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

FORM 10-K

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

For the fiscal year ended December 31, 2017

OR

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

For the transition period from ____________ to ____________

Commission File No. 001-36609

NORTHERN TRUST CORPORATION
(Exact name of registrant as specified in its charter)

Delaware	36-2723087
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
50 South La Salle Street	
Chicago, Illinois	60603
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: (312) 630-6000

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange On Which Registered
Common Stock, $1.66 $^{2}/_{3}$ Par Value	The NASDAQ Stock Market LLC
Depositary Shares, each representing 1/1000 th interest in a share of Series C Non-Cumulative Perpetual Preferred Stock	The NASDAQ Stock Market LLC

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 ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate website, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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	☒		Accelerated filer	☐
Non-accelerated filer	☐	(Do not check if a smaller reporting company)	Smaller reporting company	☐
			Emerging growth company	☐

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

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

The aggregate market value of the registrant's common stock as of June 30, 2017 (the last business day of the registrant's most recently completed second quarter), based upon the last sale price of the common stock at June 30, 2017 as reported by The NASDAQ Stock Market LLC, held by non-affiliates was approximately $22.1 billion . Determination of stock ownership by non-affiliates was made solely for the purpose of responding to this requirement and the registrant is not bound by this determination for any other purpose.

At January 31, 2018 , 226,325,851 shares of common stock, $1.66 2/3 par value, were outstanding.

Portions of the registrant's Proxy Statement for its 2018 Annual Meeting of Stockholders are incorporated by reference into Part III hereof.

NORTHERN TRUST CORPORATION
FORM 10-K
ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

PART I

ITEM 1 – BUSINESS

Northern Trust Corporation

Northern Trust Corporation (Corporation) is a financial holding company that is a leading provider of asset servicing, fund administration, asset management, fiduciary and banking solutions for corporations, institutions, families and individuals worldwide. The Corporation conducts business through various U.S. and non-U.S. subsidiaries, including The Northern Trust Company (Bank). The Corporation was originally formed as a holding company for the Bank in 1971. The Corporation has a network of offices in 19 U.S. states, Washington, D.C., and 23 international locations in Canada, Europe, the Middle East, and the Asia-Pacific region. At December 31, 2017 , the Corporation had consolidated total assets of $138.6 billion and stockholders' equity of $10.2 billion .

The Bank is an Illinois banking corporation headquartered in Chicago and the Corporation's principal subsidiary. Founded in 1889, the Bank conducts its business through its U.S. operations and its various U.S. and non-U.S. branches and subsidiaries. At December 31, 2017 , the Bank had consolidated assets of $138.2 billion and common bank equity capital of $9.2 billion .

The Corporation expects that the Bank will continue in the foreseeable future to be the major source of the Corporation's consolidated assets, revenues, and net income. Except where the context otherwise requires, references to "Northern Trust," "we," "us," "our" or similar terms mean Northern Trust Corporation and its subsidiaries on a consolidated basis.

In addition to the following information regarding Northern Trust's business, the reporting segment and geographic area information included in Note 31, "Reporting Segments and Related Information," provided in Item 8, "Financial Statements and Supplementary Data," of this Annual Report on Form 10-K is incorporated herein by reference.

Business Overview

Northern Trust focuses on managing and servicing client assets through its two client-focused reporting segments: Corporate & Institutional Services (C&IS) and Wealth Management. Asset management and related services are provided to C&IS and Wealth Management clients primarily by the Asset Management business. The revenue and expenses of Asset Management and certain other support functions are allocated fully to C&IS and Wealth Management. Northern Trust reports certain income and expense items not allocated to C&IS and Wealth Management in a third reporting segment, Treasury and Other.

CORPORATE & INSTITUTIONAL SERVICES

C&IS is a leading global provider of asset servicing and related services to corporate and public retirement funds, foundations, endowments, fund managers, insurance companies, sovereign wealth funds, and other institutional investors around the globe. Asset servicing and related services encompass a full range of capabilities including, but not limited to: global custody; fund administration; investment operations outsourcing; investment management; investment risk and analytical services; employee benefit services; securities lending; foreign exchange; treasury management; brokerage services; transition management services; banking; and cash management. Client relationships are managed through the Bank and the Bank's and the Corporation's other subsidiaries, including support from locations in North America, Europe, the Middle East, and the Asia-Pacific region. At December 31, 2017 , total C&IS assets under custody/administration, assets under custody, and assets under management were $10.07 trillion , $7.44 trillion , and $871.2 billion , respectively.

WEALTH MANAGEMENT

Wealth Management focuses on high-net-worth individuals and families, business owners, executives, professionals, retirees, and established privately-held businesses in its target markets. The business also includes the Global Family Office, which provides customized services to meet the complex financial needs of individuals and family offices in the United States and throughout the world with assets typically exceeding $200 million. In supporting these targeted segments, Wealth Management provides trust, investment management, custody, and philanthropic services; financial consulting; guardianship and estate administration; family business consulting; family financial education; brokerage services; and private and business banking.

Wealth Management is one of the largest providers of advisory services in the United States, with assets under custody/administration, assets under custody, and assets under management of $655.8 billion , $645.5 billion , and $289.8 billion , respectively, at December 31, 2017 . Wealth Management services are delivered by multidisciplinary teams through a network of offices in 18 U.S. states and Washington, D.C., as well as offices in London, Guernsey, and Abu Dhabi.

ASSET MANAGEMENT

Asset Management, through the Corporation's various subsidiaries, supports the C&IS and Wealth Management reporting segments by providing a broad range of asset management and related services and other products to clients around the world. Investment solutions are delivered through separately managed accounts, bank common and collective funds, registered investment companies, exchange traded funds, non-U.S. collective investment funds, and unregistered private investment funds. Asset Management's capabilities include active, passive, and engineered equity; active and passive fixed income; cash management; alternative asset classes (such as private equity and hedge funds of funds); and multi-manager advisory services and products. Asset Management's activities also include overlay services and other risk management services. Asset Management operates internationally through subsidiaries and distribution arrangements and its revenue and expense are fully allocated to C&IS and Wealth Management. As discussed above, Northern Trust managed $1.16 trillion in assets as of December 31, 2017 , including $871.2 billion for C&IS clients and $289.8 billion for Wealth Management clients.

Competition

Northern Trust faces intense competition in all aspects and areas of its business. Competition is provided by both regulated and unregulated financial services organizations, whose products and services span the local, national, and global markets in which Northern Trust conducts operations. Our competitors include a broad range of financial institutions and service companies, including other custodial banks, deposit-taking institutions, asset management firms, benefits consultants, trust companies, investment banking firms, insurance companies, investment counseling firms, and various financial technology companies, including software providers and data services firms. As our businesses grow and markets evolve, we may encounter increasing and new forms of competition around the world.

Northern Trust's principal business strategy is to provide quality financial services to targeted market segments in which it believes it has a competitive advantage and favorable growth prospects. As part of this strategy, Northern Trust seeks to deliver a level of service that distinguishes it from its competitors. In addition, Northern Trust emphasizes the development and growth of recurring sources of fee-based income. Northern Trust seeks to develop and expand its recurring fee-based revenue by identifying select markets with attractive growth characteristics and providing a high level of individualized service to clients in those markets. Northern Trust also seeks to preserve its asset quality through established credit review procedures and to maintain a conservative balance sheet.

Economic Conditions And Government Policies

The earnings of Northern Trust are affected by numerous external influences. Chief among these are general economic conditions, both domestic and international, and actions that governments and their central banks take in managing their economies. These general conditions affect all of Northern Trust's businesses, as well as the quality, value, and profitability of their loan and investment portfolios.

The Board of Governors of the Federal Reserve System (Federal Reserve Board) implements monetary policy through its open market operations in United States Government securities, its setting of the discount rate at which member banks may borrow from Federal Reserve Banks, and its changes in the reserve requirements for deposits. The policies adopted by the Federal Reserve Board directly affect interest rates and therefore what banks earn on their loans and investments and what they pay on their savings and time deposits and other purchased funds.

Supervision And Regulation

Northern Trust is subject to extensive regulation under state and federal laws in the United States, as well as the applicable laws of each of the various jurisdictions outside the United States in which Northern Trust does business. The discussion below outlines significant elements of selected laws and regulations applicable to Northern Trust. Changes in these laws or regulations, or their application, cannot be predicted, but may have a material effect on Northern Trust's businesses and results of operations.

FINANCIAL HOLDING COMPANY REGULATION

Under U.S. law, the Corporation is a bank holding company that has elected to be a financial holding company under the Bank Holding Company Act of 1956, as amended (BHCA). Consequently, the Corporation and its business activities throughout the world are subject to the supervision, examination, and regulation of the Federal Reserve Board. The BHCA and other federal laws subject bank and financial holding companies to particular restrictions on the types of activities in which they may engage and to a range of supervisory requirements, including enforcement actions for violations of laws and regulations. Supervision and regulation of bank holding companies, financial holding companies, and their subsidiaries are intended primarily for the protection of depositors and other clients of banking subsidiaries, the Deposit Insurance Fund of the Federal Deposit Insurance Corporation (FDIC), and the banking system as a whole, not for the protection of stockholders or other nondepository creditors.

Under the BHCA, bank holding companies and their banking subsidiaries are generally limited to the business of banking and activities closely related or incidental to banking. As a financial holding company, the Corporation is permitted to engage in other activities that the Federal Reserve Board determines to be financial in nature, incidental to an activity that is financial in nature, or complementary to a financial activity and that do not pose a substantial risk to the safety and soundness of depository institutions or the financial system generally, or to acquire shares of companies engaged in such activities. Activities defined to be financial in nature include: providing financial or investment advice; securities underwriting and dealing; insurance underwriting; and making merchant banking investments in commercial and financial companies, subject to significant limitations. They also include activities previously determined by the Federal Reserve Board to be so closely related to banking or managing or controlling banks as to be a proper incident thereto. The Corporation may not, however, directly or indirectly acquire the ownership or control of more than 5% of any class of voting shares, or substantially all of the assets, of a bank holding company or a bank, without the prior approval of the Federal Reserve Board.

In order to maintain the Corporation’s status as a financial holding company, the Bank, as the Corporation’s sole insured depository institution subsidiary, must remain “well-capitalized” and “well-managed” under applicable regulations, and must have received at least a “satisfactory” rating in its most recent examination under the Community Reinvestment Act (CRA). In addition, as a result of the amendment of the BHCA by the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act), as discussed further below, the Corporation must remain “well-capitalized” and “well-managed” in order to maintain its status as a financial holding company. Failure to meet one or more of these requirements would mean, depending on the requirements not met, that the Corporation could not undertake new activities, continue certain activities, or make acquisitions other than those permitted generally for bank holding companies.

SUBSIDIARY REGULATION

The Bank is a member of the Federal Reserve System, its eligible deposits are insured by the FDIC up to the maximum authorized limit, and it is subject to regulation by both these agencies. As an Illinois banking corporation, the Bank is also subject to Illinois state laws and regulations and to examination and supervision by the Division of Banking of the Illinois Department of Financial and Professional Regulation. The Bank is also registered as a transfer agent with the Federal Reserve Board and is therefore subject to the rules and regulations of the Federal Reserve Board in this area.

The Bank is registered provisionally as a swap dealer with the U.S. Commodity Futures Trading Commission (CFTC) under the Commodity Exchange Act and is a member of the National Futures Association (NFA). As a provisionally registered swap dealer, the Bank is subject to significant regulatory obligations regarding swap activity and the supervision, examination and enforcement power of the CFTC, NFA, and other regulators. Certain of the Corporation’s other affiliates are registered with the CFTC as commodity trading advisors or commodity pool operators under the Commodity Exchange Act, are members of the NFA, and are subject to that act and the associated rules and regulations of the CFTC and NFA.

The Corporation’s nonbanking affiliates are all subject to examination by the Federal Reserve Board. Its broker-dealer subsidiary is registered with the U.S. Securities and Exchange Commission (SEC) as a broker-dealer and an investment adviser and is a member of the Financial Industry Regulatory Authority, subject to the rules and regulations of both of these bodies. The Corporation’s broker-dealer subsidiary also is registered with the SEC and Municipal Securities Rulemaking Board as a municipal securities dealer. Several subsidiaries of the Corporation are registered with the SEC under the Investment Advisers Act of 1940 and are subject to that act and the rules and regulations promulgated thereunder. Those subsidiaries also act as investment advisers to various mutual funds, exchange-traded funds and hedge funds of funds that are subject to regulation by the SEC under the Investment Company Act of 1940. Other subsidiaries are regulated by state regulators in various states.

FUNCTIONAL REGULATION

Federal banking law has established a system of federal and state supervision and regulation based on functional regulation, meaning that primary regulatory oversight for a particular activity generally resides with the federal or state regulator designated as having the principal responsibility for that activity. Banking is supervised by federal and state banking regulators, insurance by state insurance regulators, derivatives and swaps activities by the CFTC, and securities activities by the SEC and state securities regulators.

A significant component of the functional regulation relates to the application of federal securities laws and SEC oversight of some bank securities activities. Generally, banks may conduct securities activities without broker-dealer registration only if the activities fall within a set of activity-based exemptions designed to allow banks to conduct only those activities traditionally considered to be primarily banking or trust activities. Securities activities outside these exemptions, as a practical matter, need to be conducted by a registered broker-dealer affiliate. The Investment Advisers Act of 1940 requires the registration of any bank or separately identifiable division of the bank that acts as an investment adviser to a registered investment company.

Another component of the functional regulation relates to the application of federal commodity and derivatives laws and CFTC oversight of some bank commodity and derivatives activities, including swap-dealing activities.

THE DODD-FRANK ACT

The Dodd-Frank Act has had a broad impact on the financial services industry, imposing significant new regulatory and compliance requirements, including the imposition of increased capital, leverage, and liquidity requirements, and numerous other provisions designed to improve supervision and oversight of, and strengthen safety and soundness within, the financial services sector. Additionally, the Dodd-Frank Act established a new framework of authority to conduct systemic risk oversight within the U.S. financial system to be distributed among new and existing federal regulatory agencies, including the U.S. Financial Stability Oversight Council, the Federal Reserve Board, and the FDIC. In February 2017, an executive order was issued by the current Presidential administration (i) establishing core principles for regulating the U.S. financial system and (ii) instructing the U.S. Secretary of the Treasury to consult with heads of the member agencies of the U.S. Financial Stability Oversight Council and issue reports that identify laws, regulations and policies, including those implemented under the Dodd-Frank Act, that inhibit federal regulation of the U.S. financial system in a manner consistent with the core principles. Certain of these required reports were issued during 2017, and additional such reports may be issued in the future. The Corporation cannot predict what changes may occur to the Dodd-Frank Act as a result of the executive order and related reports or the ultimate effect such changes would have on the Corporation. The following items provide a brief description of certain provisions of the Dodd-Frank Act that currently are the most relevant to the Corporation and its subsidiaries, including the Bank.

