Federal Reserve Board also has rules governing routing and exclusivity that require issuers to offer two unaffiliated networks for routing transactions on each debit or prepaid product.

Other Charges, Commissions and Fees. Other charges, commissions and fees for 2018 decreased $2.7 million, or 6.8%, compared to 2017. The decrease was primarily related to decreases in loan processing fees (down $3.0 million), income from corporate finance and capital market advisory services (down $755 thousand) and income from the sale of mutual funds (down $378 thousand) partly offset by increases in income from the sale of money market accounts and life insurance (up $604 thousand and $294 thousand, respectively) and an increase in funds transfer service charges (up $277 thousand). Changes in these categories of other charges, commissions and fees were generally due to fluctuations in business volumes.

Other charges, commissions and fees for 2017 increased $308 thousand, or 0.8%, compared to 2016. The increase included increases in income related to the sale of mutual funds (up $1.2 million) and wire transfer fees (up $317 thousand), among other things. These items were partly offset by decreases in human resources consulting fee income (down $650 thousand) and income from capital market advisory services (down $605 thousand), among other things. Human resources consulting fee income decreased as we no longer provide these services. Changes in the other aforementioned categories of other charges, commissions and fees were primarily due to fluctuations in business volumes.

Net Gain/Loss on Securities Transactions. During 2018, we sold certain available-for-sale U.S Treasury securities with an amortized cost totaling $16.8 billion and realized a net loss of $156 thousand on those sales. The sales were primarily related to securities purchased during 2018 and subsequently sold in connection with our tax planning strategies related to the Texas franchise tax. The gross proceeds from the sales of these securities outside of Texas are included in total revenues/receipts from all sources reported for Texas franchise tax purposes, which results in a reduction in the overall percentage of revenues/receipts apportioned to Texas and subjected to taxation under the Texas franchise tax.

During 2017, we sold certain available-for-sale U.S Treasury securities with an amortized cost totaling $11.2 billion and realized a net loss of $74 thousand on those sales. The sales were primarily related to securities purchased during

2017 and subsequently sold in connection with our aforementioned tax planning strategies related to the Texas franchise tax. We also sold certain other available-for-sale U.S. Treasury securities with an amortized cost totaling $751.4 million and realized a net loss of $4.9 million on those sales. These securities were sold with the intent to reinvest the sales proceeds in higher yielding debt securities and other investments.

During 2016, we sold available-for-sale securities with an amortized cost totaling $14.8 billion and realized a net gain of $11.2 million on those sales. We also sold held-to-maturity securities with an amortized cost totaling $132.9 million and realized a net gain of $3.7 million on those sales. As more fully discussed in Note 2 - Securities in the accompanying notes to consolidated financial statements elsewhere in this report, a portion of the available-for-sale securities and all of the held-to maturity securities that were sold during 2016 were sold as a result of a significant deterioration in the creditworthiness of the issuers. In aggregate, the securities sold as a result of credit deterioration had an amortized cost totaling $528.6 million and we realized a net gain of $11.9 million on those sales. We sold U.S Treasury securities with an amortized cost totaling $13.7 billion and realized a net loss of $57 thousand on those sales. The sales were primarily related to securities purchased during 2016 and subsequently sold in connection with our aforementioned tax planning strategies related to the Texas franchise tax. Other securities sold during 2016 included available-for-sale U.S. Treasury securities with an amortized cost totaling $764.5 million and we realized a net gain of $3.3 million on those sales. Most of these securities were due to mature during 2016 and most of the proceeds from the sale of these securities were reinvested into U.S. Treasury securities having comparable yields, but longer-terms.

Other Non-Interest Income. Other non-interest income for 2018 increased $9.6 million, or 25.7%, compared to 2017. The increase was primarily related to increases in sundry and other miscellaneous income (up $5.9 million), gains on the sale of foreclosed and other assets (up $2.6 million), income from customer derivative and trading activities (up $1.8 million) and income from customer foreign currency transactions (up $657 thousand), among other things, partly offset by decreases in public finance underwriting fees (down $1.3 million), among other things. Sundry and other miscellaneous income during 2018 included $4.5 million related to the recovery of prior write-offs, $2.1 million in VISA check card incentives related to business volumes, $1.7 million related to a distribution from a private equity investment and $997 thousand related to the settlement of an insurance claim, among other things. Sundry and other miscellaneous income during 2017 included $1.9 million in VISA check card incentives, $1.2 million related to the collection of amounts charged-off by Western National Bank prior to our acquisition, $864 thousand related to the settlement of a non-solicitation agreement and $541 thousand related to recoveries of prior write-offs, among other things. Gains on the sale of foreclosed and other assets included $4.2 million related to gains on the sale of various branch and operational facilities during 2018 and $2.0 million related to the sale of a motor-bank location in 2017. The fluctuations in income from customer derivative and trading activities, public finance underwriting fees and income from customer foreign currency transactions during 2018 were primarily related to changes in business volumes.

Other non-interest income for 2017 decreased $3.9 million, or 9.5%, compared to 2016. The decrease was primarily related to decreases in gains on the sale of foreclosed and other assets (down $6.3 million), lease rental income (down $482 thousand) and earnings on the cash surrender value of life insurance policies (down $409 thousand), among other things, partly offset by increases in sundry and other miscellaneous income (up $1.4 million), income from customer derivative and trading activities (up $815 thousand) and income from customer foreign currency transactions (up $760 thousand), among other things. During 2016, gains on the sale of foreclosed and other assets included a $10.3 million net gain on the sale of our headquarters building and other adjacent properties in connection with a comprehensive development agreement with the City of San Antonio and a third party controlled by one of our directors, among other things. See Note 4 - Premises and Equipment in the accompanying notes to consolidated financial statements elsewhere in this report. During 2017, gains on the sale of foreclosed and other assets included $2.9 million related to amortization of the deferred portion of the gain on our headquarters building sold in 2016 and $2.0 million related to the sale of a motor-bank location. Sundry income during 2017 included $1.9 million in VISA check card incentives related to business volumes, $1.2 million related to the collection of amounts charged-off by Western National Bank prior to our acquisition, $864 thousand related to the settlement of a non-solicitation agreement and $541 thousand related to recoveries of prior write-offs, among other things, while sundry and other miscellaneous income during 2016 included $1.8 million in VISA check card incentives related to business volumes and $1.4 million related to recoveries of prior write-offs, among other things. The fluctuations in income from customer derivative and trading activities and income from customer foreign currency transactions were primarily related to changes in business volumes.

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Non-Interest Expense

The components of non-interest expense were as follows:

	2018	2017	2016
Salaries and wages	$350,312	$337,068	$318,665
Employee benefits	77,323	74,575	72,615
Net occupancy	76,788	75,971	71,627
Technology, furniture and equipment	83,102	74,335	71,208
Deposit insurance	16,397	20,128	17,428
Intangible amortization	1,424	1,703	2,429
Other	173,538	175,289	178,988
Total	$778,884	$759,069	$732,960

Total non-interest expense for 2018 increased $19.8 million, or 2.6%, compared to 2017 while total non-interest expense for 2017 increased $26.1 million, or 3.6%, compared to 2016. Changes in the various components of non-interest expense are discussed below.

Salaries and Wages. Salaries and wages increased $13.2 million, or 3.9%, in 2018 compared to 2017 and increased $18.4 million, or 5.8%, in 2017 compared to 2016. The increases during the comparable periods were primarily related to increases in salaries, due to an increase in the number of employees, and normal annual merit and market increases, as well as increases in incentive compensation and stock-based compensation. Salaries and wages during 2017 included approximately $2.5 million in severance expense primarily related to the closure of certain branch locations and the elimination of certain job positions.

Employee Benefits. Employee benefits expense for 2018 increased $2.7 million, or 3.7%, compared to 2017. The increase was primarily due to increases in medical benefits expense (up $3.1 million), payroll taxes (up $728 thousand) and expenses related to our 401(k) and profit sharing plans (up $560 thousand) partly offset by decreases in expenses related to our defined benefit retirement plans (down $1.5 million).

Employee benefits expense for 2017 increased $2.0 million, or 2.7%, compared to 2016. The increase was primarily due to increases in expenses related to our 401(k) and profit sharing plans (up $1.7 million), payroll taxes (up $1.3 million), other employee benefits (up $826 thousand) and medical benefits expense (up $487 thousand) partly offset by a decrease in expenses related to our defined benefit retirement plans (down $2.2 million).

Our defined benefit retirement and restoration plans were frozen in 2001 and were replaced by the profit sharing plan. Management believes these actions help reduce the volatility in retirement plan expense. However, we still have funding obligations related to the defined benefit and restoration plans and could recognize retirement expense related to these plans in future years, which would be dependent on the return earned on plan assets, the level of interest rates and employee turnover. We recognized a combined net periodic pension benefit of $1.0 million related to our defined benefit retirement and restoration plans in 2018 compared to a combined net periodic pension expense of $501 thousand in 2017 and $2.7 million in 2016. Net periodic pension expense during 2016 included $1.0 million in supplemental executive retirement plan ("SERP") settlement costs related to the retirement of a former executive officer. Net periodic pension expense decreased during the comparable years in part due to a change in the method we use to estimate the interest cost component of net periodic benefit cost for our defined benefit pension and other post-retirement benefit plans. Future expense/benefits related to these plans is dependent upon a variety of factors, including the actual return on plan assets. For additional information related to our employee benefit plans, see Note 11 - Employee Benefit Plans in the accompanying notes to consolidated financial statements elsewhere in this report.

Net Occupancy. Net occupancy expense for 2018 increased $817 thousand, or 1.1%, compared to 2017. The increase was primarily related to increases in repairs and maintenance/service contracts expense (up $891 thousand), lease expense (up $517 thousand) and depreciation on leasehold improvements (up $391 thousand) partly offset by a decrease in property taxes (down $722 thousand).

Net occupancy expense for 2017 increased $4.3 million, or 6.1%, compared to 2016. The increase during 2017 was primarily related to increases in lease expense (up $3.2 million), repairs and maintenance/service contracts expense (up $1.3 million), depreciation on leasehold improvements (up $658 thousand) and utilities expense (up

$375 thousand) partly offset by a decrease in building depreciation (down $1.3 million). The increase in lease expense and the decrease

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in building depreciation during the reported periods were primarily related to the sale and lease back of our headquarters building in December 2016. See Note 4 - Premises and Equipment in the accompanying notes to consolidated financial statements elsewhere in this report.

Technology, Furniture and Equipment. Technology, furniture and equipment expense for 2018 increased $8.8 million, or 11.8%, compared to 2017. The increase was primarily related to increases in software maintenance (up $5.6 million), due to new and renewed software applications and an increase in volume-based service payments; software amortization (up $1.7 million); service contracts expense (up $989 thousand); and depreciation on furniture and equipment (up $589 thousand).

Technology, furniture and equipment expense for 2017 increased $3.1 million, or 4.4%, compared to 2016. The increase was primarily related to increases in software maintenance (up $3.9 million), due to new and renewed software applications and an increase in volume-based service payments, and depreciation on furniture and equipment (up $988 thousand) partly offset by a decrease in equipment rental expense (down $1.6 million), and a decrease in service contracts (down $436 thousand), among other things.

Deposit Insurance. Deposit insurance expense totaled $16.4 million in 2018 compared to $20.1 million in 2017 and $17.4 million in 2016. The decrease in deposit insurance expense during 2018 compared to 2017 was primarily related to a decrease in our base assessment rate and the termination of the quarterly Deposit Insurance Fund surcharge in the fourth quarter of 2018, as further discussed below. The increase during 2017 compared to 2016 was primarily related to an increase in the assessment rate and an increase in assets. The increase in the assessment rate was partly related to the quarterly Deposit Insurance Fund surcharge that became applicable during the third quarter of 2016, as further discussed below.

In August 2016, the Federal Deposit Insurance Corporation (“FDIC”) announced that the Deposit Insurance Fund reserve ratio had surpassed 1.15% as of June 30, 2016. As a result, beginning in the third quarter of 2016, the range of initial assessment rates for all institutions was adjusted downward and institutions with $10 billion or more in assets were assessed a quarterly surcharge. The quarterly surcharge was terminated in the fourth quarter of 2018 as the Deposit Insurance Fund reserve ratio as of September 30, 2018 exceeded the statutory minimum of 1.35% required by the Dodd-Frank Act.