Enhanced Prudential Standards. The Dodd-Frank Act imposed enhanced prudential requirements on U.S. bank holding companies with at least $50 billion in total consolidated assets, including the Corporation. The enhanced prudential standards include more stringent risk-based capital, leverage, liquidity, risk management, and stress testing requirements and single counterparty credit limits for large bank holding companies, including the Corporation. The Federal Reserve Board also has the discretion to require these large U.S. bank holding companies to limit their short-term debt, to issue contingent capital instruments, and to provide enhanced public disclosures. The Federal Reserve Board has issued final rules implementing enhanced prudential standards for more stringent risk-based capital, leverage, liquidity, risk management, and stress testing requirements. Under the final rules, the Corporation must submit annual capital plans to the Federal Reserve Board, be subject to supervisor-conducted periodic stress tests to evaluate capital adequacy in adverse economic conditions, conduct capital stress tests, implement enhanced risk management procedures, comply with a liquidity risk management framework (discussed below in “Liquidity Standards”), conduct liquidity stress tests, and hold a buffer of liquid assets estimated to meet funding needs during a financial stress event. The Federal Reserve Board also has proposed rules that would implement aggregate credit exposure limits and early remediation requirements that are required to be established under sections 165 and 166 of the Dodd-Frank Act. In 2017, the U.S. House of Representatives approved a bill that would introduce a multi-pronged factor-based approach, rather than the current threshold of $50 billion in total consolidated assets, to be used in determining the financial institutions subject to enhanced prudential standards. As of the date of this report, the U.S. Senate had not approved such bill and the Corporation cannot predict whether the bill will be enacted into law and whether such a law would alter the way in which the enhanced prudential standards are applied to the Corporation, if enacted.

Resolution Planning. As required by Section 165(d) of the Dodd-Frank Act, the Federal Reserve Board and the FDIC have jointly issued a final rule requiring each U.S. bank holding company with at least $50 billion in total consolidated assets, including the Corporation, to submit periodically to regulators a resolution plan for such bank holding company’s rapid and orderly resolution in the event of material financial distress or failure. In addition, the FDIC has issued a final rule requiring insured depository institutions with more than $50 billion in total assets, including the Bank, to submit to the FDIC periodic plans for resolution in the event of such institution’s failure. The Corporation and the Bank submitted resolution plans pursuant to these rules in December 2015. On March 24, 2017, the Federal Reserve Board and the FDIC provided joint written feedback to the Corporation regarding the resolution plan submitted by the Corporation in December 2015 pursuant to Section 165(d) of the Dodd-Frank Act (the “2015 165(d) Plan”). The joint written feedback identified certain “shortcomings” in the Corporation’s 2015 165(d) Plan. While the identification of these shortcomings is different from a determination that the plan is not “credible”, the Corporation was required to address the shortcomings in a satisfactory manner in the Corporation’s resolution plan to be submitted to the Federal Reserve Board and the FDIC by December 31, 2017. This plan was submitted on December 19, 2017. If the Federal Reserve Board and the FDIC jointly decide that the Corporation’s 2017 resolution plan fails to address the identified shortcomings in a satisfactory manner, then the Federal Reserve Board and the FDIC could jointly determine that the 2017 resolution plan is not credible or would not facilitate an orderly resolution under the U.S. Bankruptcy Code. In the event of such a joint determination, the Corporation could be subject to more stringent capital, leverage or liquidity requirements, restrictions on growth, activities or operations, or be required to divest certain assets or operations. Separately, the European Union Bank Recovery and Resolution Directive (BRRD), was adopted for European Union credit institutions, including certain of the Bank’s subsidiaries and branches, effective January 1, 2015. In accordance with applicable Prudential Regulation Authority (PRA) guidance, a recovery plan for Northern Trust Global Services Limited (NTGSL), a U.K. incorporated indirect subsidiary of the Bank, has been established and will be reviewed at least annually. PRA guidance also requires institutions to produce resolution planning information. In accordance with such guidance, a resolution pack for NTGSL and the Bank’s London branch has been prepared and such information will be reviewed every two years. The Corporation and the Bank have and will continue to focus management attention and substantial resources to meet U.S. and European regulatory expectations with respect to these resolution planning requirements.

Orderly Liquidation Authority. Under the Dodd-Frank Act, certain financial companies, such as the Corporation and certain of its covered subsidiaries, can be subjected to a new orderly liquidation authority. For the orderly liquidation authority to apply, the U.S. Treasury Secretary, in consultation with the President of the United States, must make a determination, among other things, that the Corporation is in default or danger of default, the failure of the Corporation and its resolution under the U.S. Bankruptcy Code would have serious adverse effects on financial stability in the United States, no viable private sector alternative is available to prevent the default of the Corporation, and orderly liquidation authority proceedings would mitigate these adverse effects. This determination must be recommended by two-thirds of the FDIC Board of Directors and two-thirds of the Federal Reserve Board. Absent such actions, the Corporation, as a bank holding company, would remain subject to the U.S. Bankruptcy Code. The orderly liquidation authority became effective in July 2010, and rulemaking is proceeding in stages. If the Corporation were subject to orderly liquidation authority, the FDIC would be appointed as its receiver, which would give the FDIC considerable powers to resolve the Corporation, including: (1) the power to remove officers and directors and appoint new ones; (2) the power to assign assets and liabilities to a third party or bridge financial company without the need for creditor consent or prior court review; (3) the ability to differentiate among creditors, including by treating junior creditors better than senior creditors, subject to a minimum recovery right to receive at least what such senior creditors would have received in bankruptcy liquidation; and (4) broad powers to administer the claims process to determine distributions from the assets of the receivership to creditors not transferred to a third party or bridge financial institution.

The Volcker Rule . The Volcker Rule bans proprietary trading subject to exceptions for market-making, hedging, certain trading activities in U.S. and foreign sovereign debt, certain trading activities of non-U.S. banking entities trading outside the United States, and trading activities related to liquidity management. The Volcker Rule also maintains significant restrictions on sponsoring or investing in certain “covered funds,” such as hedge funds or private equity funds. A banking entity may “organize and offer” certain private funds only if certain requirements are satisfied. Moreover, a banking entity only may retain a limited ownership interest in such funds, and must monitor and track investments in such covered funds carefully to ensure that the ownership interest in the fund does not exceed regulatory thresholds. A banking entity that sponsors or invests in certain private funds is also restricted from providing credit or other support to the funds or permitting the funds to use the name of the bank. The Volcker Rule requires large banking entities, including the Corporation, to implement a detailed compliance program and, on an annual basis, requires the Chief Executive Officer of the banking entity to attest that the compliance program is reasonably designed to achieve compliance with the rule. Compliance with the Volcker Rule generally has been required since July 21, 2015. Northern Trust has conducted an enterprise-wide review of affected activities, taken steps to bring those activities into conformance, and has established an enterprise-wide compliance program to comply with the Volcker Rule. The full impact of the Volcker Rule on Northern Trust ultimately will depend on further interpretation and guidance by the regulatory agencies responsible for its enforcement. Northern Trust is monitoring developments with respect to the Volcker Rule actively and will revise further its operations and compliance programs as appropriate or required.

Swaps and Other Derivatives. Title VII of the Dodd-Frank Act (Title VII) imposes a new regulatory structure on the over-the-counter derivatives market, including requirements for clearing, exchange trading, capital, margin, trade reporting, and recordkeeping. Title VII also requires certain persons to register as a “major swap participant,” a “swap dealer,” a “major-security-based swap participant” or a “security-based swap dealer.” The CFTC has finalized most rules further defining these registrant categories, while the SEC continues to draft rules related to security-based swaps. The CFTC’s Title VII rules and regulations are applicable to the Bank’s activity as a swap dealer and include rules related to internal and external business conduct standards, reporting and recordkeeping, mandatory clearing for certain swaps, and trade documentation and confirmation requirements, and applied certain regulatory requirements to cross-border swap activities. In addition, the Federal Reserve Board has finalized regulations applicable to the Bank regarding mandatory posting and collection of margin by certain swap entities. The SEC’s rules related to security-based swaps are not currently applicable to the Bank’s swap dealing activity and the Bank’s current trading activity will not mandate its regulation as a security-based swap dealer. It is anticipated that the SEC will continue with its rulemaking process, which will further clarify, among other things, margin requirements for uncleared security-based swaps, central clearing requirements, and exchange-traded requirements for security-based swaps. Northern Trust is monitoring Title VII-related regulatory developments and will revise further its operations and/or swaps compliance program as appropriate or required.

Incentive Compensation Arrangements. The Dodd-Frank Act requires federal regulators to prescribe regulations or guidelines regarding incentive-based compensation practices at certain large financial institutions. No final rule has been issued to date.

HOLDING COMPANY SUPPORT UNDER THE FEDERAL DEPOSIT INSURANCE ACT

The Dodd-Frank Act amended the Federal Deposit Insurance Act (FDIA) to obligate the Federal Reserve Board to require bank holding companies, such as the Corporation, to serve as a source of financial strength for any subsidiary depository institution. The term "source of financial strength" is defined as the ability of a company to provide financial assistance to its insured depository institution subsidiaries in the event of financial distress at such subsidiaries. Under this requirement, the Corporation in the future could be required to provide financial assistance to the Bank should the Bank experience financial distress.

PAYMENT OF DIVIDENDS

The Corporation is a legal entity separate and distinct from its subsidiaries. The Corporation may pay dividends, repurchase stock, and make other capital distributions only in accordance with a capital plan that has been reviewed by the Federal Reserve Board and as to which the Federal Reserve Board has not objected. A significant source of funds for the Corporation is dividends from the Bank. As a result, the Corporation's ability to pay dividends on its common stock will depend on the ability of the Bank to pay dividends to the Corporation in amounts sufficient to service its obligations and fund dividend payments. Dividend payments from the Bank are subject to Illinois law and to regulatory limitations, generally based on capital levels and current and retained earnings, imposed by various regulatory agencies with authority over the Bank. The ability of the Bank to pay dividends is also subject to regulatory restrictions if paying dividends would impair its profitability, financial condition or cash flow requirements.

Various federal and state statutory provisions limit the amount of dividends the Bank can pay to the Corporation without regulatory approval. Approval of the Federal Reserve Board is required for payment of any dividend by a state-chartered bank that is a member of the Federal Reserve System if the total of all dividends declared by the bank in any calendar year (including any prospective dividend) would exceed the total of its retained net income (as defined by regulatory agencies) for that year combined with its retained net income for the preceding two years. In addition, a state member bank may not pay a dividend in an amount greater than its "undivided profits," as defined, without regulatory and stockholder approval.

The Bank is also prohibited under federal law from paying any dividends if the Bank is undercapitalized or if the payment of the dividends would cause the Bank to become undercapitalized. In addition, the federal regulatory agencies are authorized to prohibit a bank or bank holding company from engaging in an unsafe or unsound banking practice. The payment of dividends could, depending on the financial condition of the Bank, be deemed to constitute an unsafe or unsound practice. The Dodd-Frank Act and Basel III (as defined and discussed further below) impose additional restrictions on the ability of banking institutions to pay dividends.

CAPITAL PLANNING AND STRESS TESTING

The Corporation's capital distributions are subject to Federal Reserve Board oversight. The major component of that oversight is the Federal Reserve Board's Comprehensive Capital Analysis and Review (CCAR) exercise, implementing its capital plan rules. These rules require bank holding companies having $50 billion or more in total consolidated assets (including the Corporation) to submit annual capital plans to their respective Federal Reserve Bank. The Corporation also is required to collect and report certain related data on a quarterly basis to allow the Federal Reserve Board to monitor progress against the annual capital plans. The CCAR exercise is an intensive assessment of the capital adequacy of bank holding companies as well as of the processes used by certain bank holding companies to assess their capital needs. Through CCAR, the Federal Reserve Board assesses whether bank holding companies have robust, forward-looking capital planning processes that account for their unique risks and that permit continued operations during times of economic and financial stress. The Corporation and other affected bank holding companies may pay dividends, repurchase stock, and make other capital distributions only in accordance with a capital plan as to which the Federal Reserve Board has not objected. The Federal Reserve Board may object to a capital plan for a number of reasons, including if the capital plan does not show that the covered bank holding company will meet, for each quarter throughout the nine-quarter planning horizon covered by the capital plan, all minimum regulatory capital ratios under applicable capital rules as in effect for that quarter, as well as all minimum regulatory capital ratios on a pro forma basis under the base case and stressful scenarios. The capital plan rules also stipulate that a covered bank holding company may not make a capital distribution, unless after giving effect to the distribution, it will meet all minimum regulatory capital ratios.

On January 30, 2017, the Federal Reserve Board announced modifications to capital plan and stress testing rules. Under the modified final rules, the qualitative assessment of CCAR was removed for bank holding companies with total consolidated assets between $50 billion and $250 billion, irrespective of the amount of on-balance-sheet foreign exposure held by such bank holding companies. As a result, capital plans submitted by the Corporation are no longer subject to objection from the Federal Reserve Board on qualitative grounds. In lieu of the qualitative assessment of CCAR, the Corporation is subject to a horizontal capital review (HCR), focusing on specific areas of capital planning, conducted as part of the Federal Reserve Board's normal supervisory process. Any supervisory findings resulting from the HCR are addressed through supervisory communications. Capital plans submitted by the Corporation remain subject to objection from the Federal Reserve Board on quantitative grounds.

The Corporation submitted its capital plan to the Federal Reserve Board in April 2017 as part of the Federal Reserve Board's 2017 CCAR exercise, and the Federal Reserve Board did not object to the Corporation's plan. The Corporation will submit its 2018 capital plan to the Federal Reserve Board by April 5, 2018. The Federal Reserve Board is expected to publish either its objection or non-objection to the 2018 capital plan and proposed capital actions, such as dividend payments and share repurchases, in mid-2018.

In addition to the CCAR stress testing requirements, Federal Reserve Board regulations include Dodd-Frank Act stress tests (DFAST). Under the DFAST regulations, the Corporation is required to undergo regulatory stress tests conducted by the Federal Reserve Board annually, and to conduct internal stress tests pursuant to regulatory requirements semi-annually. The Bank also is required to conduct its own annual internal stress test (although it is permitted to combine certain reporting and disclosure of its stress test results with the results of the Corporation). These requirements involve both company-run and supervisory-run testing of capital under various scenarios, including baseline, adverse and severely adverse scenarios provided by the appropriate banking regulator. Results from the Corporation's and the Bank's annual company-run stress tests are reported to the appropriate regulators and published. Northern Trust published the results of its company-run stress tests on June 22, 2017, and the results of its company-run mid-cycle stress tests on October 27, 2017.

CAPITAL ADEQUACY REQUIREMENTS

The regulators view capital levels as important indicators of an institution's financial soundness. As a general matter, FDIC-insured depository institutions and their holding companies (including the Bank and the Corporation) are required to maintain minimum capital relative to the amount and types of assets they hold. The final supervisory determination on an institution's capital adequacy is based on the regulator's assessment of numerous factors.

The risk-based capital guidelines that apply to the Corporation and the Bank are based upon the 2011 capital accord of the International Basel Committee on Banking Supervision (Basel Committee), a committee of central banks and bank supervisors, as implemented by the Federal Reserve Board (Basel III). The Basel III rules are currently being phased in, and will come into full effect by January 1, 2022.

To implement Basel III for bank holding companies, including the Corporation, the Federal Reserve Board established risk-based and leverage capital guidelines. The federal banking regulators also established risk-based and leverage capital guidelines that FDIC-insured depository institutions, such as the Bank, are required to meet. These regulations are generally similar to those established by the Federal Reserve Board for bank holding companies. The Bank's risk-based and leverage capital ratios remained strong at December 31, 2017 , and were well above the minimum regulatory requirements established by U.S. banking regulators.

Under the final Basel III rules, the Corporation is one of a small number of "core" banking organizations. The rules require core banking organizations to have rigorous processes for assessing overall capital adequacy in relation to their total risk profiles, and to disclose publicly certain information about their risk profiles and capital adequacy. In order to implement the capital rules, a core banking organization, such as the Corporation, is required to complete satisfactorily a parallel run, in which it calculates capital requirements under both the Basel III rules and previously effective regulations. The Corporation and the Bank completed their parallel runs in 2014 and are required to use the advanced approaches methodologies to calculate and disclose publicly their risk-based capital ratios.

Pursuant to the Federal Reserve Board's implementation in the final Basel III rules of a provision of the Dodd-Frank Act, the Corporation is subject to a capital floor that is based on the Basel III standardized approach. The Corporation is therefore required to calculate its risk-based capital ratios under both the standardized and advanced approaches, and is subject to the more stringent of the risk-based capital ratios as calculated under the standardized approach and the advanced approach in the assessment of its capital adequacy.

The risk-based and leverage capital ratios for the Corporation and the Bank, together with the regulatory minimum ratios and the ratios required for classification as "well-capitalized," are provided in the following chart.

TABLE 1: RISK-BASED AND LEVERAGE CAPITAL RATIOS AS OF DECEMBER 31, 2017

	COMMON EQUITY TIER 1 CAPITAL		TIER 1 CAPITAL		TOTAL CAPITAL		TIER 1 LEVERAGE		SUPPLEMENTARY LEVERAGE
	ADVANCED APPROACH	STANDARDIZED APPROACH	ADVANCED APPROACH	STANDARDIZED APPROACH	ADVANCED APPROACH	STANDARDIZED APPROACH	ADVANCED APPROACH	STANDARDIZED APPROACH	ADVANCED APPROACH
Northern Trust Corporation	13.5%	12.6%	14.8%	13.8%	16.7%	15.8%	7.8%	7.8%	6.8%
The Northern Trust Company	13.7%	12.6%	13.7%	12.6%	15.4%	14.3%	7.0%	7.0%	6.1%
Minimum required ratio	4.5%	4.5%	6.0%	6.0%	8.0%	8.0%	4.0%	4.0%	N/A
"Well-capitalized" minimum ratio	6.5%	6.5%	8.0%	8.0%	10.0%	10.0%	5.0%	5.0%	N/A

In addition to the above, as of January 1 2018, advanced approaches institutions, such as the Corporation and the Bank, must comply with a supplementary leverage ratio. Under the supplementary leverage ratio rule, advanced approaches institutions are subject to a minimum supplementary leverage ratio of 3.0%. Insured depository institutions that are advanced approaches institutions, such as the Bank, also are required to maintain at least a 3.0% supplementary leverage ratio to be considered "well-capitalized" under the rule. The supplementary leverage ratio differs from the leverage ratio in that the leverage ratio does not take into account certain off-balance-sheet assets and exposures that are reflected in the supplementary leverage ratio.

Basel III also introduced a capital conservation buffer, requiring banking organizations to hold a buffer of common equity Tier 1 capital above the minimum risk-based capital requirements. The minimum capital conservation buffer in 2018 is 1.875% and will increase to 2.5% for 2019. The capital conservation buffer is designed to absorb losses during periods of economic stress. Banking organizations with a common equity Tier 1 ratio above the minimum but below the conservation buffer may face constraints on dividends, equity repurchases and compensation based on the amount of such shortfall. Basel III also introduced a "countercyclical buffer" of 0% to 2.5% of a banking organization's total risk-weighted assets for advanced approaches banking organizations, such as the Corporation, which is intended to create a capital buffer for such banking organizations during expansionary economic phases in order to protect against declines in asset prices if credit conditions weaken. In general, the amount of the countercyclical capital buffer is a weighted average of the countercyclical capital buffer established in the various jurisdictions in which the banking organization has credit exposures. The U.S. countercyclical buffer is currently set at 0%, and the Federal Reserve Board has indicated that generally it will provide a 12-month phase-in of changes to the minimum required countercyclical buffer and use the notice and comment process to communicate proposed changes to the public. Certain other jurisdictions in which the Corporation has credit exposures currently have countercyclical buffers set at levels greater than 0%, slightly increasing the weighted average countercyclical buffer to which the Corporation is subject.

LIQUIDITY STANDARDS

In addition to capital adequacy standards, Basel III introduced two quantitative liquidity standards: a liquidity coverage ratio (LCR) and a net stable funding ratio (NSFR). The LCR is intended to promote the short-term resilience of the liquidity risk profile of covered banking organizations, improve the banking industry's ability to absorb shocks arising from financial and economic stress, and improve the measurement and management of liquidity risk. In September 2014, the U.S. banking agencies finalized rules to implement the LCR in the United States for large banking organizations, such as the Corporation and the Bank. Among other things, the finalized LCR rules require covered banking organizations, which include the Corporation and the Bank, to maintain an amount of high-quality liquid assets (HQLAs) equal to or greater than 100% of the banking organization's total net cash outflows over a thirty-calendar-day standardized supervisory liquidity stress scenario. The LCR has been fully implemented since January 1, 2017. Currently, Northern Trust is required to calculate its LCR on a daily basis. Daily calculation of the LCR has been required since July 2016. Additionally, on December 19, 2016, the Federal Reserve Board finalized rules that will require large banking organizations, such as the Corporation, to disclose publicly certain LCR information on a quarterly basis; these disclosure rules are being phased in through October 2018.

The NSFR requires banking organizations to maintain a stable funding profile in relation to the composition of their assets and off-balance-sheet activities. More specifically, the NSFR requires that the ratio of available stable funding relative to the amount of required stable funding be equal to at least 100% on an ongoing basis. The Basel Committee finalized its NSFR rules in October 2014, which were to be implemented by the Federal Reserve Board as a minimum standard by January 1, 2018. The Federal Reserve Board issued a proposal on May 3, 2016 to implement the NSFR, but has not adopted a final rule.

The enhanced prudential standards (discussed above) specify certain liquidity risk management practices to be followed by covered large U.S. banks and bank holding companies, including the Corporation and the Bank. These practices include an independent review of liquidity risk management and the establishment of cash flow projections, a contingency funding plan, and liquidity risk limits. The Corporation's Board of Directors (Board) also is required to establish and maintain a liquidity buffer of unencumbered HQLAs based on the results of internal liquidity stress testing. This liquidity buffer must be tailored to Northern Trust's business risks and is in addition to other liquidity requirements, such as the LCR and NSFR discussed above. The enhanced prudential standards also establish requirements and responsibilities for the Board of Directors and its Business Risk Committee with respect to liquidity risk management. The enhanced prudential standards require Northern Trust to engage in liquidity stress testing under multiple stress scenarios and time horizons tailored to its specific products and risk profile. The Board of Directors has approved a liquidity management policy establishing the principles and guidelines for the Corporation to govern the processes and activities for the management of its liquidity position. Among other matters, this policy includes limits and thresholds related to the enhanced prudential standards liquidity buffer and the LCR.

PROMPT CORRECTIVE ACTION

The FDIC Improvement Act of 1991 requires the appropriate federal banking regulator to take "prompt corrective action" with respect to a depository institution if that institution does not meet certain capital adequacy standards. While these regulations apply only to banks, such as the Bank, the Federal Reserve Board is authorized to take appropriate action against a parent bank holding company, such as the Corporation, based on the under-capitalized status of any banking subsidiary. In certain instances, the Corporation would be required to guarantee the performance of the capital restoration plan for its under-capitalized banking subsidiary.

As noted above, the Federal Reserve Board has issued proposed rules to implement certain "early remediation requirements" applicable to U.S. bank holding companies with total consolidated assets of $50 billion or more as required under Section 166 of the Dodd-Frank Act. Similar to prompt corrective action, the early remediation requirements would require firms subject to the proposal to take increasingly stringent corrective measures as the firm's financial condition deteriorates. No final rule implementing Section 166 has been issued as of the date of this report.

RESTRICTIONS ON TRANSACTIONS WITH AFFILIATES AND INSIDERS

As an insured depository institution, the Bank is subject to restrictions which govern transactions between FDIC-insured banks and any affiliated entity, whether that entity is the Corporation, as the Bank's parent holding company, a holding company affiliate of the Bank or a subsidiary of the Bank. Regulation W restrictions apply to certain "covered transactions," including extensions of credit, issuance of guarantees, investments or asset purchases. In general, these restrictions require that any extensions of credit must be secured fully with qualifying collateral and are limited, as to any one of the Corporation or such nonbank affiliates, to 10% of the Bank's capital stock and surplus, and, as to the Corporation and all such nonbank affiliates in the aggregate, to 20% of the Bank's capital stock and surplus. These restrictions are also applied to transactions between the Bank and its financial subsidiaries. Furthermore, these transactions must be on terms and conditions that are, or in good faith would be, offered to nonaffiliated companies (i.e., at arm's length).

The Dodd-Frank Act generally enhanced the restrictions on transactions with affiliates under Sections 23A and 23B of the Federal Reserve Act, including an expansion of the definition of "covered transactions" to include credit exposures related to derivatives, repurchase agreements and securities lending arrangements, and an increase in the amount of time for which collateral requirements regarding covered credit transactions must be satisfied. The definition of "affiliate" was expanded to include any investment fund to which the Corporation or an affiliate serves as an investment adviser. The ability of the Federal Reserve Board to grant exemptions from these restrictions was also narrowed, including by requiring coordination with other bank regulators. In addition, the provision in Section 23A that had permitted the Bank to engage in covered transactions with a financial subsidiary of the Bank in an amount greater than 10% (but less than 20%) of the Bank's capital and surplus has been eliminated.

The restrictions on loans to directors, executive officers, principal stockholders and their related interests (collectively referred to herein as "insiders") contained in the Federal Reserve Act and Regulation O apply to all federally insured institutions, including the Bank. These restrictions include, among others, limits on loans to one borrower and conditions that must be met before such a loan can be made. There is also an aggregate limitation on all loans (including credit exposures related to derivatives, repurchase agreements and securities lending arrangements) to insiders and their related interests. These loans cannot exceed the institution's total unimpaired capital and surplus, and the FDIC may determine that a lesser amount is appropriate. Insiders are subject to enforcement actions for knowingly accepting loans in violation of applicable restrictions. The Dodd-Frank Act enhanced these restrictions and also imposed restrictions on the purchase or sale of assets between banking institutions and insiders.

ANTI-MONEY LAUNDERING, ANTI-TERRORISM LEGISLATION, AND OFFICE OF FOREIGN ASSETS CONTROL

The Corporation and certain of its subsidiaries are subject to the Bank Secrecy Act of 1970, as amended by the USA PATRIOT Act of 2001, which contains anti-money laundering (AML) and financial transparency provisions and requires implementation of regulations applicable to financial services companies, including, but not limited to, standards for conducting due diligence, verifying client identification, and monitoring client transactions and detecting and reporting suspicious activities. AML laws outside the U.S. contain similar requirements. The Corporation and its subsidiaries have implemented policies, procedures and internal controls that are designed to comply with all applicable AML laws and regulations. Compliance with applicable AML laws and related requirements is a common area of review for financial regulators, and the Corporation's and its subsidiaries' failure to comply with these requirements could result in fines, penalties, lawsuits, regulatory sanctions or difficulties in obtaining approvals, restrictions on their business activities or harm to their reputation.

In May 2016, the Financial Crimes Enforcement Network (FinCEN) issued a new rule that requires certain financial institutions, including the Bank, to obtain certain beneficial ownership information from legal entity clients. Compliance with the new rule is not required until May 2018, and it is possible that FinCEN may issue additional guidance regarding its implementation.

The U.S. Department of the Treasury's Office of Foreign Assets Control (OFAC) is responsible for requiring that U.S. entities do not engage in business with certain prohibited parties and jurisdictions, as defined by various executive orders and Acts of Congress. OFAC publishes lists of persons, organizations and countries suspected of aiding, harboring or engaging in terrorist acts, trafficking in narcotics, proliferating weapons of mass destruction or representing other threats to national security, known as Specially Designated Nationals and Blocked Persons. If the Corporation or the Bank finds a sanctioned name or jurisdiction on any transaction or account, the Corporation or the Bank must reject or block such account or transaction as required, and notify the appropriate authorities.

Many other countries have imposed similar laws and regulations that apply to the Corporation's non-U.S. offices. The Corporation has established policies and procedures to comply with these laws and the related regulations in all relevant jurisdictions.