Intangible Amortization. Intangible amortization is primarily related to core deposit intangibles and, to a lesser extent, intangibles related to customer relationships and non-compete agreements. Intangible amortization totaled $1.4 million in 2018 compared to $1.7 million in 2017 and $2.4 million in 2016. The decrease during the comparable periods primarily related to the completion of amortization of certain previously recognized intangible assets as well as a reduction in the annual amortization rate of certain previously recognized intangible assets as we use an accelerated amortization approach which results in higher amortization rates during the earlier years of the useful lives of intangible assets. See Note 5 - Goodwill and Other Intangible Assets in the accompanying notes to consolidated financial statements elsewhere in this report.

Other Non-Interest Expense. Other non-interest expense for 2018 decreased $1.8 million, or 1.0%, compared to 2017. As discussed above in the section captioned “Interchange and Debit Card Transaction Fees,” in connection with the adoption of ASU 2014-09 in 2018, network costs associated with debit card and ATM transactions are now reported netted against the related fees from such transactions and included in Interchange and Debit Card Transaction Fees in the accompanying Consolidated Statement of Income for 2018. Previously, such network costs were reported as a component of other non-interest expense. Network costs associated with debit card and ATM transactions totaled $11.9 million during 2018 compared to $11.9 million and $12.9 million during 2017 and 2016, respectively. Excluding network costs from 2017, other non-interest expense effectively increased $10.2 million, or 6.2%, during 2018. This increase included increases in professional services expense (up $8.0 million), donations expense related to a contributions to our charitable foundation (up $4.2 million), advertising/promotions expense (up $3.2 million), losses on the sale/write-down of foreclosed and other assets (up $2.0 million), platform/management fees related to Frost Investment Advisors and Frost Investment Services (up $1.5 million) and outside computer services expense (up $1.3 million), among other things. These items were partly offset by decreases in sundry and other miscellaneous expense (down $3.5 million); fraud losses, primarily related to check cards, (down $2.6 million); and data communications expense (down $1.1 million), among other things.

The increase in professional services expense during 2018 was partly related to a data security incident during the first quarter of 2018 which resulted in unauthorized access to a third-party lockbox software program used by certain of our commercial lockbox customers to store digital images. We have stopped the identified unauthorized access and

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are working with a leading cybersecurity firm. We have reported the incident to, and are cooperating with, law-enforcement authorities and our investigation is ongoing. We have contacted each of the affected commercial customers and are working with them to support them in taking appropriate actions. The identified incident did not impact other Frost systems. Out-of-pocket costs incurred related to this incident totaled $2.1 million during 2018.
Other non-interest expense for 2017 decreased $3.7 million, or 2.1%, compared to 2016. The decrease included decreases in donations expense (down $4.5 million), sundry and other miscellaneous expense (down $3.2 million) and check card expense (down $3.1 million), among other things. These items were partly offset by increases in advertising/promotions expense (up $1.7 million), guard services expense (up $1.4 million), professional services expense (up $1.3 million), outside computer services expense (up $1.3 million) and fraud losses (up $1.0 million), among other things. Donations expense in 2016 included a $4.4 million contribution to our charitable foundation. Sundry and other miscellaneous expense during 2016 included $6.7 million related to the write-down of certain assets while sundry and other miscellaneous expense during 2017 included $3.2 million related to the write-down of certain assets and $1.9 million related to settlements. Check card expense was elevated during 2016 due to the issuance of new ATM cards with embedded processing chips. Guard services expense during 2017 was impacted by the effects of hurricane Harvey during the third quarter. The increase in fraud losses was primarily related to check cards, ATMs and checks.

Results of Segment Operations

Our operations are managed along two primary operating segments: Banking and Frost Wealth Advisors. A description of each business and the methodologies used to measure financial performance is described in Note 18 - Operating Segments in the accompanying notes to consolidated financial statements elsewhere in this report. Net income (loss) by operating segment is presented below:

	2018	2017	2016
Banking	$445,531	$347,034	$289,665
Frost Wealth Advisors	22,090	24,395	19,093
Non-Banks	(12,703)	(7,280)	(4,497)
Consolidated net income	$454,918	$364,149	$304,261

Banking

Net income for 2018 increased $98.5 million, or 28.4%, compared to 2017. The increase was primarily the result of a $107.2 million increase in net interest income, a $13.8 million decrease in the provision for loan losses and a $6.0 million increase in non-interest income partly offset by a $13.4 million increase in non-interest expense and a $15.1 million increase in income tax expense. Net income for 2017 increased $57.4 million, or 19.8%, compared to 2016. The increase was primarily the result of an $87.0 million increase in net interest income and a $16.2 million decrease in the provision for loan losses partly offset by a $22.0 million decrease in non-interest income, a $19.7 million increase in non-interest expense and a $4.2 million increase in income tax expense.

Net interest income for 2018 increased $107.2 million, or 12.5%, compared to 2017 while net interest income for 2017 increased $87.0 million, or 11.3%, compared to 2016. The increase in net interest income during 2018 was primarily related to increases in the average yields on loans, interest-bearing deposits and taxable securities combined with increases in the average volumes of loans, tax-exempt securities and federal funds sold and resell agreements. The impact of these items were partly offset by increases in the average rates paid on interest-bearing deposits and other borrowed funds, decreases in the average volume of taxable securities and interest bearing deposits and decreases in the average yield on tax-exempt securities. Net interest income for 2017 included 365 days compared to 366 days for the same period in 2016 as a result of the leap year. The additional day added approximately $1.5 million to taxable-equivalent net interest income during 2016. Despite the effect of this additional day during 2016, net interest income increased during 2017 compared to 2016 due to the impact of increases in the average volume of loans, tax-exempt securities and interest-bearing deposits as well as increases in the average yields on loans and interest-bearing deposits partly offset by the impact of decreases in the average yields on tax-exempt and taxable securities, a decrease in the average volume of taxable securities and the impact of an increase in the average rate paid on interest-bearing liabilities. See the analysis of net interest income included in the section captioned “Net Interest Income” elsewhere in this discussion.

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The provision for loan losses for 2018 totaled $21.6 million compared to $35.5 million in 2017 and $51.7 million in 2016. See the analysis of the provision for loan losses included in the section captioned “Allowance for Loan Losses” elsewhere in this discussion.

Non-interest income for 2018 increased $6.0 million, or 2.9%, compared to 2017. The increase was primarily due to increases in other non-interest income, insurance commissions and fees and service charges on deposit accounts combined with a decrease in the net loss on securities transactions partly offset by decreases in interchange and debit card transaction fees and other charges, commissions and fees. The increase in other non-interest income was primarily related to increases in sundry and other miscellaneous income, gains on the sale of foreclosed and other assets, income from customer derivative and trading activities and income from customer foreign currency transactions, among other things, partly offset by a decrease in public finance underwriting fees, among other things. The increase in sundry and other miscellaneous income during 2018 compared to 2017 was primarily related to recoveries of prior write-offs and distributions received on private equity investments, among other things. Gains on the sale of foreclosed and other assets included $4.2 million related to gains on the sale of various branch and operational facilities during 2018 and $2.0 million related to the sale of a motor-bank location in 2017. The fluctuations in income from customer derivative and trading activities, public finance underwriting fees and income from customer foreign currency transactions during 2018 were primarily related to changes in business volumes. The increase in insurance commissions and fees was primarily related to an increase in commission income related to property and casualty policies and benefit plan commissions due to increased business volumes and an increase in contingent income related to growth within the portfolio and improvement in the loss performance of insurance policies previously placed. The increase in service charges on deposit accounts was primarily related to increases in overdraft/insufficient funds charges on consumer and commercial accounts and consumer service charges partly offset by a decrease in commercial service charges. Non-interest income during 2018 and 2017 included net losses on securities transactions of $156 thousand and $4.9 million respectively. See the analysis of these net losses included in the section captioned “Net Gain/Loss on Securities Transactions” elsewhere in this discussion. In connection with the adoption of a new accounting standard in 2018, network costs associated with debit card and ATM transactions are now reported netted against the related fees from such transactions. Previously, such network costs were reported as a component of other non-interest expense. If such network costs had been netted against interchange and debit card transaction fees in 2017, interchange and debit card transaction fees would have reflected an increase in 2018 as a result of increased transaction volumes. The decreases in other charges, commissions and fees were primarily related to decreases in loan processing fees and income from capital markets advisory services partly offset by an increase in funds transfer service charges. See the analysis of these categories of non-interest income included in the section captioned “Non-Interest Income” elsewhere in this discussion.

Non-interest income for 2017 decreased $22.0 million, or 9.6%, compared to 2016. Non-interest income during 2017 included a net loss on securities transactions of $4.9 million while non-interest income during 2016 included a net gain on securities transactions of $14.9 million. See the analysis of these net gains and losses included in the section captioned “Net Gain/Loss on Securities Transactions” elsewhere in this discussion. Excluding the impact of the net gains or losses on securities transactions, total non-interest income for 2017 effectively decreased $2.1 million, or 1.0%, compared to 2016 primarily due to decreases in other non-interest income, other charges, commissions and fees and insurance commissions and fees partly offset by increases in service charges on deposit accounts and interchange and debit card transactions fees. The decrease in other non-interest income was primarily related to decreases in gains on the sale of foreclosed and other assets, lease rental income and earnings on the cash surrender value of life insurance policies, among other things, partly offset by increases in sundry and other miscellaneous income, income from customer derivative and trading activities and income from customer foreign currency transactions, among other things. During 2016, gains on the sale of foreclosed and other assets included a $10.3 million net gain on the sale of our headquarters building and other adjacent properties in connection with a comprehensive development agreement, among other things, while during 2017, gains on the sale of foreclosed and other assets included $2.9 million related to amortization of the deferred portion of the gain on the sale of our headquarters building which we sold in 2016 and $2.0 million related to the sale of a motor-bank location. See Note 4 -Premises and Equipment in the accompanying notes to consolidated financial statements elsewhere in this report. The decrease in other charges, commissions and fees was primarily due to a decrease in human resources consulting fee income and income from corporate finance and capital market advisory services, among other things, partly offset by increases in wire transfer fees, among other things. The decrease in insurance commissions and fees was related to a decrease in contingent income partly offset by an increase in commission income. The decrease in contingent income was primarily related to a lack of growth within the portfolio and a deterioration in the loss performance of insurance policies previously placed. The increase in commission income was primarily related to an increase in benefit plan commissions due to increased business volumes partly offset by a decrease in commissions on property and casualty policies. The increase in service charges on deposit accounts was primarily due to an increase in overdraft/insufficient funds charges on consumer and commercial accounts and consumer service charges partly offset by a decrease in commercial service charges. The increase in interchange and debit card transactions fees was primarily due to increases in income from debit card transactions and ATM service fees. See the analysis of these categories of non-interest income included in the section captioned “Non-Interest Income” elsewhere in this discussion.

Non-interest expense for 2018 increased $13.4 million, or 2.1%, compared to 2017. The increase was primarily related to increases in salaries and wages, technology, furniture and equipment expense and employee benefits partly offset by decreases in other non-interest expense and deposit insurance expense. The increase in salaries and wages for 2018 compared to 2017 was primarily due to an increase in the number of employees and normal annual merit and market increases, as well as increases in incentive compensation and stock based compensation. The increase in technology, furniture and equipment expense for 2018 compared to 2017 was primarily related to increases in software maintenance, software amortization, service contracts expense and depreciation on furniture and equipment. The increase in employee benefits was primarily due to increases in medical benefits expense, payroll taxes and expenses related to our 401(k) and profit sharing plans partly offset by decreases in expenses related to our defined benefit retirement plans. As discussed above, network costs associated with debit card and ATM transactions are now reported netted against the related fees from such transactions, rather than as a component of other non-interest expense as was previously the case. Excluding network costs from 2017, other non-interest expense for 2018 effectively increased $7.1 million. This effective increase included increases in professional services expense, donations expense related to a contributions to our charitable foundation, advertising/promotions expense, losses on the sale/write-down of foreclosed and other assets and outside computer services expense, among other things. These items were partly offset by decreases in sundry and other miscellaneous expense; fraud losses, primarily related to check cards; and data communications expense; among other things. The decrease in deposit insurance expense during 2018 compared to 2017 was mostly related to a decrease in our base assessment rate and the termination of the quarterly Deposit Insurance Fund surcharge in the fourth quarter of 2018. See the analysis of these categories of non-interest expense included in the section captioned “Non-Interest Expense” elsewhere in this discussion.