DEPOSIT INSURANCE AND ASSESSMENTS

The Bank accepts deposits, and eligible deposits have the benefit of FDIC insurance up to the applicable limit. The current limit for FDIC insurance for deposit accounts is $250,000 for each depositor account. Under the FDIA, insurance of deposits may be terminated by the FDIC upon a finding that the insured depository 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 a bank's federal regulatory agency. The FDIC's Deposit Insurance Fund is funded by assessments on insured depository institutions. Certain liquid assets are excluded from the deposit insurance assessment base of custody banks that satisfy certain institutional eligibility criteria. This has the effect of reducing the amount of deposit insurance fund insurance premiums due from custody banks. In March 2016, the FDIC finalized a surcharge assessment on insured depository institutions with total consolidated assets of $10 billion or more, such as the Bank, in connection with the Dodd-Frank Act requirement to increase the Deposit Insurance Fund's minimum reserve ratio from 1.15% to 1.35% without increasing the assessments of small insured depository institutions. This surcharge assessment will remain in effect until such time as the reserve ratio reaches 1.35% or December 31, 2018, whichever occurs first. If the reserve ratio has not reached 1.35% by December 31, 2018, a shortfall assessment will be levied on insured depository institutions with total consolidated assets of $10 billion or more. On December 22, 2017, the Tax Cuts and Jobs Act was signed into law, placing new restrictions on insured depository institutions with total consolidated assets of $10 billion or more, such as the Bank, with respect to the deduction of all or a portion of all of their deposit insurance assessment payments as business expenses for federal taxation purposes. As a result of this tax law change, the Bank will not be able to deduct its FDIC deposit insurance assessment payments beginning in 2018.

FIDUCIARY RULE

The U.S. Department of Labor has issued a final regulation significantly expanding the concept of “investment advice” for the purpose of determining fiduciary status to employee benefits plans, plan participants, and individual retirement account (IRA) owners under ERISA and the Internal Revenue Code (IRC). The final regulation became applicable on June 9, 2017. Pursuant to the final regulation, if an entity or individual is a fiduciary adviser under ERISA or the IRC, then that entity will be subject to procedural and other requirements related to (i) the services it performs for ERISA employee benefit plans and IRAs, subject to certain exemptions for advice given to “sophisticated independent fiduciaries,” and (ii) compensation or other benefits the institution or its affiliates receive in connection with those services. The original application date for full compliance was January 1, 2018. The Department of Labor has delayed the date by which entities and individuals must satisfy certain conditions of the prohibited transaction exemptions created or amended in connection with the new fiduciary rule until July 1, 2019. Specifically, the conditions in these exemptions relating to the “Impartial Conduct Standards” (as defined in such prohibited transaction exemptions) are the only conditions that must be satisfied by advice fiduciaries relying on such exemptions between June 9, 2017 and July 1, 2019. The other conditions of the exemptions, such as the specific disclosures and representations of fiduciary compliance in written communications with investors, were postponed until July 1, 2019, unless they are delayed further or revised before becoming effective. Furthermore, the Department of Labor has announced a temporary “non-enforcement policy” for those fiduciaries who are working diligently and in good faith to comply with the fiduciary rule and related exemptions. The Corporation is monitoring regulatory developments and reviewing and conforming its business practices as necessary to meet the requirements of the new fiduciary rule and related exemptions within the current implementation periods.

COMMUNITY REINVESTMENT ACT

The Bank is subject to the Community Reinvestment Act (CRA). The CRA and the regulations issued thereunder are intended to encourage banks to help meet the credit needs of their service areas, including low and moderate income neighborhoods, consistent with the safe and sound operations of the banks. These regulations also provide for regulatory assessment of a bank’s record in meeting the needs of its service area when considering applications to establish branches, merger applications, and applications to acquire the assets and assume the liabilities of another bank. In October 2012, the Federal Reserve Board, the federal regulator responsible for monitoring the Bank’s CRA compliance, approved the designation of the Bank as a “wholesale bank.” As a result of this designation, the Bank fulfills its CRA obligations by making qualified investments for the purposes of community development, rather than retail CRA loans. Federal banking agencies are required to make public the rating of a bank’s performance under the CRA. The Bank received an “outstanding” CRA rating from the Federal Reserve Board in its most recent CRA examination.

PRIVACY AND SECURITY

Federal law establishes a minimum federal standard of financial privacy by, among other provisions, requiring financial institutions to adopt and disclose privacy policies with respect to consumer information and setting forth certain limitations on disclosure to third parties of consumer information. Regulations adopted under the federal law set standards for protecting the security, confidentiality and integrity of client information, and require notice of data breaches to regulators, and in some cases, to clients.

Most states, the European Union (EU) and other non-U.S. jurisdictions also have adopted their own statutes and/or regulations concerning financial privacy and security and requiring notification of data breaches. For example, a new European data protection framework - the General Data Protection Regulation (GDPR) - was adopted on April 8, 2016, and will become effective in all European Economic Area (EEA) member states on May 25, 2018. GDPR is designed to harmonize data privacy laws across the EEA, to protect EEA citizens’ data privacy and to reshape the way organizations across the region approach data privacy. GDPR has extraterritorial effect as its scope includes all data controllers and processors outside the EEA whose processing activities relate to the offering of goods or services to, or monitoring the behavior of, EEA individuals.

The Corporation has adopted and disseminated privacy policies, and communicates required information relating to financial privacy and data security, in accordance with applicable law.

CONSUMER LAWS AND REGULATIONS

The Corporation's banking subsidiaries are subject to certain consumer laws and regulations that are designed to protect consumers in transactions with banks. These laws and regulations mandate certain disclosure requirements and regulate the manner in which financial institutions must deal with clients and monitor account activity when taking deposits, making loans to or engaging in other types of transactions with such clients. Failure to comply with these laws and regulations could lead to substantial penalties, operating restrictions and reputational damage to the financial institution. The Dodd-Frank Act established an independent Consumer Financial Protection Bureau (CFPB) within the Federal Reserve System. The CFPB was tasked with establishing and implementing rules and regulations under certain federal consumer protection laws with respect to the conduct of providers of certain consumer financial products and services. The creation of the CFPB by the Dodd-Frank Act has led to enhanced enforcement of consumer financial protection laws.

NON-U.S. REGULATION

Northern Trust is subject to the laws and regulatory authorities of the jurisdictions in which its non-U.S. branches and subsidiaries operate. For example, branches and subsidiaries conducting banking, fund administration and asset servicing businesses in the United Kingdom are authorized to do so pursuant to the UK Financial Services and Markets Act 2000. They are authorized by the PRA or the Financial Conduct Authority (FCA) and regulated by the FCA and, in some instances, also the PRA. The PRA and FCA exercise broad supervisory and disciplinary powers that include the power to revoke temporarily or permanently authorization to conduct a regulated business upon breach of the relevant regulations, suspend registered employees, and impose censures and fines on both regulated businesses and their regulated employees.

Northern Trust's European branches and subsidiaries are subject to the laws and regulatory authorities of the EU and the member states in which they are domiciled. Moreover, Northern Trust's non-European branches and subsidiaries conducting financial services activities also may be within the scope of these laws, given that some EU laws apply to the wider EEA, which includes not only all EU member states but also the non-EU member states Iceland, Liechtenstein and Norway, and because of increasing extraterritorial effect of European legislation.

The following items provide a brief description of certain recently implemented and in-progress regulatory changes in the EU and UK relevant to the Corporation and its subsidiaries, in addition to the BRRD and GDPR discussed under "The Dodd-Frank Act – Resolution Planning" and "Privacy and Security", respectively, above.

EU Central Securities Depositories Regulation. On September 17, 2014 the EU Central Securities Depositories Regulation (CSDR) entered into force. The CSDR aims principally to ensure that transactions between buyers and sellers of dematerialized securities are settled in a safe and timely manner by introducing common securities settlement standards across the EU. Implementing provisions adopted by the EU Commission were published on March 10, 2017.

Securities Financing Transactions and Reuse of Collateral Regulation. On November 25, 2015, the EU adopted a regulation on securities financing transactions and reuse of collateral (SFTR) as part of its approach to addressing shadow banking. The regulation includes provisions for enhanced transparency and reporting of securities financing transactions. The SFTR became applicable on January 12, 2016, subject to certain transitional provisions.

Fourth EU Money Laundering Directive. On June 26, 2017, the Fourth EU Money Laundering Directive (MLD4) became effective in all EU member states. MLD4 is designed to strengthen the EU's defenses against money laundering and terrorist financing, while also ensuring that the EU framework is aligned with the Financial Action Task Force's February 2012 anti-money laundering and counter-terrorist financing standards, which are the recognized international standards. On the same day, the revised "EU regulation on information accompanying transfers of funds", or "Wire Transfer Regulation" (WTR) became law in all EU member states. The WTR sets out the minimum requirements on information that should be included in SWIFT payment messages to ensure the traceability of transfers of funds.

EU Benchmarks Regulation. On January 1, 2018, the EU Benchmarks Regulation (BMR) entered into force. The principal objectives of the BMR are to restore investor confidence in the accuracy, robustness and integrity of indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds, and the benchmark-setting process itself. The BMR aims to achieve this by ensuring that benchmarks are not subject to conflicts of interest, are used appropriately, and reflect the actual market or economic reality they are intended to measure.

Market in Financial Instruments Directive. On January 3, 2018, the recast Market in Financial Instruments Directive (MiFID II) was transposed into the local laws of EU member states. MiFID II, together with the Markets in Financial Instruments Regulation (MiFIR), repeals and recasts the Markets in Financial Instruments Directive (2004/39/EC) (MiFID). Together, MiFID II and MiFIR form the EU legal framework governing the requirements applicable to investment firms, trading venues, data reporting service providers and third-country firms providing investment services or activities in the EU.

Payment Services Directive. On January 13, 2018, the recast Payment Services Directive (PSD II) was transposed into the local laws of EU member states. PSD II provides the legal foundation for an EU single market for payments to establish safer and more innovative payment services across the EU.

EU Money Market Funds Regulation. On June 30, 2017, the EU adopted a regulation on money market funds (MMFR) with a view of making money market funds more resistant to crises and market turbulence. The MMFR will be effective July 21, 2018 for new money market funds and January 21, 2019 for existing money market funds, and it will impose detailed rules relating to the investment policies, risk management and other operational aspects of such funds. Further regulation containing the technical implementation of the MMFR has not yet been published.

European Deposit Insurance Scheme. On October 11, 2017, the EU Commission announced that it aims to complete all parts of the European Banking Union by 2018. This will require, among other things, the creation of a single European Deposit Insurance Scheme.

In addition to the above, the Bank's and the Corporation's subsidiary banks located outside the United States are subject to regulatory capital requirements in the jurisdictions in which they operate. As of December 31, 2017 , each of our non-U.S. banking subsidiaries had capital ratios above their specified minimum requirements.

Staff

Northern Trust employed approximately 18,100 full-time equivalent staff members as of December 31, 2017 .

Available Information

Through the Corporation's website at www.northerntrust.com, the Corporation makes available free of charge its Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and all other reports and all amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (Exchange Act), as soon as reasonably practicable after it files such material with, or furnishes such material to, the SEC. The contents of the Corporation's website, the website of the SEC or any other website referenced herein are not a part of this Annual Report on Form 10-K.

Statistical Disclosure by Bank Holding Companies

The following statistical disclosures, included in the "Supplemental Item – Selected Statistical and Supplemental Financial Data" section of this Annual Report on Form 10-K, are incorporated herein by reference.

- Average Consolidated Balance Sheets with Analysis of Net Interest Income for the years ended December 31, 2017 , 2016 and 2015 .
- Changes in Net Interest Income for the years ended December 31, 2017 and 2016 .
- Remaining Maturity and Average Yield of Securities Held to Maturity and Available for Sale as of December 31, 2017 .
- Remaining Maturity of Selected Loans and Leases as of December 31, 2017 .
- Distribution of Non-U.S. Loans by Type as of December 31, 2017 , 2016 , 2015 , 2014 and 2013 .
- Allowance for Credit Losses Relating to Non-U.S. Operations for the years ended December 31, 2017 , 2016 , 2015 , 2014 and 2013 .
- Analysis of Allowance for Credit Losses for the years ended December 31, 2017 , 2016 , 2015 , 2014 and 2013 .
- Average Deposits by Type as of December 31, 2017 , 2016 and 2015 .
- Distribution of Non-U.S. Deposits by Type as of December 31, 2017 , 2016 and 2015 .
- Remaining Maturity of Time Deposits $100,000 or More as of December 31, 2017 .
- Average Rates Paid on Interest-Related Deposits by Type for the years ended December 31, 2017 , 2016 and 2015 .
- Selected Average Assets and Liabilities Attributable to Non-U.S. Operations for the years ended December 31, 2017 , 2016 , 2015 , 2014 , and 2013 .
- Percent of Non-U.S.-Related Average Assets and Liabilities to Total Consolidated Average Assets for the years ended December 31, 2017 , 2016 , 2015 , 2014 , and 2013 .
- Non-U.S. Outstandings as of December 31, 2017 , 2016 and 2015 .
- Purchased Funds as of December 31, 2017 , 2016 and 2015 .

The following statistical disclosures, included under Items 6, 7 and 8 of this Annual Report on Form 10-K, are incorporated herein by reference.

- Item 6, "Selected Financial Data," includes the Corporation's consolidated return on average common equity, return on average assets, dividend payout ratio and ratio of average equity to average assets.
- The "Securities Portfolio" table (Item 7) provides the book values of investments in obligations of the U.S. government, states and political subdivisions, and other held to maturity and available for sale securities as of December 31, 2017 , 2016 and 2015 .

- The “Composition of Loan Portfolio” table (Item 7) provides loans and leases by type as of December 31, 2017 , 2016 , 2015 , 2014 , and 2013 .
- The “Nonperforming Assets” table (Item 7) provides information about the Corporation’s nonaccrual, past due and restructured loans receivable as of December 31, 2017 , 2016 , 2015 , 2014 , and 2013 .
- The “Commercial Real Estate Loans” table (Item 7) provides details of loan concentrations as of December 31, 2017 and 2016 .
- The “Allocation of the Allowance for Credit Losses” table (Item 7) provides a breakdown of the allowance for credit losses by loan class and illustrates the proportion of each loan class to total loans.
- The “Allowance and Provision for Credit Losses” section (Item 7) provides a discussion of the factors which influenced management’s judgment in determining the provision for credit losses.
- Note 6, “Loans and Leases,” (Item 8) provides the Corporation’s forgone interest income on nonaccrual loans, as well as a description of the nature of non-U.S. loans as of December 31, 2017 and 2016 .
- Note 1, “Summary of Significant Accounting Policies,” (Item 8) provides a discussion of Northern Trust’s policy for placing loans on non-accrual status.
- Further discussion of Northern Trust’s management of credit risk with respect to the provision and allowance for credit losses is provided in the following information that is incorporated herein by reference to the notes to the consolidated financial statements provided in Item 8, “Financial Statements and Supplementary Data.”
    - Note 1, “Summary of Significant Accounting Policies”:
        - H. Loans and Leases.
        - I. Allowance for Credit Losses.
        - L. Other Real Estate Owned (OREO).
    - Note 6, “Loans and Leases.”
    - Note 7, “Allowance for Credit Losses.”
    - Note 8, “Concentrations of Credit Risk.”
    - Note 27, “Off-Balance-Sheet Financial Instruments.”

ITEM 1A - RISK FACTORS

In the normal course of our business activities, we are exposed to a variety of risks. The following discussion sets forth the risk factors that we have identified as being most significant to Northern Trust. Although we discuss these risk factors primarily in the context of their potential effects on our business, financial condition or results of operations, you should understand that these effects can have further negative implications such as: reducing the price of our common stock and other securities; reducing our capital, which can have regulatory and other consequences; affecting the confidence that clients and counterparties have in us, with a resulting negative effect on our ability to conduct and grow our businesses; and reducing the attractiveness of our securities to rating agencies and potential purchasers, which may affect adversely our ability to raise capital and secure other funding or the prices at which we are able to do so. Further, additional risks beyond those discussed below, elsewhere in this Annual Report on Form 10-K or in other of our reports filed with, or furnished to, the SEC also could affect us adversely. We cannot assure you that the risk factors herein or elsewhere in our other reports address all potential risks that we may face.

These risk factors also serve to describe factors which may cause our results to differ materially from those described in forward-looking statements included herein or in other documents or statements that make reference to this Annual Report on Form 10-K. Forward-looking statements and other factors that may affect future results are discussed under “Forward-Looking Statements” included in Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” of this Annual Report on Form 10-K.

Market Risks

We are dependent on fee-based business for a majority of our revenues, which may be affected adversely by market volatility, a downturn in economic conditions, underperformance and/or negative trends in investment preferences.

Our principal operational focus is on fee-based business, which is distinct from commercial banking institutions that earn most of their revenues from loans and other traditional interest-generating products and services. Fees for many of our products and services are based on the market value of assets under management, custody or administration; the volume of transactions processed; securities lending volume and spreads; and fees for other services rendered, all of which may be impacted negatively by market volatility, a downturn in economic conditions, underperformance and/or negative trends in investment preferences. For example, downturns in equity markets and decreases in the value of debt-related investments resulting from market disruption, illiquidity or other factors historically have reduced the valuations of the assets we manage or service for others, which generally impacted our earnings negatively. Market volatility and/or weak economic conditions also may affect wealth creation, investment preferences, trading activities, and savings patterns, which impact demand for certain products and services that we provide.

Our earnings also may be affected by poor investment returns or changes in investment preferences driven by factors beyond market volatility or weak economic conditions. For example, poor investment performance in funds or client accounts that we manage or in investment products that we design or provide that is due to underperformance relative to our competitors or benchmarks could result in declines in the market values of portfolios that we manage and/or administer and may affect our ability to retain existing assets and to attract new clients or additional assets from existing clients. Further, broader changes in investment preferences that lead to less investment in mutual funds or other collective funds, such as the recent shift in investor preference to lower fee products, could impact our earnings negatively.

Changes in interest rates can affect our earnings negatively.

The direction and level of interest rates are important factors in our earnings. Although the Federal Reserve Board has raised the target Federal Funds rate range in recent years, interest rates generally remain low relative to historical levels. The low interest rate environment has had, and may continue to have, a negative impact on our net interest margin, which is the difference between what we earn on our assets and the interest rates we pay for deposits and other sources of funding. A continued low interest rate environment also may have a negative impact on our fees earned on certain of our products. For example, in recent years we have waived certain fees associated with money market mutual funds due to short-term interest rate levels. While the recent Federal Funds rate increases have reduced significantly the amount of such fee waivers, they have not been altogether eliminated, and they could increase in the future if short-term interest rate levels decline. Low net interest margins and fee waivers each negatively impact our earnings.

Conversely, a continued rise in interest rates also may affect us negatively. For example, we may be impacted negatively if such an increase were to cause: our clients to transfer funds into investments with higher rates of return, resulting in decreased deposit levels and higher fund or account redemptions; our borrowers to experience difficulties in making higher interest payments, resulting in increased credit costs, provisions for loan and lease losses and charge-offs; reduced bond and fixed income fund liquidity, resulting in lower performance, yield and fees; a decline in the value of securities held in our portfolio of investment securities, resulting in decreased levels of capital and liquidity; or higher funding costs.

Further, although we have policies and procedures in place to assess and mitigate potential impacts of interest rate risks, if our assumptions about any number of variables are incorrect, these policies and procedures to mitigate risk may be ineffective, which could impact earnings negatively.

Please see "Market Risk" in the "Risk Management" section included in Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," of this Annual Report on Form 10-K for a more detailed discussion of interest rate and market risks we face.

Changes in the monetary and other policies of the various regulatory authorities or central banks of the United States, non-U.S. governments and international agencies may reduce our earnings and affect our growth prospects negatively.

The monetary and other policies of U.S. and international governments, agencies and regulatory bodies have a significant impact on interest rates and overall financial market performance. For example, the Federal Reserve Board regulates the supply of money and credit in the United States, and its policies determine in large part the level of interest rates and our cost of funds for lending and investing, which are important factors in our earnings. The actions of the Federal Reserve Board or other regulatory authorities also may reduce the value of financial instruments we hold. Further, their policies can affect our borrowers by increasing interest rates or making sources of funding less available, which may increase the risk that borrowers fail to repay their loans from us. Changes in monetary and other governmental policies are beyond our control and can be difficult to predict, and we cannot determine the ultimate effect that any such changes would have upon our business, financial condition or results of operations.

Uncertainty about the financial stability of various regions or countries across the globe, including the risk of defaults on sovereign debt and related stresses on financial markets, could have a significant adverse effect on our earnings.

Risks and concerns about the financial stability of various regions or countries across the globe could have a detrimental impact on economic and market conditions in these or other markets across the world. Foreign market and economic disruptions have affected, and may continue to affect, consumer confidence levels and spending, personal bankruptcy rates, levels of incurrence of and default on consumer debt, and home prices. Economic challenges faced in various foreign markets, including negative interest rates in some jurisdictions, and any disruptions related to such challenges, may impact our earnings negatively.

The ultimate impact on us of the United Kingdom's referendum regarding whether to remain part of the European Union remains uncertain.

In June 2016, United Kingdom ("UK") voters approved a departure from the European Union (the "EU"), commonly referred to as "Brexit." In March 2017, the UK delivered a formal notice of withdrawal to the EU. The terms of the withdrawal are subject to a negotiation period expected to last at least two years from the withdrawal notification date and such negotiation period likely will be followed by additional negotiations between the EU and the UK concerning future relations between the parties. The ultimate impact of Brexit on the Corporation and the Bank remains uncertain and will depend on the terms of withdrawal and the post-Brexit relationships between the UK and other nations. Brexit has contributed, and may continue to contribute, to market volatility, particularly the valuation of the euro and British pound, and could have significant adverse effects on our businesses, financial condition and results of operations. Additionally, certain of our EU operations are conducted through subsidiaries located in the UK. If our UK subsidiaries are not able to retain their EU financial services "passport," which permits activities throughout the single EU market without needing to obtain local authorizations, we may incur costs to move operations and personnel from our UK subsidiaries to new or existing subsidiaries in other EU member states, such as the planned move of our EU-banking headquarters to Luxembourg. During any such transition we may incur additional costs, as well as face greater operational risk and client concern with respect to our ability to maintain a high level of service delivery, particularly relative to those of our competitors with subsidiaries in other EU member states facing a lesser degree of cost or disruption. If our clients reduce their deposits with us or select other service providers for all or a portion of the services we provide to them, our revenues will decrease accordingly.

Declines in the value of securities held in our investment portfolio can affect us negatively.

Our investment securities portfolio represents a greater proportion, and our loan and lease portfolios represent a smaller proportion, of our total consolidated assets in comparison to many other financial institutions. The value of securities available for sale and held to maturity within our investment portfolio, which is generally determined based upon market values available from third-party sources, may fluctuate as a result of market volatility and economic or financial market conditions. For example, the global financial crisis of 2007-08 and resultant period of economic turmoil and financial market disruption affected negatively the liquidity and pricing of securities, generally, and asset-backed and auction rate securities, in particular. Declines in the value of securities held in our investment portfolio negatively impact our levels of capital and liquidity. Further, to the extent that we experience unrealized losses in our portfolio of investment securities from declines in securities values that management determines to be other than temporary, the book value of those securities will be adjusted to their estimated recovery value and we will recognize a charge to earnings in the quarter during which we make that determination. Although we have policies and procedures in place to assess and mitigate potential impacts of market risks, including hedging-related strategies, those policies and procedures are inherently limited because they cannot anticipate the existence or future development of currently unanticipated or unknown risks. Accordingly, we could suffer adverse effects as a result of our failure to anticipate and manage these risks properly.

Volatility levels and fluctuations in foreign currency exchange rates may affect our earnings.

We provide foreign exchange services to our clients, primarily in connection with our global custody business. Foreign currency volatility influences our foreign exchange trading income as does the level of client activity. Foreign currency volatility and changes in client activity may result in reduced foreign exchange trading income. Fluctuations in exchange rates may raise the potential for losses resulting from foreign currency trading positions, where aggregate obligations to purchase and sell a currency other than the U.S. dollar do not offset each other or offset each other in different time periods. We also are exposed to non-trading foreign currency risk as a result of our holdings of non-U.S. dollar denominated assets and liabilities, investments in non-U.S. subsidiaries, and future non-U.S. dollar denominated revenue and expense.

We have policies and procedures in place to assess and mitigate potential impacts of foreign exchange risks, including hedging-related strategies. Any failure or circumvention of our procedures to mitigate risk may impact earnings negatively. Please see “Market Risk” in the “Risk Management” section included in Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” of this Annual Report on Form 10-K for a more detailed discussion of market risks we face.

Changes in a number of particular market conditions can affect our earnings negatively.

In past periods, reductions in the volatility of currency-trading markets, the level of cross-border investing activity, and the demand for borrowing securities or willingness to lend such securities have affected our earnings from activities such as foreign exchange trading and securities lending negatively. If these conditions occur in the future, our earnings from these activities may be affected negatively. In a few of our businesses, such as securities lending, our fee is calculated as a percentage of our client’s earnings, such that market and other factors that reduce our clients’ earnings from investments or trading activities also reduce our revenues. For example, the global financial crisis of 2007-08 and resultant period of economic turmoil and financial market disruption produced losses in some securities lending programs, reduced borrower demand and led some clients to withdraw from these programs. A return of these conditions in the future could result in additional withdrawals and decreased activity, which could impact our earnings negatively.

Operational Risks

Many types of operational risks can affect our earnings negatively.

We regularly assess and monitor operational risk in our businesses. Despite our efforts to assess and monitor operational risk, our risk management program may not be effective in all cases. Factors that can impact operations and expose us to risks varying in size, scale and scope include:

- failures of technological systems or breaches of security measures, including, but not limited to, those resulting from cyber-attacks;
- human errors or omissions, including failures to comply with applicable laws or corporate policies and procedures;
- theft, fraud or misappropriation of assets, whether arising from the intentional actions of internal personnel or external third parties;
- defects or interruptions in computer or communications systems;
- breakdowns in processes, over-reliance on manual processes, which are inherently more prone to error than automated processes, breakdowns in internal controls or failures of the systems and facilities that support our operations;
- unsuccessful or difficult implementation of computer systems upgrades;
- defects in product design or delivery;
- difficulty in accurately pricing assets, which can be aggravated by increased asset coverage, market volatility and illiquidity, and lack of reliable pricing from third-party vendors;
- negative developments in relationships with key counterparties, third-party vendors, employees or associates in our day-to-day operations; and

- external events that are wholly or partially beyond our control, such as natural disasters, epidemics, computer viruses, geopolitical events, political unrest or acts of terrorism.

While we have in place many controls and business continuity plans designed to address many of these factors, these plans may not operate successfully to mitigate these risks effectively. We also may fail to identify or fully understand the implications and risks associated with changes in the financial markets or our businesses-particularly as we expand our geographic footprint, product pipeline and client types-and consequently fail to enhance our controls and business continuity plans to address those changes in an adequate or timely fashion. If our controls and business continuity plans do not address the factors noted above and operate to mitigate the associated risks successfully, such factors may have a negative impact on our business, financial condition or results of operations. In addition, an important aspect of managing our operational risk is creating a risk culture in which all employees fully understand that there is risk in every aspect of our business and the importance of managing risk as it relates to their job functions. We continue to enhance our risk management program to support our risk culture, ensuring that it is sustainable and appropriate for our role as a major financial institution. Nonetheless, if we fail to provide the appropriate environment that sensitizes all of our employees to managing risk, our business could be impacted adversely.

Failures of our technological systems or breaches of our security measures, including, but not limited to, those resulting from cyber-attacks, may result in losses.

Any failure, interruption or breach in the security of our systems could severely disrupt our operations. Our systems involve the use of clients' and our proprietary and confidential information, and security breaches, including cyber-attacks, could expose us to a risk of theft, loss or other misappropriation of this information. Our security measures may be breached due to the actions of outside parties, employee error, failure of our controls with respect to granting access to our systems, malfeasance or otherwise, and, as a result, an unauthorized party may obtain access to our or our clients' proprietary and confidential information, resulting in theft, loss or other misappropriation of this information.

Information security risks for large financial institutions like us are significant in part because of the proliferation of new technologies to conduct financial transactions and the increased sophistication and activities of hackers, terrorists, organized crime and other external parties, including foreign state actors. If we fail to continue to upgrade our technology infrastructure to ensure effective cyber-security relative to the type, size and complexity of our operations, we could become more vulnerable to cyber-attack. Additionally, our computer, communications, data processing, networks, backup, business continuity or other operating, information or technology systems, including those that we outsource to other providers, may fail to operate properly or become disabled, overloaded or damaged as a result of a number of factors, including events that are wholly or partially beyond our control, which could have a negative effect on our ability to conduct our business activities.