Non-interest expense for 2017 increased $19.7 million, or 3.2%, compared to 2016. The increase was primarily related to increases in salaries and wages; technology, furniture and equipment expense; deposit insurance expense; and employee benefits partly offset by a decrease in net occupancy expense, other non-interest expense and intangible amortization. The increase in salaries were primarily due to an increase in the number of employees and normal annual merit and market increases, as well as increases in incentive compensation, due to improved operating performance, and stock-based compensation. The increase in technology, furniture and equipment expense was primarily related to increases in software maintenance and depreciation on furniture and equipment partly offset by decreases in equipment rental expense and service contracts expense, among other things. The increase in deposit insurance expense was related to an increase in the assessment rate due to a new quarterly surcharge which began in the third quarter of 2016 and an increase in assets. The increase in employee benefits was primarily due to increases in expenses related to our 401(k) and profit sharing plans, medical benefits expense and payroll taxes, among other things, partly offset by a decrease in expenses related to our defined benefit retirement plans. The decrease in net occupancy expense was partly related to a change in the way we allocate occupancy expenses among our operating segments. The decrease in other non-interest expense was primarily related to decreases in donations expense, sundry and other miscellaneous expense and check card expense, among other things. These items were partly offset by increases in advertising/promotions expense, guard services expense, professional services expense, outside computer services expense and fraud losses, among other things. The decrease in intangible amortization expense was primarily related to the completion of amortization of certain previously recognized intangible assets as well as a reduction in the annual amortization rate of certain previously recognized intangible assets as we use an accelerated amortization approach which results in higher amortization rates during the earlier years of the useful lives of intangible assets. See the analysis of these categories of non-interest expense included in the section captioned “Non-Interest Expense” elsewhere in this discussion.

Income tax expense for 2018 increased $15.1 million, or 39.9%, compared to 2017 while income tax expense for 2017 increased $4.2 million, or 12.3%, compared to 2016. See the section captioned “Income Taxes” elsewhere in this discussion.

Frost Insurance Agency, which is included in the Banking operating segment, had gross commission revenues of $49.6 million during 2018 compared to $46.8 million during 2017 and $47.8 million in 2016. The increase during 2018 compared to 2017 was primarily related to increases in commissions on property and casualty policies and benefit plan commissions due to increased business volumes and an increase in contingent income primarily related to growth within the portfolio and improvement in the loss performance of insurance policies previously placed. The decrease during

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2017 compared to 2016 was primarily related to a decrease in contingent income partly offset by an increase in benefit plan commissions. See the analysis of insurance commissions and fees included in the section captioned “Non-Interest Income” elsewhere in this discussion.

Frost Wealth Advisors

Net income for 2018 decreased $2.3 million, or 9.4%, compared to 2017. The decrease was primarily due a $13.6 million decrease in net interest income and a $5.2 million increase in non-interest expense partly offset by a $9.2 million increase in non-interest income and a $7.3 million decrease in income tax expense. Net income for 2017 increased $5.3 million, or 27.8%, compared to 2016. The increase was primarily due to an $8.7 million increase in non-interest income and a $6.3 million increase in net interest income partly offset by a $6.9 million increase in non-interest expense and a $2.9 million increase in income tax expense.

Net interest income for 2018 decreased $13.6 million, or 76.9%, compared to 2017. Beginning in 2018, certain repurchase agreements that were previously allocated to the Frost Wealth Advisors segment are now allocated to the Banking segment which resulted in the decreases in net interest income. Net interest income for 2017 increased $6.3 million, or 55.7%, compared to 2016. The increase was primarily due to an increase in the funds transfer price received for funds provided related to Frost Wealth Advisors' repurchase agreements and an increase in the average volume of funds provided.

Non-interest income for 2018 increased $9.2 million, or 7.2%, compared to 2017. The increase was primarily due to an increase in trust and investment management fees. Trust and investment management fee income is the most significant income component for Frost Wealth Advisors. Investment fees are the most significant component of trust and investment management fees, making up approximately 83%, 84% and 82% of total trust and investment management fees for 2018, 2017 and 2016, respectively. Investment and other custodial account fees are generally based on the market value of assets within a trust account. Volatility in the equity and bond markets impacts the market value of trust assets and the related investment fees. The increase in trust and investment management fees during 2018 compared to 2017 was primarily the result of an increase in trust investment fees and an increase in oil and gas fees. The increase in trust investment fees during 2018 was due to higher average equity valuations. The increase in oil and gas fees during 2018 was related to higher average energy prices and new business, partly driven by enhancements to our service offering. See the analysis of trust and investment management fees included in the section captioned “Non-Interest Income” elsewhere in this discussion.

Non-interest income for 2017 increased $8.7 million, or 7.3%, compared to 2016. The increase was primarily related to increases in trust and investment management fees and other charges, commissions and fees. The increase in trust and investment management fees during 2017 compared to 2016 was primarily the result of an increase in trust investment fees. The increase in trust investment fees was due to higher average equity valuations on managed accounts. Trust and investment management fees during 2017 also included an increase in real estate fees and a decrease in estate fees compared to 2016. See the analysis of trust and investment management fees included in the section captioned “Non-Interest Income” elsewhere in this discussion.

Non-interest expense for 2018 increased $5.2 million, or 4.8%, compared to 2017. The increase was primarily related to increases in other non-interest expense, salaries and wages and technology, furniture and equipment expense. The increase in other non-interest expense was primarily related to increases in platform/management fees, outside computer services expense and sundry and other miscellaneous expense, among other things. The increase in salaries and wages was primarily due to an increase in the number of employees and normal annual merit and market increases, as well as an increase in incentive compensation. The increase in technology, furniture and equipment expense was primarily related to increases in software maintenance, service contracts expense and software amortization.

Non-interest expense for 2017 increased $6.9 million, or 6.7%, compared to 2016. The increase was primarily related to increases in net occupancy expense, salaries and wages and employee benefits partly offset by a decrease in other non-interest expense. The increase in net occupancy expense and decrease in other non-interest expense were related to a change in the way we allocate occupancy expenses among our operating segments. Beginning in 2017, operating segments receive a direct charge for occupancy expense based upon cost centers within the segment. Such amounts are now reported as occupancy expense. Previously, these costs were included within the allocated overhead and reported as a component of other non-interest expense. The increase in salaries and wages was primarily related to an increase in the number of employees and normal annual merit and market increases. The increase in employee benefits expense was primarily related to increases in expenses related to our defined benefit retirement plans, payroll taxes and medical benefits expense.

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Non-Banks

The Non-Banks operating segment had a net loss of $12.7 million for 2018 compared to a net loss of $7.3 million in 2017. The increase in the net loss for 2018 was primarily due to an increase in net interest expense due to increases in the interest rates paid on our long-term borrowings, a decrease in the net income tax benefit due to a decrease in the U.S. federal statutory income tax rate and an increase in salaries and wages.

The Non-Banks operating segment had a net loss of $7.3 million for 2017 compared to a net loss of $4.5 million in 2016. The increase in the net loss was primarily due to a $3.2 million increase in net interest expense partly offset by a $436 thousand decrease in non-interest expense. The increase in net interest expense was primarily due to increases in the interest rates paid on our long-term borrowings. The decrease in non-interest expense was primarily related to decreases in employee benefits expense and salaries and wages.

Income Taxes

We recognized income tax expense of $53.8 million, for an effective tax rate of 10.6%, in 2018 compared to $44.2 million, for an effective tax rate of 10.8%, in 2017 and $37.2 million, for an effective rate of 10.9%, in 2016. The effective income tax rates differed from the U.S. statutory federal income tax rate of 21% during 2018 and 35% during 2017 and 2016 primarily due to the effect of tax-exempt income from loans, securities and life insurance policies and discrete items including the income tax effects associated with stock-based compensation, changes in enacted tax rates and corrections.

Income tax expense and the effective tax rate during 2018 were impacted by the decrease in the U.S. statutory federal income tax rate under the Tax Cuts and Jobs Act enacted on December 22, 2017. The effect of this decrease was offset by increases in total income during 2018 with a higher proportion of taxable income relative to tax-exempt income and the impact of certain expenses related to meals and entertainment, executive compensation and deposit insurance, among other things, that are no longer deductible as a result of the Tax Cuts and Jobs Act. See Note 13 - Income Taxes in the accompanying notes to consolidated financial statements elsewhere in this report for additional information about the Tax Cut and Jobs Act.

The effective tax rate for 2017 was also impacted by the decrease in U.S. statutory federal income tax rate under the Tax Cuts and Jobs Act as, under ASC 740, Income Taxes, the effect of income tax law changes on deferred taxes are recognized as a component of income tax expense related to continuing operations in the period in which the law is enacted. This requirement applies not only to items initially recognized in continuing operations, but also to items initially recognized in other comprehensive income. As a result of the reduction in the U.S. federal statutory income tax rate, during 2017, we recognized a provisional net income tax benefit totaling $4.0 million, which included $5.5 million expense related to items recognized in continuing operations and $9.5 million benefit related to items recognized in other comprehensive income. In accordance with a new accounting standard adopted as of January 1, 2018, we reclassified the $9.5 million income tax benefit from accumulated other comprehensive income to retained earnings. See Note 1 - Summary of Significant Accounting Policies. During fourth quarter of 2018, we finalized the accounting for the tax effects of the Tax Cuts and Jobs Act, and recognized an additional tax benefit totaling $231 thousand as a component of continuing operations.

The effective tax rate for 2017 was also impacted by the correction of an over-accrual of taxes that resulted from incorrectly classifying certain tax-exempt loans as taxable for federal income tax purposes since 2013. As a result, we recognized tax benefits totaling $2.9 million related to the 2013 through 2016 tax years.

Excluding the effects of the change in the U.S. federal statutory income tax rate and the correction of the over-accrual, our effective tax rate would have been 12.5% during 2017. This increase in income tax expense and the effective tax rate during 2017 compared to 2016 was primarily related to an increase in total income with a higher proportion of taxable income relative to tax-exempt income, partly offset by an increase in tax benefits associated with stock-based compensation.

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Sources and Uses of Funds

The following table illustrates, during the years presented, the mix of our funding sources and the assets in which those funds are invested as a percentage of our average total assets for the period indicated. Average assets totaled $31.0 billion in 2018 compared to $30.5 billion in 2017 and $28.8 billion in 2016.

	2018	2017	2016
Sources of Funds:			
Deposits:			
Non-interest-bearing	34.7 %	35.5 %	34.8 %
Interest-bearing	50.1	49.6	50.2
Federal funds purchased and repurchase agreements	3.4	3.2	2.7
Long-term debt and other borrowings	0.8	0.8	0.8
Other non-interest-bearing liabilities	0.5	0.5	0.9
Equity capital	10.5	10.4	10.6
Total	100.0%	100.0%	100.0%
Uses of Funds:			
Loans	43.9 %	40.9 %	40.1 %
Securities	38.9	40.2	41.8
Federal funds sold, resell agreements and interest-bearing deposits	10.3	12.0	10.8
Other non-interest-earning assets	6.9	6.9	7.3
Total	100.0%	100.0%	100.0%

Deposits continue to be our primary source of funding. Average deposits increased $384.1 million, or 1.5%, in 2018 compared to 2017 and increased $1.4 billion, or 5.7% in 2017 compared to 2016. Non-interest-bearing deposits remain a significant source of funding, which has been a key factor in maintaining our relatively low cost of funds. Average non-interest-bearing deposits totaled 40.9% of total average deposits in 2018 compared to 41.8% in 2017, and 40.9% in 2016. Federal prohibitions on the payment of interest on demand deposits were repealed in 2011. Nonetheless, we have not experienced any significant additional costs as a result. However, as market interest rates have increased, we have increased the interest rates we pay on most of our interest-bearing deposit products. This may lead to a decrease in the relative proportion of non-interest-bearing deposits to total deposits.

We primarily invest funds in loans and securities. Average loans increased $1.2 billion, or 9.3%, in 2018 compared to 2017 and increased $905.3 million, or 7.8% in 2017 compared to 2016. Average securities decreased $180.7 million, or 1.5%, in 2018 compared to 2017 and increased $188.5 million, or 1.6%, in 2017 compared to 2016. Average federal funds sold and resell agreements and interest-bearing deposits decreased $436.7 million, or 12.0%, in 2018 compared to 2017 and increased $548.3 million, or 17.7%, in 2017 compared to 2016.