The third parties with which we do business also are susceptible to the foregoing risks (including regarding the third parties with which they are similarly interconnected or on which they otherwise rely), and our or their business operations and activities may therefore be affected adversely, perhaps materially, by failures, terminations, errors or malfeasance by, or attacks or constraints on, one or more financial, technology, infrastructure or government institutions or intermediaries with whom we or they are interconnected or conduct business. In addition, our clients often use their own devices, such as computers, smart phones and tablets, to manage their accounts, which may heighten the risk of system failures, interruptions or security breaches.

In recent years, several financial services firms suffered successful cyber-attacks launched both domestically and from abroad, resulting in the disruption of services to clients, loss or misappropriation of sensitive or private data, and reputational harm. Although we have not to our knowledge suffered a material breach of our systems, we and our clients have been subject to cyber-attacks, and it is possible that we could suffer a material breach in the future. Because the techniques used to obtain unauthorized access, disable or degrade service or sabotage systems change frequently and often are not recognized until launched against a target, we may be unable to anticipate these techniques or to implement adequate preventative measures. We expect to continue to face increasing cyber-threats, including computer viruses, ransomware and other malicious code, distributed denial of service attacks, phishing attacks, information security breaches or employee or contractor error or malfeasance that could result in the unauthorized release, gathering, monitoring, misuse, loss or destruction of our, our clients' or other parties' confidential, personal, proprietary or other information or otherwise disrupt, compromise or damage our or our clients' or other parties' business assets, operations and activities. Our status as a global financial institution and the nature of our client base may enhance the risk that we are targeted by such cyber-threats. If a breach of our security occurs, we could be the subject of legal claims or proceedings, including regulatory investigations and actions, the market perception of the effectiveness of our security measures could be harmed, our reputation could suffer and we could lose clients, each of which could have a negative effect on our business, financial condition and results of operations. A breach of our security also may affect adversely our ability to effect transactions, service our clients, manage our exposure to risk or expand our business. An event that results in the loss of information also may require us to reconstruct lost data or reimburse clients for data and credit monitoring services, which could be costly and have a negative impact on our business and reputation.

Further, even if not directed at us, attacks on financial or other institutions important to the overall functioning of the financial system or on our counterparties could affect, directly or indirectly, aspects of our business.

The systems and models we employ to analyze, monitor and mitigate risks, as well as for other business purposes, are inherently limited, may be not be effective in all cases and, in any case, cannot eliminate all risks that we face.

We use various systems and models in analyzing and monitoring several risk categories, as well as for other business purposes. However, these systems and models are inherently limited because they involve techniques and judgments that cannot anticipate every economic and financial outcome in the markets in which we operate, nor can they anticipate the specifics and timing of such outcomes. Further, these systems and models may fail to quantify accurately the magnitude of the risks we face. Our measurement methodologies rely on many assumptions and historical analyses and correlations. These assumptions may be incorrect, and the historical correlations on which we rely may not continue to be relevant. Consequently, the measurements that we make may not adequately capture or express the true risk profiles of our businesses or provide accurate data for other business purposes, each of which ultimately could have a negative impact on our business, financial condition and results of operations. Errors in the underlying model or model assumptions, or inadequate model assumptions, could result in unanticipated and adverse consequences, including material loss or noncompliance with regulatory requirements or expectations.

Errors, breakdowns in controls or other mistakes in the provision of services to clients or in carrying out transactions for our own account can subject us to liability, result in losses or have a negative effect on our earnings in other ways.

In our asset servicing, investment management, fiduciary administration and other business activities, we effect or process transactions for clients and for ourselves that involve very large amounts of money. Failure to manage or mitigate operational risks properly can have adverse consequences, and increased volatility in the financial markets may increase the magnitude of resulting losses. Given the high volume of transactions we process, errors that affect earnings may be repeated or compounded before they are discovered and corrected.

Our dependence on technology, and the need to update frequently our technology infrastructure, exposes us to risks that also can result in losses.

Our businesses depend on information technology infrastructure, both internal and external, to record and process, among other things, a large volume of increasingly complex transactions and other data, in many currencies, on a daily basis, across numerous and diverse markets and jurisdictions. Due to our dependence on technology and the important role it plays in our business operations, we must constantly improve and update our information technology infrastructure. Updating these systems can require significant resources and often involves implementation, integration and security risks that could cause financial, reputational and operational harm. Failure to ensure adequate review and consideration of critical business and regulatory issues prior to and during the introduction and deployment of key technological systems or failure to align operational capabilities adequately with evolving client commitments and expectations may have a negative impact on our results of operations. The failure to respond properly to and invest in changes and advancements in technology could limit our ability to attract and retain clients, prevent us from offering products and services comparable to those offered by our competitors, inhibit our ability to meet regulatory requirements or otherwise have a material adverse effect on our operations.

A failure or circumvention of our controls and procedures could have a material adverse effect on our business, financial condition and results of operations.

We regularly review and update our internal controls, disclosure controls and procedures, and corporate governance policies and procedures. Any system of controls, however well designed and operated, is based in part on certain assumptions and can provide only reasonable, not absolute, assurances that the objectives of the system will be met. Any failure or circumvention of our controls and procedures or failure to comply with regulations related to controls and procedures could have a material adverse effect on our business, financial condition and results of operations. If we identify material weaknesses in our internal control over financial reporting or are otherwise required to restate our financial statements, we could be required to implement expensive and time-consuming remedial measures and could lose investor confidence in the accuracy and completeness of our financial reports. In addition, there are risks that individuals, either employees or contractors, consciously circumvent established control mechanisms by, for example, exceeding trading or investment management limitations, or committing fraud.

Failure of any of our third-party vendors to perform can result in losses.
Third-party vendors provide key components of our business operations such as data processing, recording and monitoring transactions, online banking interfaces and services, and network access. Our use of third-party vendors exposes us to the risk that such vendors may not comply with their servicing and other contractual obligations to us, including with respect to indemnification and information security, and to the risk that we may not satisfy applicable regulatory responsibilities regarding the management and oversight of third parties and outsourcing providers. While we have established risk management processes and continuity plans, any disruptions in service from a key vendor for any reason or poor performance of services could have a negative effect on our ability to deliver products and services to our clients and conduct our business. Replacing these third-party vendors or performing the tasks they perform for ourselves could create significant delay and expense.

We are subject to certain risks inherent in operating globally which may affect our business adversely.
In conducting our U.S. and non-U.S. business, we are subject to risks of loss from various unfavorable political, economic, legal or other developments, including social or political instability, changes in governmental policies or policies of central banks, expropriation, nationalization, confiscation of assets, price controls, capital controls, exchange controls, unfavorable tax rates and tax court rulings and changes in laws and regulations. Less mature and often less regulated business and investment environments heighten these risks in various emerging markets, in which we have been expanding our business activities. Our non-U.S. operations accounted for 32% of our revenue in 2017 . Our non-U.S. businesses are subject to extensive regulation by various non-U.S. regulators, including governments, securities exchanges, central banks and other regulatory bodies in the jurisdictions in which those businesses operate. In many countries, the laws and regulations applicable to the financial services industry are uncertain and evolving and may be applied with extra scrutiny to foreign companies. Moreover, the regulatory and supervisory standards and expectations in one jurisdiction may not conform with standards or expectations in other jurisdictions. Even within a particular jurisdiction, the standards and expectations of multiple supervisory agencies exercising authority over our affairs may not be harmonized fully. Accordingly, it may be difficult for us to determine the exact requirements of local laws in every market or manage our relationships with multiple regulators in various jurisdictions. Our inability to remain in compliance with local laws in a particular market and manage our relationships with regulators could have an adverse effect not only on our businesses in that market but also on our reputation generally. The failure to mitigate properly such risks or the failure of our operating infrastructure to support such international activities could result in operational failures and regulatory fines or sanctions, which could affect our business and results of operations adversely.

We actively strive to optimize our geographic footprint. This optimization may occur by establishing operations in lower-cost locations or by outsourcing to third-party vendors in various jurisdictions. These efforts expose us to the risk that we may not maintain service quality, control or effective management within these operations. In addition, we are exposed to the relevant macroeconomic, political and similar risks generally involved in doing business in those jurisdictions. The increased elements of risk that arise from conducting certain operating processes in some jurisdictions could lead to an increase in reputational risk. During periods of transition, greater operational risk and client concern exist with respect to maintaining a high level of service delivery.

In addition, we are subject in our global operations to rules and regulations relating to corrupt and illegal payments and money laundering, laws relating to doing business with certain individuals, groups and countries, such as the U.S. Foreign Corrupt Practices Act, the USA PATRIOT Act, and the UK Bribery Act, and economic sanctions and embargo programs administered by the U.S. Office of Foreign Assets Control and similar agencies worldwide. While we have invested and continue to invest significant resources in training and in compliance monitoring, the geographic diversity of our operations, employees, clients and customers, as well as the vendors and other third parties with whom we deal, presents the risk that we may be found in violation of such rules, regulations, laws or programs and any such violation could subject us to significant penalties or affect our reputation adversely.

Failure to control our costs and expenses adequately could affect our earnings negatively.
Our success in controlling the costs and expenses of our business operations also impacts operating results. Through various parts of our business strategy, we aim to produce efficiencies in operations that help reduce and control costs and expenses, including the costs of losses associated with operating risks attributable to servicing and managing financial assets. Failure to control these and other costs could affect our earnings negatively and reduce our competitive position. In October 2017, we announced our “Value for Spend” expense management initiative, through which we intend to realize $250 million in expense run-rate savings by 2020 through improved organizational alignment, process optimization and strategic sourcing. We cannot provide assurance that such initiative will be successful, nor can we predict its overall effect on our financial condition or results of operations.

Acts of terrorism, natural disasters, pandemics and global conflicts may have a negative impact on our business and operations.
Acts of terrorism, natural disasters, pandemics, global conflicts or other similar catastrophic events could have a negative impact on our business and operations. While we have in place business continuity plans, such events could still damage our facilities, disrupt or delay the normal operations of our business (including communications and technology), result in harm to or cause travel limitations on our employees, and have a similar impact on our clients, suppliers, third-party vendors and counterparties. These events also could impact the purchase of our products and services negatively to the extent that those acts or conflicts result in reduced capital markets activity, lower asset price levels, or disruptions in general economic activity in the United States or abroad, or in financial market settlement functions. In addition, war, terror attacks, political unrest, global conflicts, national and global efforts to combat terrorism and other potential military activities and outbreaks of hostilities may impact economic growth negatively, which could have an adverse effect on our business and operations, and may have other adverse effects on us in ways that we are unable to predict.

Credit Risks

Failure to evaluate accurately the prospects for repayment when we extend credit or maintain an adequate allowance for credit losses can result in losses or the need to make additional provisions for credit losses, both of which reduce our earnings.
We evaluate extensions of credit before we make them and then provide for credit risks based on our assessment of the credit losses inherent in our loan portfolio, including undrawn credit commitments. This process requires us to make difficult and complex judgments. Challenges associated with our credit risk assessments include identifying the proper factors to be used in assessments and accurately estimating the impacts of those factors. Allowances that prove to be inadequate may require us to realize increased provisions for credit losses or write down the value of certain assets on our balance sheet, which in turn would affect earnings negatively.

Market volatility and/or weak economic conditions can result in losses or the need for additional provisions for credit losses, both of which reduce our earnings.
Credit risk levels and our earnings also can be affected by market volatility and/or weakness in the economy in general and in the particular locales in which we extend credit, a deterioration in credit quality or a reduced demand for credit. Adverse changes in the financial performance or condition of our borrowers resulting from market volatility and/or weakened economic conditions could impact the borrowers' abilities to repay outstanding loans, which could in turn impact our financial condition and results of operations negatively.

The failure or perceived weakness of any of our significant counterparties could expose us to loss.
The financial markets are characterized by extensive interconnections among financial institutions, including banks, broker/dealers, collective investment funds and insurance companies. As a result of these interconnections, we and many of our clients have counterparty exposure to other financial institutions. This counterparty exposure presents risks to us and to our clients because the failure or perceived weakness of any of our counterparties has the potential to expose us to risk of loss. Instability in the financial markets has resulted historically in some financial institutions becoming less creditworthy. During such periods of instability, we are exposed to increased counterparty risks, both as principal and in our capacity as agent for our clients. Changes in market perception of the financial strength of particular financial institutions can occur rapidly, are often based upon a variety of factors and can be difficult to predict. In addition, the criteria for and manner of governmental support of financial institutions and other economically important sectors remain uncertain. Further, the consolidation of financial service firms and the failures of other financial institutions has in the past, and may in the future increase the concentration of our counterparty risk. We are not able to mitigate all of our and our clients' counterparty credit risk. If a significant individual counterparty defaults on an obligation to us, we could incur financial losses that have a material and adverse effect on our business, financial condition and results of operations.

Liquidity Risks

If we do not effectively manage our liquidity, our business could suffer.
Liquidity is essential for the operation of our business. Market conditions, unforeseen outflows of funds or other events could have a negative effect on our level or cost of funding, affecting our ongoing ability to accommodate liability maturities and deposit withdrawals, meet contractual obligations, and fund new business transactions at a reasonable cost and in a timely manner. If our access to stable and low-cost sources of funding, such as customer deposits, are reduced, we may need to use alternative funding, which could be more expensive or of limited availability. Further evolution in the regulatory requirements relating to liquidity and risk management also may impact us negatively. Additional regulations may impose more stringent liquidity requirements for large financial institutions, including the Corporation and the Bank.

Given the overlap and complex interactions of these regulations with other regulatory changes, the full impact of the adopted and proposed regulations remains uncertain until their full implementation. For more information on these regulations and other regulatory changes, see “Supervision and Regulation-Liquidity Standards” in Item 1, “Business,” of this Annual Report on Form 10-K. Any substantial, unexpected or prolonged changes in the level or cost of liquidity could affect our business adversely.

If the Bank is unable to supply the Corporation with funds over time, the Corporation could be unable to meet its various obligations.
The Corporation is a legal entity separate and distinct from the Bank and the Corporation’s other subsidiaries. The Corporation relies on dividends paid to it by the Bank to meet its obligations and to pay dividends to stockholders of the Corporation. There are various legal limitations on the extent to which the Bank and the Corporation’s other subsidiaries can supply funds to the Corporation by dividend or otherwise. Dividend payments by the Bank to the Corporation in the future will require continued generation of earnings by the Bank and could require regulatory approval under certain circumstances. For more information on dividend restrictions, see “Supervision and Regulation-Payment of Dividends” in Item 1, “Business,” of this Annual Report on Form 10-K.

We may need to raise additional capital in the future, which may not be available to us or may only be available on unfavorable terms.
We may need to raise additional capital to provide sufficient resources to meet our business needs and commitments, to accommodate the transaction and cash management needs of our clients, to maintain our credit ratings in response to regulatory changes, including capital rules, or for other purposes. However, our ability to access the capital markets, if needed, will depend on a number of factors, including the state of the financial markets. Rising interest rates, disruptions in financial markets, negative perceptions of our business or our financial strength, or other factors may impact our ability to raise additional capital, if needed, on terms acceptable to us. Any diminished ability to raise additional capital, if needed, could subject us to liability, restrict our ability to grow, require us to take actions that would affect our earnings negatively or otherwise affect our business and our ability to implement our business plan, capital plan and strategic goals adversely.

Any downgrades in our credit ratings, or an actual or perceived reduction in our financial strength, could affect our borrowing costs, capital costs and liquidity adversely.
Rating agencies publish credit ratings and outlooks on our creditworthiness and that of our obligations or securities, including long-term debt, short-term borrowings, preferred stock and other securities. Our credit ratings are subject to ongoing review by the rating agencies and thus may change from time to time based on a number of factors, including our own financial strength, performance, prospects and operations as well as factors not under our control, such as rating-agency-specific criteria or frameworks for our industry or certain security types, which are subject to revision from time to time, and conditions affecting the financial services industry generally.

Downgrades in our credit ratings may affect our borrowing costs, our capital costs and our ability to raise capital and, in turn, our liquidity adversely. A failure to maintain an acceptable credit rating also may preclude us from being competitive in certain products. Additionally, our counterparties, as well as our clients, rely on our financial strength and stability and evaluate the risks of doing business with us. If we experience diminished financial strength or stability, actual or perceived, a decline in our stock price or a reduced credit rating, our counterparties may be less willing to enter into transactions, secured or unsecured, with us, our clients may reduce or place limits on the level of services we provide them or seek other service providers, or our prospective clients may select other service providers, all of which may have other adverse effects on our business.

The risk that we may be perceived as less creditworthy relative to other market participants is higher in a market environment in which the consolidation, and in some instances failure, of financial institutions, including major global financial institutions, could result in a smaller number of larger counterparties and competitors. If our counterparties perceive us to be a less viable counterparty, our ability to enter into financial transactions on terms acceptable to us or our clients, on our or our clients’ behalf, will be compromised materially. If our clients reduce their deposits with us or select other service providers for all or a portion of the services we provide to them, our revenues will decrease accordingly.

Our success with large, complex clients requires substantial liquidity.
A significant portion of our business involves providing certain services to large, complex clients, which, by their nature, require substantial liquidity. Our failure to manage successfully the liquidity and balance sheet issues attendant to this portion of our business may have a negative impact on our ability to meet client needs and grow.

Regulatory and Legal Risks

Failure to comply with regulations can result in penalties and regulatory constraints that restrict our ability to grow or even conduct our business, or that reduce earnings.

Virtually every aspect of our business around the world is regulated, generally by governmental agencies that have broad supervisory powers and the ability to impose sanctions. In the United States, the Corporation, the Bank and many of the Corporation's other subsidiaries are regulated heavily by bank regulatory agencies at the federal and state levels. These regulations cover a variety of matters ranging from required capital levels to prohibited activities. They are directed specifically at protecting depositors, the federal deposit insurance fund and the banking system as a whole, not our stockholders or other security holders. The Corporation and its subsidiaries also are regulated heavily by bank, securities and other regulators globally. Regulatory violations or the failure to meet formal or informal commitments made to regulators could generate penalties, require corrective actions that increase costs of conducting business, result in limitations on our ability to conduct business, restrict our ability to expand or impact our reputation adversely. Failure to obtain necessary approvals from regulatory agencies on a timely basis could affect proposed business opportunities and results of operations adversely. Similarly, changes in laws or failure to comply with new requirements or with future changes in laws or regulations may impact our results of operations and financial condition negatively.

The ongoing implementation of the Dodd-Frank Act may have a material effect on our operations.

The Dodd-Frank Act, which became law in July 2010, has had a significant impact on the regulatory and compliance structure in which we operate. While the current Presidential administration and U.S. Congress have indicated that the Dodd-Frank Act may be subject to scrutiny and that some of its provisions may be amended or repealed, there remains uncertainty surrounding the manner in which certain of the existing provisions will be implemented by the various regulatory agencies. In February 2017, an executive order was issued by the President (i) establishing core principles for regulating the U.S. financial system and (ii) instructing the U.S. Secretary of the Treasury to consult with heads of the member agencies of the U.S. Financial Stability Oversight Council and to issue reports that identify laws, regulations, and policies, including those implemented under the Dodd-Frank Act, that inhibit federal regulation of the U.S. financial system in a manner consistent with the core principles. Certain of the required reports were issued during 2017, and additional reports may be issued in the future. Further changes to or resulting from the Dodd-Frank Act, the February 2017 executive order, or the reports issued by the U.S. Secretary of the Treasury may impact the profitability of our business activities, require changes to certain of our business practices, or otherwise affect our business adversely. These legislative and/or regulatory changes also may require us to invest significant management attention and resources to evaluate and make any changes necessary to comply with new statutory and regulatory requirements.

Failure to address shortcomings identified by regulators in our 2015 resolution plan could result in restrictions or directives that restrict our ability to grow or even conduct our business.

Section 165(d) of the Dodd-Frank Act and implementing regulations jointly issued by the Federal Reserve Board and the FDIC require bank holding companies with at least $50 billion in assets, which includes the Corporation, to annually submit a resolution plan to the Federal Reserve Board and the FDIC detailing the bank holding company's plan for rapid and orderly resolution in the event of material financial distress or failure. If the regulators jointly determine that our resolution plan is not "credible" or would not facilitate an orderly resolution under the U.S. Bankruptcy Code, the Corporation could be subject to more stringent capital, leverage or liquidity requirements, restrictions on growth, activities or operations, or be required to divest certain assets or operations. On March 24, 2017, the Federal Reserve Board and the FDIC jointly identified certain "shortcomings" in the resolution plan submitted by the Corporation in December 2015. While the identification of shortcomings is different from a determination that the plan is not credible, the Corporation was required to address satisfactorily the identified shortcomings in the Corporation's resolution plan to be submitted to the Federal Reserve Board and the FDIC by December 31, 2017. The Corporation submitted this resolution plan on December 19, 2017. If the Federal Reserve Board and the FDIC jointly decide that the Corporation's 2017 resolution plan fails to address the identified shortcomings in a satisfactory manner, then the Federal Reserve Board and the FDIC could jointly determine that the 2017 resolution plan is not credible or would not facilitate an orderly resolution under the U.S. Bankruptcy Code, and could subject us to the measures described above.

Changes in regulatory capital requirements could result in reduced earnings.

The Dodd-Frank Act and the implementation of Basel III have led to significantly higher capital requirements, higher capital charges and more restrictive leverage and liquidity ratios, and could impact the capital allocations to various business activities. The ultimate impact of the evolving capital and liquidity standards on us will depend on a number of factors, including the interpretation and implementation of capital and leverage requirements by the U.S. banking regulators. Increased capital requirements ultimately could impact the profitability of certain of our business activities, require changes to certain business practices or otherwise affect our business and earnings adversely. See “Supervision and Regulation” under Item 1, “Business,” of this Annual Report on Form 10-K for a further discussion of the various capital and liquidity requirements to which we are, and in the future may be, subject.

Changes by the U.S. and other governments to policies involving the financial services industry may heighten the challenges we face and make compliance with the evolving laws and regulations applicable to banks and other financial services companies more difficult and costly.

In the past several years, various regulatory bodies have demonstrated heightened enforcement scrutiny through many regulatory initiatives, including anti-money-laundering rules, anti-bribery laws, and loan-modification requirements. These and other regulatory requirements have increased compliance costs and regulatory risks and may lead to financial and reputational damage in the event of a violation. While we have programs in place, including policies, training and various forms of monitoring, designed to ensure compliance with legislative and regulatory requirements, these programs and policies may not always protect us from conduct by individual employees. Governments may take further actions to change significantly the way financial institutions are regulated, either through new legislation, new regulations, new applications of existing regulations or a combination of all of these methods. We cannot currently predict the impact, if any, of these changes to our business. Additionally, governments and regulators may take actions that increase intervention in the normal operation of our businesses and the businesses of our competitors in the financial services industry, and likely would involve additional legislative and regulatory requirements imposed on banks and other financial services companies. Any such actions could increase compliance costs and regulatory risks, lead to financial and reputational damage in the event of a violation, affect our ability to compete successfully, and also may impact the nature and level of competition in the industry in unpredictable ways. The full scope and impact of possible legislative or regulatory changes and the extent of regulatory activity is uncertain and difficult to predict.

We may be impacted adversely by claims or litigation, including claims or litigation relating to our fiduciary responsibilities.

Our businesses involve the risk that clients or others may sue us, claiming that we have failed to perform under a contract or otherwise failed to carry out a duty perceived to be owed to them. Our trust, custody and investment management businesses are particularly subject to this risk. This risk is heightened when we act as a fiduciary for our clients and may be further heightened during periods when credit, equity or other financial markets are deteriorating in value or are particularly volatile, or when clients or investors are experiencing losses. In addition, as a publicly-held company, we are subject to the risk of claims under the federal securities laws, and volatility in our stock price and those of other financial institutions increases this risk. Claims made or actions brought against us, whether founded or unfounded, may result in injunctions, settlements, damages, fines or penalties, which could have a material adverse effect on our financial condition or results of operations or require changes to our business. Even if we defend ourselves successfully, the cost of litigation is often substantial, and public reports regarding claims made against us may cause damage to our reputation among existing and prospective clients or negatively impact the confidence of counterparties, rating agencies and stockholders, consequently affecting our earnings negatively.

We may be impacted adversely by regulatory enforcement matters.

In the ordinary course of our business, we are subject to various regulatory, governmental and enforcement inquiries, investigations and subpoenas. These may be directed generally to participants in the businesses in which we are involved or may be directed specifically at us. In conjunction with enforcement matters, we may face claims for disgorgement, the imposition of civil and criminal penalties or the imposition of other remedial sanctions, any of which could have an adverse impact on us.

We may fail to set aside adequate reserves for, or otherwise underestimate our liability relating to, pending and threatened claims, with a negative effect on our earnings.

We estimate our potential liability for pending and threatened claims, and record reserves when appropriate pursuant to GAAP, by evaluating the facts of particular claims under current judicial decisions and legislative and regulatory interpretations. This process is inherently subject to risk, including the risks that a judge or jury could decide a case contrary to our evaluation of the law or the facts or that a court could change or modify existing law on a particular issue important to the case. Our earnings will be affected adversely to the extent that our reserves are not adequate.

If we fail to comply with legal standards, we could incur liability to our clients or lose clients, which could affect our earnings negatively.
Managing or servicing assets with reasonable prudence in accordance with the terms of governing documents and applicable laws is important. Failure to comply with the terms of governing documents and applicable laws, manage adequately risks or manage appropriately the differing interests often involved in the exercise of fiduciary responsibilities may subject us to liability or cause client dissatisfaction, which may impact negatively our earnings and growth.

Strategic Risks

If we do not execute strategic plans successfully, we will not grow as we have planned and our earnings growth will be impacted negatively.
Our growth depends upon successful, consistent execution of our business strategies. A failure to execute these strategies will impact growth negatively. A failure to grow organically or to integrate successfully an acquisition could have an adverse effect on our business. The challenges arising from generating organic growth or the integration of an acquired business may include preserving valuable relationships with employees, clients, suppliers and other business partners, delivering enhanced products and services, as well as combining accounting, data processing and internal control systems. To the extent we enter into transactions to acquire complementary businesses and/or technologies, we may not achieve the expected benefits of such transactions, which could result in increased costs, lowered revenues, ineffective deployment of capital, regulatory concerns, exit costs or diminished competitive position or reputation. These risks may be increased if the acquired company operates internationally or in a geographic location where we do not already have significant business operations.

Execution of our business strategies also may require certain regulatory approvals or consents, which may include approvals of the Federal Reserve Board and other domestic and non-U.S. regulatory authorities. These regulatory authorities may impose conditions on the activities or transactions contemplated by our business strategies which may impact negatively our ability to realize fully the expected benefits of certain opportunities. Further, acquisitions we announce may not be completed if we do not receive the required regulatory approvals, if regulatory approvals are significantly delayed or if other closing conditions are not satisfied.

Competition for our employees is intense, and we may not be able to attract and retain key personnel.
Our success depends, in large part, on our ability to attract new employees, retain and motivate our existing employees, and continue to compensate our employees competitively. Competition for the best employees in most activities in which we engage can be intense, and there can be no assurance that we will be successful in our efforts to recruit and retain key personnel. Factors that affect our ability to attract and retain talented and diverse employees include our compensation and benefits programs, our profitability and our reputation for rewarding and promoting qualified employees. Our ability to attract and retain key executives and other employees may be hindered as a result of existing and potential regulations applicable to incentive compensation and other aspects of our compensation programs. These regulations may not apply to some of our competitors and to other institutions with which we compete for talent. The unexpected loss of services of key personnel, both in businesses and corporate functions, could have a material adverse impact on our business because of their skills, knowledge of our markets, operations and clients, years of industry experience and, in some cases, the difficulty of promptly finding qualified replacement personnel. Similarly, the loss of key employees, either individually or as a group, could affect our clients' perception of our abilities adversely.

We are subject to intense competition in all aspects of our businesses, which could have a negative effect on our ability to maintain satisfactory prices and grow our earnings.
We provide a broad range of financial products and services in highly competitive markets. We compete against large, well-capitalized, and geographically diverse companies that are capable of offering a wide array of financial products and services at competitive prices. In certain businesses, such as foreign exchange trading, electronic networks present a competitive challenge. Additionally, technological advances and the growth of internet-based commerce have made it possible for other types of institutions to offer a variety of products and services competitive with certain areas of our business. Many of these nontraditional service providers have fewer regulatory constraints and some have lower cost structures. The same may be said for competitors based in non-U.S. jurisdictions, where legal and regulatory environments may be more favorable than those applicable to the Corporation and the Bank as U.S.-domiciled financial institutions. These competitive pressures may have a negative effect on our earnings and ability to grow. Pricing pressures, as a result of the willingness of competitors to offer comparable or improved products or services at a lower price, also may result in a reduction in the price we can charge for our products and services, which could have, and in some cases has had, a negative effect on our ability to maintain or increase our profitability.