Loans

Year-end loans, including leases net of unearned discounts, consisted of the following:

	2018	Percentage of Total	2017	2016	2015	2014
Commercial and industrial	$5,111,957	36.3 %	$4,792,388	$4,344,000	$4,120,522	$4,055,225
Energy:						
Production	1,309,314	9.3	1,182,326	971,767	1,249,678	1,160,404
Service	168,775	1.2	171,795	221,213	272,934	319,618
Other	124,509	0.9	144,972	193,081	235,583	293,923
Total energy	1,602,598	11.4	1,499,093	1,386,061	1,758,195	1,773,945
Commercial real estate:						
Commercial mortgages	4,121,966	29.2	3,887,742	3,481,157	3,285,041	2,999,082
Construction	1,267,717	9.0	1,066,696	1,043,261	720,695	624,888
Land	306,755	2.2	331,986	311,030	286,991	291,907
Total commercial real estate	5,696,438	40.4	5,286,424	4,835,448	4,292,727	3,915,877
Consumer real estate:						
Home equity loans	353,924	2.5	355,342	345,130	340,528	342,725
Home equity lines of credit	337,168	2.4	291,950	264,862	233,525	220,128
Other	427,898	3.0	376,002	326,793	306,696	286,198
Total consumer real estate	1,118,990	7.9	1,023,294	936,785	880,749	849,051
Total real estate	6,815,428	48.3	6,309,718	5,772,233	5,173,476	4,764,928
Consumer and other	569,750	4.0	544,466	473,098	434,338	393,437
Total loans	$14,099,733	100.0 %	$13,145,665	$11,975,392	$11,486,531	$10,987,535

Overview. Year-end total loans increased $954.1 million, or 7.3%, during 2018 compared to 2017, increased $1.2 billion, or 9.8% during 2017 compared to 2016, increased $488.9 million, or 4.3% during 2016 compared to 2015 and increased $499.0 million, or 4.5% during 2015 compared to 2014.

The majority of our loan portfolio is comprised of commercial and industrial loans, energy loans and real estate loans. Commercial and industrial loans made up 36.3% and 36.4% of total loans at December 31, 2018 and 2017 while energy loans made up 11.4% of total loans at both December 31, 2018 and 2017 and real estate loans made up 48.3% and 48.0% of total loans at December 31, 2018 and 2017. Energy loans include commercial and industrial loans, leases and real estate loans to borrowers in the energy industry. Real estate loans include both commercial and consumer balances.

Loan Origination/Risk Management. We have certain lending policies and procedures in place that are designed to maximize loan income within an acceptable level of risk. Management reviews and approves these policies and procedures on a regular basis. A reporting system supplements the review process by providing management with frequent reports related to loan production, loan quality, concentrations of credit, loan delinquencies and non-performing and potential problem loans. Diversification in the loan portfolio is a means of managing risk associated with fluctuations in economic conditions.

Commercial and industrial loans are underwritten after evaluating and understanding the borrower’s ability to operate profitably and prudently expand its business. Underwriting standards are designed to promote relationship banking rather than transactional banking. Once it is determined that the borrower’s management possesses sound ethics and solid business acumen, our management examines current and projected cash flows to determine the ability of the borrower to repay their obligations as agreed. Commercial and industrial loans are primarily made based on the identified cash flows of the borrower and secondarily on the underlying collateral provided by the borrower. The cash flows of borrowers, however, may not be as expected and the collateral securing these loans may fluctuate in value. Most commercial and industrial loans are secured by the assets being financed or other business assets such as accounts receivable or inventory and may incorporate a personal guarantee; however, some short-term loans may be made on an unsecured basis. In the case of loans secured by accounts receivable, the availability of funds for the repayment of these loans may be substantially dependent on the ability of the borrower to collect amounts due from its customers.

Our energy loan portfolio includes loans for production, energy services and other energy loans, which includes private clients, transportation and equipment providers, manufacturers, refiners and traders. The origination process for energy loans is similar to that of commercial and industrial loans. Because, however, of the average loan size, the significance of the portfolio and the specialized nature of the energy industry, our energy lending requires a highly prescriptive underwriting policy. Production loans are secured by proven, developed and producing reserves. Loan proceeds are used for the development and drilling of additional wells, the acquisition of additional production, and/or the acquisition of additional properties to be developed and drilled. Our customers in this sector are generally large, independent, private owner-producers or large corporate producers. These borrowers typically have large capital requirements for drilling and acquisitions, and as such, loans in this portfolio are generally greater than $10 million. Production loans are collateralized by the oil and gas interests of the borrower. Collateral values are determined by the risk-adjusted and limited discounted future net revenue of the reserves. Our valuations take into consideration geographic and reservoir differentials as well as cost structures associated with each borrower. Collateral is calculated at least semi-annually using third party engineer-prepared reserve studies. These reserve studies are conducted using a discount factor and base case assumptions for the current and future value of oil and gas. To qualify as collateral, typically reserves must be proven, developed and producing. For our strongest borrowers, collateral may include up to 20% proven, non-producing reserves. Loan commitments are limited to 65% of estimated reserve value. Cash flows must be sufficient to amortize the loan commitment within 120% of the half-life of the underlying reserves. Loan commitments generally must also be 100% covered by the risk-adjusted and limited discounted future net revenue of the reserves when stressed at 75% of our base case price assumptions. In addition, the ratio of the borrower's debt to earnings before interest, taxes, depreciation and amortization ("EBITDA") should generally not exceed 350%.

Oil and gas service, transportation, and equipment providers are economically aligned due to their reliance on drilling and active oil and gas development. Income for these borrowers is highly dependent on the level of drilling activity and rig utilization, both of which are driven by the current and future outlook for the price of oil and gas. We mitigate the credit risk in this sector through conservative concentration limits and guidelines on the profile of eligible borrowers. Guidelines require that the companies have extensive experience through several industry cycles, and that they be supported by financially competent and committed guarantors who provide a significant secondary source of repayment. Borrowers in this sector are typically privately-owned, middle-market companies with annual sales of less than $100 million. The services provided by companies in this sector are highly diversified, and include down-hole testing and maintenance, providing and threading drilling pipe, hydraulic fracturing services or equipment, seismic testing and equipment and other direct or indirect providers to the oil and gas production sector.

Our private client portfolio primarily consists of loans to wealthy individuals and their related oil and gas exploration and production entities, where the oil and gas producing reserves are not considered to be the primary source of repayment. These borrowers and guarantors typically have significant sources of wealth including significant liquid assets and/or cash flow from other investments which can fully repay the loans. The credit structures of these loans are generally similar to those of energy production loans, described above, with respect to the valuation of the reserves taken as collateral and the repayment structures.

Although no balances were outstanding at December 31, 2018, in prior years, we have had a small portfolio of loans to refiners where our credit involvement with these customers was through purchases of shared national credit syndications. These borrowers refine crude oil into gasoline, diesel, jet fuel, asphalt and other petrochemicals and are not dependent on drilling or development. All of the borrowers in this portfolio are very large public companies that are important employers in several of our major markets. These borrowers, for the most part, have been long-term customers and we have a strong relationship with these companies and their executive management. There is no new customer origination process for this segment and any outstanding balances are expected to only reflect the needs of these existing relationships.

We also have a small portfolio of loans to energy trading companies that serve as intermediaries that buy and sell oil, gas, other petrochemicals, and ethanol. These companies are not dependent on drilling or development. As a general policy, we do not lend to energy traders; however, we have made an exception to this policy for certain customers based upon their underlying business models which minimize risk as commodities are bought only to fill existing orders (back-to-back trading). As such, the commodity price risk and sale risk are eliminated. There is no new customer origination process for this segment and any outstanding balances are expected to only reflect the needs of

these existing relationships.
Commercial real estate loans are subject to underwriting standards and processes similar to commercial and industrial loans, in addition to those of real estate loans. These loans are viewed primarily as cash flow loans and secondarily as loans secured by real estate. Commercial real estate lending typically involves higher loan principal amounts and the

repayment of these loans is generally largely dependent on the successful operation of the property securing the loan or the business conducted on the property securing the loan. Commercial real estate loans may be more adversely affected by conditions in the real estate markets or in the general economy. The properties securing our commercial real estate portfolio are diverse in terms of type and geographic location within Texas. This diversity helps reduce our exposure to adverse economic events that affect any single market or industry. Management monitors and evaluates commercial real estate loans based on collateral, geography and risk grade criteria. As a general rule, we avoid financing single-purpose projects unless other underwriting factors are present to help mitigate risk. We also utilize third-party experts to provide insight and guidance about economic conditions and trends affecting market areas we serve. In addition, management tracks the level of owner-occupied commercial real estate loans versus non-owner occupied loans. At December 31, 2018, approximately 49.6% of the outstanding principal balance of our commercial real estate loans were secured by owner-occupied properties.

With respect to loans to developers and builders that are secured by non-owner occupied properties that we may originate from time to time, we generally require the borrower to have had an existing relationship with us and have a proven record of success. Construction loans are underwritten utilizing feasibility studies, independent appraisal reviews, sensitivity analysis of absorption and lease rates and financial analysis of the developers and property owners. Construction loans are generally based upon estimates of costs and value associated with the completed project. These estimates may be inaccurate. Construction loans often involve the disbursement of substantial funds with repayment substantially dependent on the success of the ultimate project. Sources of repayment for these types of loans may be pre-committed permanent loans from approved long-term lenders, sales of developed property or an interim loan commitment from us until permanent financing is obtained. These loans are closely monitored by on-site inspections and are considered to have higher risks than other real estate loans due to their ultimate repayment being sensitive to interest rate changes, governmental regulation of real property, general economic conditions and the availability of long-term financing.

We originate consumer loans utilizing a computer-based credit scoring analysis to supplement the underwriting process. To monitor and manage consumer loan risk, policies and procedures are developed and modified, as needed, jointly by line and staff personnel. This activity, coupled with relatively small loan amounts that are spread across many individual borrowers, minimizes risk. Additionally, trend and outlook reports are reviewed by management on a regular basis. Underwriting standards for home equity loans are heavily influenced by statutory requirements, which include, but are not limited to, loan-to-value limitations, collection remedies, the number of such loans a borrower can have at one time and documentation requirements.

We maintain an independent loan review department that reviews and validates the credit risk program on a periodic basis. Results of these reviews are presented to management and the appropriate committees of our board of directors. The loan review process complements and reinforces the risk identification and assessment decisions made by lenders and credit personnel, as well as our policies and procedures.

Commercial and Industrial. Commercial and industrial loans increased $319.6 million, or 6.7%, during 2018 compared to 2017 and increased $448.4 million, or 10.3%, in 2017 compared to 2016. Our commercial and industrial loans are a diverse group of loans to small, medium and large businesses. The purpose of these loans varies from supporting seasonal working capital needs to term financing of equipment. While some short-term loans may be made on an unsecured basis, most are secured by the assets being financed with collateral margins that are consistent with our loan policy guidelines. The commercial and industrial loan portfolio also includes the commercial lease and purchased shared national credits.

Energy. Energy loans include loans to entities and individuals that are engaged in various energy-related activities including (i) the development and production of oil or natural gas, (ii) providing oil and gas field servicing, (iii) providing energy-related transportation services (iv) providing equipment to support oil and gas drilling (v) refining petrochemicals, or (vi) trading oil, gas and related commodities. Energy loans increased $103.5 million, or 6.9%, during 2018 compared to 2017 and decreased $113.0 million, or 8.2%, in 2017 compared to 2016. The average loan size, the significance of the portfolio and the specialized nature of the energy industry requires a highly prescriptive underwriting policy. Exceptions to this policy are rarely granted. Due to the large borrowing requirements of this customer base, the energy loan portfolio includes participations and purchased shared national credits.

Industry Concentrations. As of December 31, 2018 and 2017, other than energy loans, there were no concentrations of loans within any single industry in excess of 10% of total loans, as segregated by Standard Industrial Classification code (“SIC code”). The SIC code system is a federally designed standard industrial numbering system used by us to categorize loans by the borrower’s type of business. The following table summarizes the industry concentrations of our loan portfolio, as segregated by SIC code. Industry concentrations, stated as a percentage of year-end total loans as of December 31, 2018 and 2017, are presented below:

	2018	2017
Industry concentrations:		
Energy	11.4 %	11.4 %
Public finance	5.4	6.1
Medical services	4.0	3.6
General and specific trade contractors	3.4	3.6
Building materials and contractors	3.2	3.2
Manufacturing, other	2.9	3.1
Automobile dealers	2.9	3.0
Religion	2.5	2.6
Financial services, consumer credit	2.3	2.2
Services	2.1	2.5
Investor	2.1	1.7
All other	57.8	57.0
Total loans	100.0%	100.0%

Large Credit Relationships. The market areas served by us include three of the top ten most populated cities in the United States. These market areas are also home to a significant number of Fortune 500 companies. As a result, we originate and maintain large credit relationships with numerous commercial customers in the ordinary course of business. We consider large credit relationships to be those with commitments equal to or in excess of $10.0 million, excluding treasury management lines exposure, prior to any portion being sold. Large relationships also include loan participations purchased if the credit relationship with the agent is equal to or in excess of $10.0 million. In addition to our normal policies and procedures related to the origination of large credits, one of our Regional Credit Committees must approve all new credit facilities which are part of large credit relationships and renewals of such credit facilities with exposures between $20.0 million and $30.0 million. Our Central Credit Committee must approve all new credit facilities which are part of large credit relationships and renewals of such credit facilities with exposures that exceed $30.0 million. The Regional and Central Credit Committees meet regularly to review large credit relationship activity and discuss the current pipeline, among other things.

The following table provides additional information on our large credit relationships outstanding at year-end.

	2018			2017		
	Number of	Period-End Balances		Number of	Period-End Balances	
	Relationships	Committed	Outstanding	Relationships	Committed	Outstanding
Committed amount:						
$20.0 million and greater	247	$10,815,882	$6,236,133	224	$9,765,770	$5,446,315
$10.0 million to $19.9 million	165	2,296,908	1,395,082	162	2,250,279	1,319,667
Average amount:						
$20.0 million and greater		43,789	25,248		43,597	24,314
$10.0 million to $19.9 million		13,921	8,455		13,891	8,146

Purchased Shared National Credits (“SNCs”). Purchased SNCs are participations purchased from upstream financial organizations and tend to be larger in size than our originated portfolio. Our purchased SNC portfolio totaled $757.5 million at December 31, 2018 decreasing $77.4 million, or 9.3%, from $835.0 million at December 31, 2017. At December 31, 2018, 56.9% of outstanding purchased SNCs were related to the energy industry, 14.4% of outstanding purchased SNCs were related to the construction industry and 11.1% of outstanding purchased SNCs were related to the financial services industry. The remaining purchased SNCs were diversified throughout various other industries, with no other single industry exceeding 10% of the total purchased SNC portfolio. Additionally, almost all of the outstanding balance of purchased SNCs was included in the energy and commercial and industrial portfolios, with the remainder included in the real estate categories. SNC participations are originated in the normal course of business to meet the needs of our customers. As a matter of policy, we generally only participate in SNCs for companies headquartered in or which have significant operations within our market areas. In addition, we must have direct access to the company's management, an existing banking relationship or the expectation of broadening the relationship with other banking products and services within the following 12 to 24 months. SNCs are reviewed at least quarterly for credit quality and business development successes.

The following table provides additional information about certain credits within our purchased SNCs portfolio as of year-end.

	2018			2017		
	Number of	Period-End Balances		Number of	Period-End Balances	
	Relationships	Committed	Outstanding	Relationships	Committed	Outstanding
Committed amount:						
$20.0 million and greater	38	$1,431,117	$ 605,402	41	$1,502,958	$ 585,509
$10.0 million to $19.9 million	18	268,974	149,233	27	389,243	222,661
Average amount:						
$20.0 million and greater		37,661	15,932		36,658	14,281
$10.0 million to $19.9 million		14,943	8,291		14,416	8,247

Real Estate Loans. Real estate loans increased $505.7 million, or 8.0%, during 2018 compared to 2017 and increased $537.5 million, or 9.3%, in 2017 compared to 2016. Real estate loans include both commercial and consumer balances. Commercial real estate loans totaled $5.7 billion, or 83.6% of total real estate loans, at December 31, 2018 and $5.3 billion, or 83.8% of total real estate loans, at December 31, 2017. The majority of this portfolio consists of commercial real estate mortgages, which includes both permanent and intermediate term loans. Our primary focus for the commercial real estate portfolio has been growth in loans secured by owner-occupied properties. These loans are viewed primarily as cash flow loans and secondarily as loans secured by real estate. Consequently, these loans must undergo the analysis and underwriting process of a commercial and industrial loan, as well as that of a real estate loan.

The following tables summarize our commercial real estate loan portfolio, including commercial real estate loans reported as a component of our energy loan portfolio segment, as segregated by (i) the type of property securing the credit and (ii) the geographic region in which the loans were originated. Property type concentrations are stated as a percentage of year-end total commercial real estate loans as of December 31, 2018 and 2017:

	2018	2017
Property type:		
Office building	20.9 %	19.8 %
Office/warehouse	16.1	16.6
Multifamily	9.2	6.7
Retail	8.4	8.2
Non-farm/non-residential	5.8	6.5
Dealerships	4.9	4.3
Medical Offices and Services	4.7	4.7
Religious	4.0	4.8
Strip Centers	3.4	5.1
1-4 Family	3.2	5.4
All other	19.4	17.9
Total commercial real estate loans	100.0 %	100.0 %

	2018	2017
Geographic region:		
San Antonio	26.2 %	26.6 %
Houston	23.8	22.3
Fort Worth	16.1	17.3
Dallas	15.4	14.0
Austin	9.1	10.1
Rio Grande Valley	4.8	4.7
Permian Basin	2.7	3.0
Corpus Christi	1.9	2.0
Total commercial real estate loans	100.0%	100.0%

Consumer Loans. The consumer loan portfolio at December 31, 2018 increased $121.0 million, or 7.7%, from December 31, 2017. As the following table illustrates, the consumer loan portfolio has two distinct segments, including consumer real estate and consumer and other.

	2018	2017
Consumer real estate:		
Home equity loans	$353,924	$355,342
Home equity lines of credit	337,168	291,950
Other	427,898	376,002
Total consumer real estate	1,118,990	1,023,294
Consumer and other	569,750	544,466
Total consumer loans	$1,688,740	$1,567,760

Consumer real estate loans at December 31, 2018 increased $95.7 million, or 9.4%, from December 31, 2017. Combined, home equity loans and lines of credit made up 61.8% and 63.3% of the consumer real estate loan total at December 31, 2018 and 2017, respectively. We offer home equity loans up to 80% of the estimated value of the personal residence of the borrower, less the value of existing mortgages and home improvement loans. In general, we do not originate 1-4 family mortgage loans; however, from time to time, we may invest in such loans to meet the needs of our customers. Under the Tax Cuts and Jobs Act enacted on December 22, 2017, interest on home equity loans and lines of credit is no longer deductible. This change could adversely impact the level of originations and outstanding volumes of home equity loans and lines of credit in the future. The consumer and other loan portfolio at December 31, 2018 increased $25.3 million, or 4.6%, from December 31, 2017. This portfolio primarily consists of automobile loans, unsecured revolving credit products, personal loans secured by cash and cash equivalents, and other similar types of credit facilities.

Foreign Loans. We make U.S. dollar-denominated loans and commitments to borrowers in Mexico. The outstanding balance of these loans and the unfunded amounts available under these commitments were not significant at December 31, 2018 or 2017.

Maturities and Sensitivities of Loans to Changes in Interest Rates. The following table presents the maturity distribution of our commercial and industrial loans, energy loans and commercial real estate loans at December 31, 2018. The table also presents the portion of loans that have fixed interest rates or variable interest rates that fluctuate over the life of the loans in accordance with changes in an interest rate index such as the prime rate or LIBOR.

	Due in One Year or Less	After One, but Within Five Years	After Five Years	Total
Commercial and industrial	$2,080,043	$2,255,716	$776,198	$5,111,957
Energy	1,047,276	518,541	36,781	1,602,598
Commercial real estate:				
Buildings, land and other	534,690	1,946,963	1,947,068	4,428,721
Construction	295,902	771,907	199,908	1,267,717
Total	$3,957,911	$5,493,127	$2,959,955	$12,410,993
Loans with fixed interest rates	$346,849	$1,809,617	$1,470,528	$3,626,994
Loans with floating interest rates	3,611,062	3,683,510	1,489,427	8,783,999
Total	$3,957,911	$5,493,127	$2,959,955	$12,410,993

We generally structure commercial loans with shorter-term maturities in order to match our funding sources and to enable us to effectively manage the loan portfolio by providing the flexibility to respond to liquidity needs, changes in interest rates and changes in underwriting standards and loan structures, among other things. Due to the shorter-term nature of such loans, from time to time and in the ordinary course of business, we will renew/extend maturing lines of credit or refinance existing loans at their maturity dates. Some loans may renew multiple times in a given year as a result of general customer practice and need. These renewals, extensions and refinancings are made in the ordinary course of business for customers that meet our normal level of credit standards. Such borrowers typically request renewals to support their on-going working capital needs to finance their operations. Such borrowers are not experiencing financial difficulties and generally could obtain similar financing from another financial institution. In connection with each renewal, extension or refinancing, we may require a principal reduction, adjust the rate of interest and/or modify the structure and other terms to reflect the current market pricing/structuring for such loans or to maintain competitiveness with other financial institutions. In such cases, we do not generally grant concessions, and, except for those reported in Note 3 - Loans, any such renewals, extensions or refinancings that occurred during the reported periods were not deemed to be troubled debt restructurings pursuant to applicable accounting guidance. Loans exceeding $1.0 million undergo a complete underwriting process at each renewal.

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Non-Performing Assets and Potential Problem Loans

Non-Performing Assets. Year-end non-performing assets and accruing past due loans were as follows:

	2018	2017	2016	2015	2014
Non-accrual loans:					
Commercial and industrial	$9,239	$46,186	$31,475	$25,111	$34,108
Energy	46,932	94,302	57,571	21,180	636
Commercial real estate	15,268	7,589	8,550	35,088	22,431
Consumer real estate	892	2,109	2,130	1,862	2,212
Consumer and other	1,408	128	425	226	538
Total non-accrual loans	73,739	150,314	100,151	83,467	59,925
Restructured loans	—	4,862	—	—	—
Foreclosed assets:					
Real estate	1,175	2,116	2,440	2,255	5,251
Other	—	—	—	—	—
Total foreclosed assets	1,175	2,116	2,440	2,255	5,251
Total non-performing assets	$74,914	$157,292	$102,591	$85,722	$65,176
Ratio of non-performing assets to:					
Total loans and foreclosed assets	0.53 %	1.20 %	0.86 %	0.75 %	0.59 %
Total assets	0.23	0.50	0.34	0.30	0.23
Accruing past due loans:					
30 to 89 days past due	$59,595	$93,428	$55,456	$59,480	$42,881
90 or more days past due	20,468	14,432	24,864	8,108	20,941
Total accruing past due loans	$80,063	$107,860	$80,320	$67,588	$63,822
Ratio of accruing past due loans to total loans:					
30 to 89 days past due	0.42 %	0.71 %	0.46 %	0.52 %	0.39 %
90 or more days past due	0.15	0.11	0.21	0.07	0.19
Total accruing past due loans	0.57 %	0.82 %	0.67 %	0.59 %	0.58 %

Non-performing assets include non-accrual loans, restructured loans and foreclosed assets. Non-performing assets at December 31, 2018 decreased $82.4 million compared to December 31, 2017 while non-performing assets at December 31, 2017 increased $54.7 million compared to December 31, 2016.

There were no non-accrual commercial industrial loans in excess of $5.0 million at December 31, 2018. Non-accrual commercial and industrial loans included two credit relationships in excess of $5 million totaling $34.2 million at December 31, 2017. We charged-off $12.1 million related to these two credit relationships during 2018. Subsequent to the charge-offs, the remaining balances of both credit relationships were paid off. Non-accrual commercial and industrial loans included one credit relationship in excess of $5 million totaling $9.8 million at December 31, 2016. Of this amount, we charged-off $7.7 million during 2017 and $1.8 million during 2018.

Non-accrual energy loans included two credit relationships in excess of $5 million totaling $44.0 million at December 31, 2018, each of which was previously reported as non-accrual at December 31, 2017. These credits had an aggregate outstanding balance of $53.0 million at December 31, 2017. The decrease in outstanding balance in 2018 was partly related to $6.0 million in charge-offs related to one of the credit relationships. Non-accrual energy loans included four credit relationships in excess of $5 million totaling $83.5 million at December 31, 2017. Of this amount, we had net payments totaling $28.0 million during 2018 and we charged-off $11.6 million (which included the aforementioned $6.0 million in charge-offs) related to two of the credit relationships. Non-accrual energy loans included four credit relationships in excess of $5 million totaling $52.1 million at December 31, 2016. Of this amount, we charged-off a total of $10.0 million related to two credit relationships during 2017. Subsequent to the charge-off, the remaining balance of one of these credit relationships was paid-off in 2017 and the remaining balance of the other credit relationship was sold in 2018. The increasing trend in non-accrual energy loans from 2015 through 2017 was related to disruption within the energy industry resulting from oil price volatility in recent years, as more fully discussed in the section captioned “Allowance for Loan Losses” below.

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Non-accrual real estate loans primarily consist of land development, 1-4 family residential construction credit relationships and loans secured by office buildings and religious facilities. Non-accrual commercial real estate loans included one relationship in excess of $5.0 million totaling $12.2 million at December 31, 2018. This entire relationship was previously reported as a potential problem as of March 31, 2018 and one of the credits in this relationship was previously reported as a potential problem loan as of December 31, 2017. There were no non-accrual commercial real estate loan credit relationships in excess of $5 million at December 31, 2017 or December 31, 2016. Generally, loans are placed on non-accrual status if principal or interest payments become 90 days past due and/or management deems the collectibility of the principal and/or interest to be in question, as well as when required by regulatory requirements. Once interest accruals are discontinued, accrued but uncollected interest is charged to current year operations. Subsequent receipts on non-accrual loans are recorded as a reduction of principal, and interest income is recorded only after principal recovery is reasonably assured. Classification of a loan as non-accrual does not preclude the ultimate collection of loan principal or interest.

Foreclosed assets represent property acquired as the result of borrower defaults on loans. Foreclosed assets are recorded at estimated fair value, less estimated selling costs, at the time of foreclosure. Write-downs occurring at foreclosure are charged against the allowance for loan losses. Regulatory guidelines require us to reevaluate the fair value of foreclosed assets on at least an annual basis. Our policy is to comply with the regulatory guidelines. Write-downs are provided for subsequent declines in value and are included in other non-interest expense along with other expenses related to maintaining the properties. Write-downs of foreclosed assets totaled $473 thousand, $16 thousand and $217 thousand during 2018, 2017 and 2016 respectively. There were no significant concentrations of any properties, to which the aforementioned write-downs relate, in any single geographic region.

Accruing past due loans at December 31, 2018 decreased $27.8 million compared to December 31, 2017. The decrease was primarily due to a decrease in past due energy loans (down $17.3 million) and past due commercial real estate loans (down $13.2 million, including $3.8 million related to construction loans). Accruing past due loans at December 31, 2017 increased $27.5 million compared to December 31, 2016. The increase was primarily due to increases in past due energy and commercial real estate loans (up $14.4 million and $11.2 million, respectively).

Potential problem loans consist of loans that are performing in accordance with contractual terms but for which management has concerns about the ability of an obligor to continue to comply with repayment terms because of the obligor’s potential operating or financial difficulties. Management monitors these loans closely and reviews their performance on a regular basis. At December 31, 2018 and 2017, we had $63.4 million and $61.4 million in loans of this type which are not included in any one of the non-accrual, restructured or 90 days past due loan categories. At December 31, 2018, potential problem loans consisted of 11 credit relationships. Of the total outstanding balance at December 31, 2018, 30.0% was related to the restaurant industry, 20.7% was related to the energy industry and 16.2% was related to the real estate industry. Weakness in these organizations’ operating performance and financial condition, among other factors, have caused us to heighten the attention given to these credits. As such, all of the loans identified as potential problem loans at December 31, 2018 were graded as “substandard - accrual” (risk grade 11). Potential problem loans impact the allocation of our allowance for loan losses as a result of our risk grade based allocation methodology. See Note 3 - Loans in the accompanying consolidated financial statements for details regarding our allowance allocation methodology.

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Allowance For Loan Losses

The allowance for loan losses is a reserve established through a provision for loan losses charged to expense, which represents management's best estimate of inherent losses that have been incurred within the existing portfolio of loans. The allowance, in the judgment of management, is necessary to reserve for estimated loan losses and risks inherent in the loan portfolio. Our allowance for loan losses consists of: (i) specific valuation allowances determined in accordance with ASC Topic 310, "Receivables," based on probable losses on specific loans; (ii) historical valuation allowances determined in accordance with ASC Topic 450, "Contingencies," based on historical loan loss experience for similar loans with similar characteristics and trends, adjusted, as necessary, to reflect the impact of current conditions; (iii) general valuation allowances determined in accordance with ASC Topic 450 based on various risk factors that are internal to us; and (iv) macroeconomic valuation allowances determined in accordance with ASC Topic 450 based upon management's assessment of current and expected economic conditions, trends and other quantitative and qualitative portfolio risk factors that are external to us or that are not otherwise captured in our allowance modeling process but could impact the credit risk or inherent losses within our loan portfolio segments.

Our model for the determination of the allowance for loan losses is largely prescriptive, based on policy, and calculated using quantitative data related to our loan portfolio. This calculation yields the minimum level of allowance required ("minimum calculated need"). In that the model is constructed to address aspects of the loan portfolio quantitatively as they move over time (both good and bad), the model output of the minimum calculated need will move directionally with the overall health of the portfolio and inherent losses in the portfolio at any period end. While the model inherently captures loan portfolio characteristics and actions such as risk grade migration, required specific reserves, net charge-offs, among other things, the model contains a degree of imprecision arising from various items and portfolio risk factors that are not and cannot be incorporated in to the model but nonetheless have an impact on the overall level of allowance deemed appropriate by management. To adequately address this imprecision, our methodology to determine the allowance for loan losses provides for additional reserves in excess of the minimum calculated need. This process entails the application of management judgment related to various non-model items and portfolio risk factors not addressed by the quantitative model but reflective of inherent losses in the portfolio. These additional reserves, which are reported as a component of our macroeconomic valuation allowances, are determined at the portfolio level and allocated as reserves for general economic risk to our various portfolio segments based upon management judgment.

The table below provides an allocation of the year-end allowance for loan losses by loan type; however, allocation of a portion of the allowance to one category of loans does not preclude its availability to absorb losses in other categories. See Note 3 - Loans in the accompanying notes to consolidated financial statements elsewhere in this report for further details regarding our methodology for estimating the appropriate level of the allowance for loan losses and the amounts allocated to specific portfolio segments.

	2018		2017		2016		2015		2014	
	Allowance for Loan Losses	Percentage of Loans in each Category to Total Loans	Allowance for Loan Losses	Percentage of Loans in each Category to Total Loans	Allowance for Loan Losses	Percentage of Loans in each Category to Total Loans	Allowance for Loan Losses	Percentage of Loans in each Category to Total Loans	Allowance for Loan Losses	Percentage of Loans in each Category to Total Loans
Commercial and industrial	$48,580	36.3 %	$59,614	36.4 %	$52,915	36.3 %	$42,993	35.9 %	$44,273	36.9 %
Energy	29,052	11.4	51,528	11.4	60,653	11.6	54,696	15.3	14,919	16.1
Commercial real estate	38,777	40.4	30,948	40.2	30,213	40.4	24,313	37.4	27,163	35.7
Consumer real estate	6,103	7.9	5,657	7.8	4,238	7.8	4,659	7.6	5,178	7.7
Consumer and other	9,620	4.0	7,617	4.2	5,026	3.9	9,198	3.8	8,009	3.6

Total	$132,132	100.0 %	$155,364	100.0 %	$153,045	100.0 %	$135,859	100.0 %	$99,542	100.0 %

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Allocation of the Allowance for Loan Losses at December 31, 2018 vs. December 31, 2017

The reserve allocated to commercial and industrial loans at December 31, 2018 decreased $11.0 million compared to December 31, 2017. The decrease was primarily due to decreases in macroeconomic valuation allowances, specific valuation allowances and historical valuation allowances. Macroeconomic valuation allowances for commercial and industrial loans decreased $5.9 million from $16.5 million at December 31, 2017 to $10.6 million at December 31, 2018. The decrease was primarily related to a decrease in the general macroeconomic risk allocation (down $4.3 million), as further discussed below. The decrease was also partly related to a decrease in the distressed industries allocation (down $1.6 million), as certain industries are no longer considered to be distressed. Specific valuation allowances for commercial and industrial loans decreased $5.0 million from $7.6 million at December 31, 2017 to $2.6 million at December 31, 2018. The decrease was primarily related to the charge-off of a credit relationship which had an associated specific valuation allowance totaling $5.9 million at December 31, 2017. Historical valuation allowances decreased $1.1 million from $26.4 million at December 31, 2017 to $25.4 million at December 31, 2018. The decrease was primarily related to a decrease in the volume of classified loans graded as "substandard - accrual" (risk grade 11) as well as non-classified loans graded "watch" (risk grade 9) and "special mention" (risk grade 10) partly offset by the impact of an increase in the volume of pass-graded loans and an increase in the historical loss allocation factor applied to loans graded "substandard - non-accrual" (risk grade 12). Classified loans consist of loans having a risk grade of 11, 12 or 13. Classified commercial and industrial loans totaled $78.9 million at December 31, 2018 compared to $144.0 million at December 31, 2017. The weighted-average risk grade of commercial and industrial loans was 6.30 at December 31, 2018 compared to 6.41 at December 31, 2017. Commercial and industrial loan net charge-offs totaled $22.4 million during 2018 compared to $17.5 million during 2017. Charge-offs in 2018 included $19.8 million related to nine credit relationships, four which had an associated specific valuation allowances totaling $6.4 million as of December 31, 2017. General valuation allowances for commercial and industrial loans increased $950 thousand from $9.1 million at December 31, 2017 to $10.1 million at December 31, 2018. The increase was primarily related to an increases in the allocations for highly-leveraged transactions (up $1.4 million) and excessive industry concentrations (up $536 thousand) partly offset by an increase in the adjustment for recoveries (up $522 thousand) combined with a decrease in the allocation for loans not reviewed by concurrence (down $297 thousand).

The reserve allocated to energy loans at December 31, 2018 decreased $22.5 million compared to December 31, 2017. As a result, reserves allocated to energy loans as a percentage of total energy loans totaled 1.81% at December 31, 2018 compared to 3.44% at December 31, 2017. This decrease was primarily related to decreases in historical valuation allowances, macroeconomic valuation allowances, specific valuation allowances and general valuation allowances. Historical valuation allowances decreased $12.4 million from $22.1 million at December 31, 2017 to $9.7 million at December 31, 2018. The decrease was primarily related to decreases in the historical loss allocation factors for non-classified energy loans and classified energy loans graded “substandard - accrual” (risk grade 11). The decrease was also partly related to a decrease in the volume of certain categories of non-classified energy loans and a decrease in the volume of classified energy loans. Non-classified energy loans graded as “watch” and “special mention” (risk grades 9 and 10) totaled $78.6 million at December 31, 2018 compared to $114.7 million at December 31, 2017, decreasing $36.1 million while "pass" grade energy loans increased $252.5 million from $1.2 billion at December 31, 2017 to $1.5 billion at December 31, 2018. Classified energy loans totaled $72.4 million at December 31, 2018 compared to $185.2 million at December 31, 2017, decreasing $112.8 million. As a result of these changes, the weighted-average risk grade of energy loans decreased to 6.22 at December 31, 2018 compared to 6.97 at December 31, 2017. Macroeconomic valuation allowances related to energy loans decreased $4.6 million from $8.2 million at December 31, 2017 to $3.7 million at December 31, 2018, primarily due to a decrease in the general macroeconomic risk allocation (down $3.2 million), as further discussed below, and a decrease in the environmental risk adjustment (down $1.3 million) due to decreases in the historical loss valuation allowances to which the environmental risk adjustment factor is applied. Specific valuation allowances for energy loans decreased $3.6 million from $13.3 million at December 31, 2017 to $9.7 million at December 31, 2018. Specific valuation allowances at December 31, 2017 were related to two credit relationships totaling $61.2 million. We subsequently recognized charge-offs totaling $11.6 million related to these credit relationships during 2018. Both credit relationships continue to be reported as non-accrual loans, totaling $38.5 million with associated specific valuation allowances totaling $8.9 million at December 31, 2018. Total energy loan net charge-offs were $13.1 million during 2018 compared to net charge-offs of $10.0 million during 2017. General valuation allowances decreased $2.0 million from $8.0 million at December 31, 2017 $6.0 million at December 31, 2018. The decrease was primarily related to decreases in the allocations for highly-leveraged transactions (down $701 thousand) and excessive industry concentrations (down $644 thousand), among other things.

The reserve allocated to commercial real estate loans at December 31, 2018 increased $7.8 million compared to December 31, 2017. The increase was primarily related to increases in macroeconomic valuation allowances, specific valuation allowances and historical valuation allowances. Macroeconomic valuation allowances increased $3.1 million from $7.9 million at December 31, 2017 to $11.0 million at December 31, 2018. The increase was primarily related to an increase in the general macroeconomic risk allocation (up $2.8 million), as further discussed below. Specific valuation allowances totaled $2.6 million at December 31, 2018 and primarily related to two credit relationships totaling $12.2 million. There were no specific valuation allowances related to commercial real estate loans at December 31, 2017. Historical valuation allowances increased $1.9 million primarily due to an increase in the volume of “pass” grade commercial real estate loans, which increased $432.2 million during 2018. Classified commercial real estate loans increased $42.5 million from $75.8 million at December 31, 2017 to $118.3 million at December 31, 2018. The weighted-average risk grade of commercial real estate loans was 7.05 at both December 31, 2018 and December 31, 2017.

The reserve allocated to consumer real estate loans at December 31, 2018 increased $446 thousand compared to December 31, 2017. This increase was primarily due to a $660 thousand increase in the general macroeconomic risk allocation, as further discussed below partly offset by a $462 thousand decrease in general valuation allowances, which was primarily related to a decrease in allowances allocated for loans not reviewed by concurrence and an increase in the reduction for recoveries.

The reserve allocated to consumer and other loans at December 31, 2018 increased $2.0 million compared to December 31, 2017. The increase was partly related to a $1.4 million increase in specific valuation allowances, which was related to one credit relationship totaling $1.4 million. The increase was also partly related to a $1.2 million increase in historical valuation allowances primarily due to an increase in the historical loss allocation factor. These increases were partly offset by a decrease in macroeconomic valuation allowances (down $724 thousand), related to a decrease in the general macroeconomic risk allocation.

As discussed above, under our allowance methodology, we allocate additional reserves for general macroeconomic risk in excess of our minimum calculated need calculated using our allowance model. These additional reserves are based upon management's assessment of current and expected economic conditions, trends and other quantitative and qualitative portfolio risk factors that are external to us or that are not otherwise captured in our allowance modeling process but impact the credit risk or inherent losses within our loan portfolio segments. These additional reserves are allocated to our various portfolio segments based upon management judgment.

Allocation of the Allowance for Loan Losses at December 31, 2017 vs. December 31, 2016

The reserve allocated to commercial and industrial loans at December 31, 2017 increased $6.7 million compared to December 31, 2016. The increase was due to increases in macroeconomic valuation allowances, general valuation allowances and specific valuation allowances partly offset by a decrease in historical valuation allowances. Macroeconomic valuation allowances for commercial and industrial loans increased $9.0 million from $7.5 million at December 31, 2016 to $16.5 million at December 31, 2017. The increase was primarily related to an increase in the general macroeconomic allocation (up $9.6 million) partly offset by a decrease in the environmental risk adjustment (down $916 thousand). General valuation allowances for commercial and industrial loans increased $2.4 million from $6.7 million at December 31, 2016 to $9.1 million at December 31, 2017. The increase was primarily related to increases in the allocations for highly leveraged credit relationships (up $2.8 million), large credit relationships (up $582 thousand) and loans not reviewed by concurrence (up $356 thousand) combined with a decrease in the adjustment for recoveries (down $485 thousand). These items were partly offset by a decrease in the allocation for excessive industry concentrations (down $2.0 million). The increase in the allocation for highly leveraged transactions was partly related to a change in the criteria for determining whether a loan is considered to be highly leveraged. Specific valuation allowances increased $2.1 million from $5.4 million at December 31, 2016 to $7.6 million at December 31, 2017. Of the total specific valuations allowances at December 31, 2017, $5.9 million related to one credit relationship totaling $12.9 million. Charge-offs in 2017 included $5.7 million related to six credit relationships that, as of December 31, 2016, had associated specific valuation allowances totaling $4.4 million. Charge-offs in 2017 also included $10.4 million related to two credit relationships for which we had no specific allocation as of December 31, 2016, or at the time of charge-off. Historical valuation allowances decreased $6.9 million from $33.3 million at December 31, 2016 to $26.4 million at December 31, 2017. The decrease was primarily related to decreases in the historical loss allocation factors for non-classified loans graded as “watch” (risk grade 9) and “special mention” (risk grade 10) and classified commercial and industrial loans partly offset by increases in the volume of certain categories of both non-classified and classified loans. Classified loans consist of loans having a risk grade of 11, 12 or 13. Classified commercial and industrial loans totaled $144.0 million at December 31, 2017 compared to $131.9 million at December 31, 2016. The weighted-average risk grade of commercial and industrial loans was 6.41 at December 31, 2017 compared to 6.35

at December 31, 2016. Commercial and industrial loan net charge-offs totaled $17.5 million during 2017 compared to $12.3 million during 2016.

The reserve allocated to energy loans at December 31, 2017 decreased $9.1 million compared to December 31, 2016. As a result, reserves allocated to energy loans as a percentage of total energy loans totaled 3.44% at December 31, 2017 compared to 4.38% at December 31, 2016. This decrease was primarily related to decreases in historical valuation allowances and macroeconomic valuation allowances partly offset by increases in specific valuation allowances and general valuation allowances. Historical valuation allowances decreased $12.6 million from $34.6 million at December 31, 2016 to $22.1 million at December 31, 2017. The decrease was primarily related to decreases in the volume of classified energy loans and higher risk categories of non-classified energy loans partly offset by increases in the historical loss allocation factors for both non-classified and classified energy loans. Classified energy loans totaled $185.2 million at December 31, 2017 compared to $302.0 million at December 31, 2016, decreasing $116.8 million. Non-classified energy loans graded as “watch” and “special mention” (risk grades 9 and 10) totaled $114.7 million at December 31, 2017 compared to $229.4 million at December 31, 2016, decreasing $114.7 million while "pass" grade energy loans increased $344.5 million from $854.7 million at December 31, 2016 to $1.2 billion at December 31, 2017. As a result of these changes, the weighted-average risk grade of energy loans decreased to 6.97 at December 31, 2017 compared to 7.95 at December 31, 2016. Macroeconomic valuation allowances related to energy loans decreased $10.3 million from $18.5 million at December 31, 2016 to $8.2 million at December 31, 2017, in part due to decreased oil price volatility. The price per barrel of crude oil was approximately $54 at December 31, 2016 and $60 at December 31, 2017. Specific valuation allowances for energy loans increased $9.5 million from $3.8 million at December 31, 2016 to $13.3 million at December 31, 2017. Specific valuation allowances at December 31, 2017 were related to two credit relationships totaling $61.2 million while specific valuation allowances at December 31, 2016 were related to three credit relationships totaling $29.8 million. Energy loan net charge-offs totaled $10.0 million during 2017 compared to net charge-offs of $18.6 million during 2016. The charge-offs in 2017 included $10.0 million related to two credit relationships that, as of December 31, 2016, had associated specific valuation allowances totaling $3.4 million. The charge-offs in 2016 were primarily related to three large credit relationships for which, at the time we recognized the charged-offs, we had associated specific valuation allowances totaling $27.5 million. General valuation allowances increased $4.2 million during 2017 compared to 2016 primarily due to an increase in the allocation for highly leveraged transactions (up $3.3 million) and excessive industry concentrations (up $1.0 million) partly offset by an increase in the adjustment for recoveries (up $530 thousand). The increase in the allocation for highly leveraged transactions was partly related to a change in the criteria for determining whether a loan is considered to be highly leveraged.

The reserve allocated to commercial real estate loans at December 31, 2017 increased $735 thousand compared to December 31, 2016. The increase was primarily related to an increase in historical valuation allowances partly offset by decreases in general valuation allowances and macroeconomic valuation allowances. Historical valuation allowances increased $2.0 million primarily due to an increase in the volume of non-classified commercial real estate loans. Non-classified commercial real estate loans increased $451.5 million from December 31, 2016 to December 31, 2017 primarily due to an increase in commercial real estate loans graded as “pass.” Classified commercial real estate loans decreased $478 thousand from $76.3 million at December 31, 2016 to $75.8 million at December 31, 2017. The weighted-average risk grade of commercial real estate loans was 7.05 at December 31, 2017 compared to 6.96 at December 31, 2016. Macroeconomic valuation allowances decreased $381 thousand from $8.2 million at December 31, 2016 to $7.9 million at December 31, 2017. The decrease was primarily related to decreases in the general macroeconomic allocation (down $814 thousand) and the distressed industries allocation (down $156 thousand) partly offset by an increase in the environmental risk adjustment (up $589 thousand).

The reserve allocated to consumer real estate loans at December 31, 2017 increased $1.4 million compared to December 31, 2016. This increase was mostly due to a $627 thousand increase in general valuation allowances, which was primarily related to an increase in allowances allocated for loans not reviewed by concurrence and a decrease in the reduction for recoveries, and a $544 thousand increase in macroeconomic valuation allowances.

The reserve allocated to consumer and other loans at December 31, 2017 increased $2.6 million compared to December 31, 2016. The increase was primarily related to increases in macroeconomic valuation allowances (up $1.5

million) and historical valuation allowances (up $1.0 million). The increase in macroeconomic valuation allowances was related to a $1.4 million increase in the general macroeconomic allocation. The increase in historical valuation allowances was primarily due to an increase in the volume of non-classified consumer and other loans.

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Activity in the allowance for loan losses is presented in the following table.

	2018	2017	2016	2015	2014
Balance of allowance for loan losses at beginning of year	$155,364	$153,045	$135,859	$99,542	$92,438
Provision for loan losses	21,613	35,460	51,673	51,845	16,314
Charge-offs:					
Commercial and industrial	(26,076)	(20,619)	(15,910)	(11,092)	(12,073)
Energy	(13,940)	(10,595)	(18,644)	(6,000)	(1,747)
Commercial real estate	(619)	(86)	(82)	(657)	(3,800)
Consumer real estate	(2,143)	(925)	(814)	(577)	(1,097)
Consumer and other	(17,197)	(15,579)	(12,878)	(11,246)	(9,768)
Total charge-offs	(59,975)	(47,804)	(48,328)	(29,572)	(28,485)
Recoveries:					
Commercial and industrial	3,688	3,166	3,651	4,557	9,162
Energy	819	586	56	3	510
Commercial real estate	369	832	918	989	1,800
Consumer real estate	605	419	557	486	364
Consumer and other	9,649	9,660	8,659	8,009	7,439
Total recoveries	15,130	14,663	13,841	14,044	19,275
Net charge-offs	(44,845)	(33,141)	(34,487)	(15,528)	(9,210)
Balance at end of year	$132,132	$155,364	$153,045	$135,859	$99,542
Net loan charge-offs to average loans	0.33%	0.27%	0.30%	0.14%	0.09%
Allowance for loan losses to year-end loans	0.94	1.18	1.28	1.18	0.91
Allowance for loan losses to year-end non-accrual loans	179.19	103.36	152.81	162.77	166.11
Average loans	$13,617,940	$12,460,148	$11,554,823	$11,267,402	$10,299,025
Year-end loans	14,099,733	13,145,665	11,975,392	11,486,531	10,987,535
Year-end non-accrual loans	73,739	150,314	100,151	83,467	59,925

The provision for loan losses reflects loan quality trends, including the levels of and trends related to non-accrual loans, past due loans, potential problem loans, classified and criticized loans and net charge-offs or recoveries, among other factors. The provision for loan losses also reflects the totality of actions taken on all loans for a particular period. In other words, the amount of the provision reflects not only the necessary increases in the allowance for loan losses related to newly identified criticized loans, but it also reflects actions taken related to other loans including, among other things, any necessary increases or decreases in required allowances for specific loans or loan pools.

The provision for loan losses decreased $13.8 million, or 39.0%, in 2018 compared to 2017. Despite increases in net charge-offs during 2018 compared to 2017, the provision for loan losses decreased due to a decrease in the calculated reserves necessary as a result of the aforementioned decreases in our historical loss allocation factors for energy loans, decreases in the level of classified loans and positive trends in the overall weighted-average risk grade of our energy and commercial and industrial loan portfolios. Classified energy, commercial and industrial and commercial real estate loans totaled $269.6 million at December 31, 2018 compared to $405.0 million at December 31, 2017. The overall weighted-average risk grade of our energy, commercial and industrial and commercial real estate loan portfolios was 6.63 at December 31, 2018 compared to 6.77 at December 31, 2017. Net charge-offs totaled $44.8 million during 2018 compared to $33.1 million during 2017. Specific valuation allowances totaled $16.2 million at December 31, 2018 compared to $20.8 million at December 31, 2017. The level of the provision was also partly influenced by the overall level of the Texas Leading Index, though down slightly from last year. The Texas Leading Index totaled 127.4 at November 30, 2018 (most recent date available) compared to 129.3 at December 31, 2017. A higher Texas Leading Index value implies more favorable economic conditions.

The ratio of the allowance for loan losses to total loans was 0.94% at December 31, 2018 compared to 1.18% at December 31, 2017. Management believes the recorded amount of the allowance for loan losses is appropriate based upon management's best estimate of probable losses that have been incurred within the existing portfolio of loans. Should any of the factors considered by management in evaluating the appropriate level of the allowance for loan losses

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change, our estimate of probable loan losses could also change, which could affect the level of future provisions for loan losses.

The provision for loan losses decreased $16.2 million, or 31.4%, in 2017 compared to 2016. The level of the provision for loan losses in 2016 was reflective of a significant increase in the volume of classified energy loans, specific valuation allowances taken on certain classified energy loans and increases in the weighted-average risk grades of our energy, commercial and industrial and commercial real estate loan portfolios. Classified energy, commercial and industrial and commercial real estate loans totaled $405.0 million at December 31, 2017 compared to $510.1 million at December 31, 2016. Specific valuation allowances related to energy, commercial and industrial and commercial real estate loans totaled $20.8 million at December 31, 2017 compared to $9.2 million at December 31, 2016. The overall weighted-average risk grade of our energy, commercial and industrial and commercial real estate loan portfolios was 6.77 at December 31, 2017 compared to 6.84 at December 31, 2016. The level of the provision for loan losses during 2017 was mostly reflective of the level of net charge-offs during 2017, which totaled $33.1 million, approximately $25.9 million of which related to eight credit relationships. The level of the provision was also partly influenced by improvement in the Texas Leading Index. The Texas Leading Index totaled 128.7 at December 31, 2017 compared to 123.1 at December 31, 2016. The ratio of the allowance for loan losses to total loans was 1.18% at December 31, 2017 compared to 1.28% at December 31, 2016.

Securities

Year-end securities were as follows:

	2018			2017			2016		
	Amount	Percentage of Total		Amount	Percentage of Total		Amount	Percentage of Total	
Held to maturity:									
U.S. Treasury	$—	—	%	$—	—	%	$249,889	2.0	%
Residential mortgage-backed securities	2,737	—		3,610	—		4,511	0.1	
States and political subdivisions	1,101,820	8.8		1,428,488	12.0		1,994,710	16.0	
Other	1,500	—		—	—		1,350	—	
Total	1,106,057	8.8		1,432,098	12.0		2,250,460	18.1	
Available for sale:									
U.S. Treasury	3,427,689	27.4		3,445,153	28.8		4,019,731	32.2	
Residential mortgage-backed securities	829,740	6.6		665,086	5.6		785,167	6.3	
States and political subdivisions	7,087,202	56.6		6,336,209	53.1		5,355,885	43.0	
Other	42,690	0.4		42,561	0.3		42,494	0.3	
Total	11,387,321	91.0		10,489,009	87.8		10,203,277	81.8	
Trading:									
U.S. Treasury	21,928	0.2		19,210	0.2		16,594	0.1	
States and political subdivisions	2,158	—		1,888	—		109	—	
Total	24,086	0.2		21,098	0.2		16,703	0.1	
Total securities	$12,517,464	100.0	%	$11,942,205	100.0	%	$12,470,440	100.0	%

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The following tables summarize the maturity distribution schedule with corresponding weighted-average yields of securities held to maturity and securities available for sale as of December 31, 2018. Weighted-average yields have been computed on a fully taxable-equivalent basis using a tax rate of 21%. Mortgage-backed securities are included in maturity categories based on their stated maturity date. Expected maturities may differ from contractual maturities because issuers may have the right to call or prepay obligations. Other securities classified as available for sale include stock in the Federal Reserve Bank and the Federal Home Loan Bank, which have no maturity date. These securities have been included in the total column only.

	Within 1 Year		1-5 Years		5-10 Years		After 10 Years		Total	
	Amount	Weighted Average Yield	Amount	Weighted Average Yield	Amount	Weighted Average Yield	Amount	Weighted Average Yield	Amount	Weighted Average Yield
Held to maturity:										
Residential mortgage-backed securities	$—	— %	$618	3.58 %	$—	— %	$2,119	1.16 %	$2,737	1.71 %
States and political subdivisions	72,476	4.97	121,296	3.56	483,934	3.16	424,114	3.54	1,101,820	3.47
Other	—	—	1,500	—	—	—	—	—	1,500	—
Total	$72,476	4.97	$123,414	3.52	$483,934	3.16	$426,233	3.53	$1,106,057	3.46
Available for sale:										
U.S. Treasury	$2,007,396	1.55 %	$1,132,243	1.94 %	$288,050	2.66 %	$—	— %	$3,427,689	1.77 %
Residential mortgage-backed securities	546	4.64	84,842	1.70	63,079	3.67	681,273	3.69	829,740	3.49
States and political subdivisions	208,471	2.66	720,813	2.70	204,385	3.59	5,953,533	3.86	7,087,202	3.70
Other	—	—	—	—	—	—	—	—	42,690	—
Total	$2,216,413	1.66	$1,937,898	2.21	$555,514	3.12	$6,634,806	3.84	$11,387,321	3.09

Securities are classified as held to maturity and carried at amortized cost when management has the positive intent and ability to hold them to maturity. Securities are classified as available for sale when they might be sold before maturity. Securities available for sale are carried at fair value, with unrealized holding gains and losses reported in other comprehensive income, net of tax. The remaining securities are classified as trading. Trading securities are held primarily for sale in the near term and are carried at their fair values, with unrealized gains and losses included immediately in other income. Management determines the appropriate classification of securities at the time of purchase. Securities with limited marketability, such as stock in the Federal Reserve Bank and the Federal Home Loan Bank, are carried at cost.

All mortgage-backed securities included in the above tables were issued by U.S. government agencies and corporations. At December 31, 2018, approximately 98.4% of the securities in our municipal bond portfolio were issued by the State of Texas or political subdivisions or agencies within the State of Texas, of which approximately 68.2% are either guaranteed by the Texas Permanent School Fund, which has a “triple-A” insurer financial strength rating, or secured by U.S. Treasury securities via defeasance of the debt by the issuers. At December 31, 2018, we held general obligation bonds issued by the State of Texas with an aggregate amortized cost of $991.9 million and an aggregate fair value of $998.0 million and general obligation bonds issued by Bexar County, Texas with an aggregate amortized cost of $372.7 million and an aggregate fair value of $369.4 million. Such amounts were in excess of 10% of our shareholders’ equity at December 31, 2018. At such date, all of these securities were considered "high grade" or better by various credit rating agencies. At December 31, 2018, there were no other holdings of any one issuer, other than the U.S. government and its agencies, in an amount greater than 10% of our shareholders’ equity.

The average taxable-equivalent yield on the securities portfolio based on a 21% tax rate in 2018 and a 35% tax rate in 2017 and 2016, was 3.38% in 2018 compared to 3.99% in 2017 and 4.02% in 2016. Tax-exempt municipal securities totaled 65.0% of average securities in 2018 compared to 60.0% in 2017 and 56.4% in 2016. The average yield on taxable securities was 2.03% in 2018 compared to 1.92% in 2017 and 2.01% in 2016, while the average taxable-equivalent yield on tax-exempt securities was 4.11% in 2018 compared to 5.37% in 2017 and 5.57% in 2016. See the section captioned “Net Interest Income” elsewhere in this discussion. The overall growth in the securities portfolio since 2016 was primarily funded by deposit growth.

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Deposits

The table below presents the daily average balances of deposits by type and weighted-average rates paid thereon during the years presented:

	2018 Average Balance	2018 Average Rate Paid	2017 Average Balance	2017 Average Rate Paid	2016 Average Balance	2016 Average Rate Paid
Non-interest-bearing demand deposits:						
Commercial and individual	$10,164,396		$10,155,502		$9,215,962	
Correspondent banks	205,727		245,759		310,445	
Public funds	386,685		418,165		507,912	
Total	10,756,808		10,819,426		10,034,319	
Interest-bearing deposits:						
Private accounts:						
Savings and interest checking	6,667,695	0.08 %	6,376,855	0.02 %	5,745,385	0.02 %
Money market accounts	7,645,624	0.77	7,502,494	0.17	7,466,252	0.06
Time accounts of $100,000 or more	474,472	0.87	446,695	0.26	461,138	0.20
Time accounts under $100,000	325,624	0.71	329,245	0.18	349,964	0.12
Public funds	418,843	1.04	430,203	0.33	454,786	0.04
Total	15,532,258	0.49	15,085,492	0.11	14,477,525	0.05
Total deposits	$26,289,066	0.29	$25,904,918	0.07	$24,511,844	0.03

Average deposits increased $384.1 million, or 1.5%, in 2018 compared to 2017 and increased $1.4 billion, or 5.7%, in 2017 compared to 2016. The most significant volume growth during 2018 compared to 2017 was in savings and interest checking, and money market accounts accounts. This growth was partly offset by decreases in the volume of public fund accounts, both non-interest bearing and interest-bearing, and correspondent bank accounts. The most significant volume growth during 2017 compared to 2016 was in non-interest bearing commercial and individual accounts and savings and interest checking accounts. This growth was partly offset by decreases in the volume of public fund accounts, both non-interest bearing and interest-bearing, and correspondent bank accounts. The ratio of average interest-bearing deposits to total average deposits was 59.1% in 2018 compared to 58.2% in 2017 and 59.1% in 2016. The average cost of interest-bearing deposits and total deposits was 0.49% and 0.29% during 2018 compared to 0.11% and 0.07% during 2017 and 0.05% and 0.03% during 2016. The increase in the average cost of interest-bearing deposits in 2018 as compared to 2017 and in 2017 compared to 2016 was related to the aforementioned increases in interest rates paid on most of our interest-bearing deposit products as a result of increases in market interest rates during the comparable periods.

The following table presents the proportion of each component of average non-interest-bearing deposits to the total of such non-interest-bearing deposits during the years presented:

	2018	2017	2016
Commercial and individual	94.5 %	93.8 %	91.8 %
Correspondent banks	1.9	2.3	3.1
Public funds	3.6	3.9	5.1
Total	100.0%	100.0%	100.0%

Average non-interest-bearing deposits decreased $62.6 million, or 0.6%, in 2018 compared to 2017 while average non-interest-bearing deposits increased $785.1 million, or 7.8% in 2017 compared to 2016. The decrease in 2018 compared to 2017 was primarily due to a $40.1 million, or 16.3%, decrease in average correspondent bank deposits and a $31.5 million, or 7.5%, decrease in average public fund deposits. The increase in 2017 compared to 2016 was primarily due to a $939.5 million, or 10.2%, increase in average commercial and individual deposits.

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The following table presents the proportion of each component of average interest-bearing deposits to the total of such interest-bearing deposits during the years presented:

	2018	2017	2016
Private accounts:			
Savings and interest checking	42.9%	42.3	