Damage to our reputation could have a direct and negative effect on our ability to compete, grow and generate revenue.
Damage to our reputation for delivery of a high level of service could undermine the confidence of clients and prospects in our ability to serve them and accordingly affect our earnings negatively. Damage to our reputation also could affect the confidence of rating agencies, regulators, stockholders and other parties in a wide range of transactions that are important to our business. Failure to maintain our reputation ultimately would have an adverse effect on our ability to manage our balance sheet or grow our business. Actions by the financial services industry generally or by other members of or individuals in the financial services industry also could impact our reputation negatively. Further, whereas negative public opinion once was driven primarily by adverse news coverage in traditional media, the proliferation of social media channels utilized by us and third parties, as well as the personal use of social media by our employees and others, may increase the risk of negative publicity, including through the rapid dissemination of inaccurate, misleading or false information, which could harm our reputation or have other negative consequences.

We need to invest in innovation constantly, and the inability or failure to do so may affect our businesses and earnings negatively.
Our success in the competitive environment in which we operate requires consistent investment of capital and human resources in innovation, particularly in light of the current "FinTech" environment, in which financial institutions are investing significantly in evaluating new technologies and developing potentially industry-changing new products, services and industry standards. Our investment is directed at generating new products and services, and adapting existing products and services to the evolving standards and demands of the marketplace. Among other things, investing in innovation helps us maintain a mix of products and services that keeps pace with our competitors and achieve acceptable margins. Our investment also focuses on enhancing the delivery of our products and services in order to compete successfully for new clients or gain additional business from existing clients, and includes investment in technological innovation as well. Effectively identifying gaps or weaknesses in our product offerings also is important. Falling behind our competition in any of these areas could affect our business opportunities, growth and earnings adversely. There are substantial risks and uncertainties associated with innovation efforts. We must invest significant time and resources in developing and marketing new products and services, and expected timetables for the introduction and development of new products or services may not be achieved and price and profitability targets may not be met. Further, our revenues and costs may fluctuate because new products and services generally require start-up costs while corresponding revenues take time to develop or may not develop at all.

Failure to understand or appreciate fully the risks associated with development or delivery of new product and service offerings will affect our businesses and earnings negatively.
The success of our innovation efforts depends, in part, on the successful implementation of new product and service initiatives. Not only must we keep pace with competitors in the development of these new offerings, but we must accurately price them (as well as existing products) on a risk-adjusted basis and deliver them to clients effectively. Our identification of risks arising from new products and services, both in their design and implementation, and effective responses to those identified risks, including pricing, is key to the success of our efforts at innovation and investment in new product and service offerings.

Our success with large, complex clients requires an understanding of the market and legal, regulatory and accounting standards in various jurisdictions.
A significant portion of our business involves providing certain services to large, complex clients which require an understanding of the market and legal, regulatory and accounting standards in various jurisdictions. Any failure to understand, address or comply with those standards appropriately could affect our growth prospects or affect our reputation negatively. We identify and manage risk through our business strategies and plans and our risk management practices and controls. If we fail to identify and manage significant risks successfully, we could incur financial loss, suffer damage to our reputation that could restrict our ability to grow or conduct business profitably, or become subject to regulatory penalties or constraints that could limit some of our activities or make them significantly more expensive. In addition, our businesses and the markets in which we operate are continuously evolving. We may fail to understand fully the implications of changes in legal or regulatory requirements, our businesses or the financial markets or fail to enhance our risk framework to address those changes in a timely fashion. If our risk framework is ineffective, either because it fails to keep pace with changes in the financial markets, legal and regulatory requirements, our businesses, our counterparties, clients or service providers or for other reasons, we could incur losses, suffer reputational damage or find ourselves out of compliance with applicable regulatory or contractual mandates or expectations. These risks are magnified as client requirements become more complex and as our increasingly global business requires end-to-end management of operational and other processes across multiple time zones and many inter-related products and services.

Failure to produce adequate and competitive returns can affect our earnings and growth prospects negatively.
We derive a significant portion of our revenues from our investment management, fiduciary and asset-servicing businesses. If we do not generate competitive risk-adjusted returns that satisfy clients in a variety of asset classes, we will have greater difficulty maintaining existing business and attracting new business, which would affect our earnings negatively.

We may take actions to maintain client satisfaction that result in losses or reduced earnings.
We may take action or incur expenses in order to maintain client satisfaction or preserve the usefulness of investments or investment vehicles we manage in light of changes in security ratings, liquidity or valuation issues or other developments, even though we are not required to do so by law or the terms of governing instruments. The risk that we will decide to take actions to maintain client satisfaction that result in losses or reduced earnings is greater in periods when credit or equity markets are deteriorating in value or are particularly volatile and liquidity in markets is disrupted.

Other Risks
Changes in tax laws and interpretations and tax challenges may affect our earnings negatively.
Both U.S. and non-U.S. governments and tax authorities, including states and municipalities, from time to time issue new, or modify existing, tax laws and regulations. These authorities may also issue new, or modify existing, interpretations of those laws and regulations. These new laws, regulations or interpretations, and our actions taken in response to, or reliance upon, such changes in the tax laws may impact our tax position in a manner that affects our earnings negatively.

On December 22, 2017, the Tax Cuts and Jobs Act (H.R. 1) (the “Act”) was signed into law. The Act includes a number of changes in existing tax law impacting businesses including, among other things, a reduction in the corporate income tax rate from 35% to 21%, disallowance of certain deductions that had previously been allowed, limitations on interest deductions, alteration of the expensing of capital expenditures, adoption of a territorial tax system, assessment of a repatriation tax or “toll-charge” on undistributed earnings and profits of U.S.-owned foreign corporations, and introduction of certain anti-base erosion provisions. In the fourth quarter of 2017, we recognized a net tax benefit of $53.1 million associated with the Act; however, the ultimate impact of the Act on our financial condition and results of operations in 2018 and future years remains uncertain and may differ materially from our expectations due to the issuance of technical guidance regarding elements of the Act, changes in interpretations and assumptions we have made with respect to the Act, and changes to the competitive landscape in which we operate and other factors.

In the course of our business, we are sometimes subject to challenges from U.S. and non-U.S. tax authorities, including states and municipalities, regarding the amount of taxes due. These challenges may result in adjustments to the timing or amount of taxable income or deductions or the allocation of income among tax jurisdictions, all of which may require a greater provision for taxes or otherwise affect earnings negatively.

Changes in accounting standards may be difficult to predict and could have a material impact on our consolidated financial statements.
New accounting standards, changes to existing accounting standards, or changes in the interpretation of existing accounting standards by the Financial Accounting Standards Board, the International Accounting Standards Board, the SEC or bank regulatory agencies, or otherwise reflected in GAAP, potentially could have a material impact on our financial condition and results of operations. These changes are difficult to predict and in some cases we could be required to apply a new or revised standard retroactively, resulting in the revised treatment of certain transactions or activities, or even the restatement of consolidated financial statements for prior periods.

Our ability to return capital to stockholders is subject to the discretion of our Board of Directors and may be limited by U.S. banking laws and regulations, applicable provisions of Delaware law, or our failure to pay full and timely dividends on our preferred stock and the terms of our outstanding debt.
Holders of our common stock are entitled to receive only such dividends and other distributions of capital as our Board of Directors may declare out of funds legally available for such payments under Delaware law. Although we have declared cash dividends on shares of our common stock historically, we are not required to do so. In addition to the approval of our Board of Directors, our ability to take certain actions, including our ability to pay dividends, repurchase stock, and make other capital distributions, is dependent upon, among other things, their payment being made in accordance with a capital plan as to which the Federal Reserve Board has not objected. There can be no assurance that the Federal Reserve Board will not object to our future capital plans. In addition to imposing restrictions on our ability to return capital to stockholders, an objection by the Federal Reserve Board to a future capital plan would negatively impact our reputation and investor perceptions of us.

A significant source of funds for the Corporation is dividends from the Bank. As a result, our ability to pay dividends on the Corporation's common stock will depend on the ability of the Bank to pay dividends to the Corporation. There are various legal limitations on the extent to which the Bank and the Corporation's other subsidiaries can supply funds to the Corporation by dividend or otherwise. Dividend payments by the Bank to the Corporation in the future will require continued generation of earnings by the Bank and could require regulatory approval under certain circumstances. If the Bank is unable to pay dividends to the Corporation in the future, our ability to pay dividends on the Corporation's common stock would be affected adversely.

Our ability to declare or pay dividends on, or purchase, redeem or otherwise acquire, shares of our common stock or any of our shares that rank junior to our preferred stock as to the payment of dividends and/or the distribution of any assets on any liquidation, dissolution or winding-up of the Corporation also generally will be prohibited in the event that we do not declare and pay in full dividends on our Series C Non-Cumulative Perpetual Preferred Stock (Series C preferred stock) and Series D Non-Cumulative Perpetual Preferred Stock (Series D preferred stock). Further, in the future if we default on certain of our outstanding debts or elect to defer interest payments on our Floating Rate Capital Debt we will be prohibited from making dividend payments on our common stock until such payments have been brought current.

Any reduction or elimination of our common stock dividend, or even our failure to increase our common stock dividend along with our competitors, likely would have a negative effect on the market price of our common stock.

For more information on dividend restrictions, see "Supervision and Regulation-Payment of Dividends" in Item 1, "Business," of this Annual Report on Form 10-K.

ITEM 1B – UNRESOLVED STAFF COMMENTS

None.

ITEM 2 – PROPERTIES

The executive offices of the Corporation and the Bank are located at 50 South La Salle Street in Chicago. This Bank-owned building is occupied by various divisions of Northern Trust's businesses. Adjacent to this building are two office buildings in which the Bank leases space principally for corporate support functions. Financial services are provided by the Bank and other subsidiaries of the Corporation through a network of offices in 19 U.S. states, Washington D.C., and 23 international locations. The majority of those offices are leased. The Bank's primary U.S. operations are located in seven facilities: a leased facility at 801 South Canal Street in Chicago; a subleased facility at 231 South La Salle Street in Chicago; a leased facility at 181 West Madison Street in Chicago; a leased facility at 10 South La Salle Street in Chicago; a leased facility in Tempe, Arizona; and two Bank-owned supplementary operations/data center buildings located in the western suburbs of Chicago. A majority of the Bank's London-based staff is located at a leased facility at Canary Wharf in London. Additional support and operations activity originates from two facilities in each of Bangalore and Limerick, as well as one facility in each of Manila and Pune, all of which are leased. The Bank and the Corporation's other subsidiaries operate from various other facilities in North America, Europe, the Asia-Pacific region, and the Middle East, most of which are leased.

The Corporation believes that its owned and leased facilities are suitable and adequate for its business needs. For additional information relating to properties and lease commitments, refer to Note 9, "Buildings and Equipment" and Note 10, "Lease Commitments," included under Item 8, "Financial Statements and Supplementary Data," of this Annual Report on Form 10-K and which information is incorporated herein by reference.

ITEM 3 – LEGAL PROCEEDINGS

The information presented under the caption "Legal Proceedings" in Note 24, "Contingent Liabilities," included under Item 8, "Financial Statements and Supplementary Data," of this Annual Report on Form 10-K is incorporated herein by reference.

ITEM 4 – MINE SAFETY DISCLOSURES

Not applicable.

SUPPLEMENTAL ITEM – EXECUTIVE OFFICERS OF THE REGISTRANT

The following sets forth certain information with regard to each executive officer of the Corporation.

Frederick H. Waddell - Mr. Waddell, age 64, joined Northern Trust in 1975 and has served as Chairman of the Board since 2009. Mr. Waddell served as Chief Executive Officer from 2008 through 2017; as President from 2006 to 2011 and again from October through December 2016; as Chief Operating Officer from 2006 to 2008; and as Executive Vice President and President of Corporate & Institutional Services from 2003 to 2006. Prior to that, Mr. Waddell held leadership positions in commercial banking, strategic planning and Wealth Management.

Michael G. O'Grady - Mr. O'Grady, age 52, joined Northern Trust in 2011 and has served as Chief Executive Officer since January 2018 and as President and a member of the Board of Directors since January 2017. Prior to that, Mr. O'Grady served as Executive Vice President and President of Corporate & Institutional Services from 2014 to 2016 and as Chief Financial Officer from 2011 to 2014. Before joining Northern Trust, Mr. O'Grady served as a Managing Director in Bank of America Merrill Lynch's Investment Banking Group.

Aileen B. Blake - Ms. Blake, age 50, joined Northern Trust in 2004 and has served as Executive Vice President and Controller since May 2017. Prior to that, Ms. Blake served as Executive Vice President and Director of Financial Planning and Strategy from February 2016 to May 2017 and as Head of Enterprise Productivity from 2011 to February 2016. She also previously served as Controller from 2004 to 2011.

S. Biff Bowman - Mr. Bowman, age 54, joined Northern Trust in 1985 and has served as Executive Vice President and Chief Financial Officer since 2014. Prior to that, Mr. Bowman served as Executive Vice President, Human Resources from 2012 to 2014. From 2010 to 2012, Mr. Bowman was the Head of Americas for Corporate & Institutional Services. From 2008 to 2010, he served as Executive Vice President, Corporate & Institutional Services for Europe, Middle East and Africa.

Robert P. Browne - Mr. Browne, age 52, joined Northern Trust in 2009 as Executive Vice President and Chief Investment Officer. Before joining Northern Trust, Mr. Browne served as Chief Investment Officer for Fixed Income and Proprietary Investments for ING Investment Management Holdings N.V. from 2004 to 2009.

Peter B. Cherecwich - Mr. Cherecwich, age 53, joined Northern Trust in 2007 and has served as Executive Vice President and President of Corporate & Institutional Services since February 2017. Prior to that, Mr. Cherecwich served as Executive Vice President and President of Global Fund Services from 2010 to 2017 and as Chief Operating Officer of Corporate & Institutional Services from 2008 to 2014. From 2007 to 2008, he served as Head of Institutional Strategy & Product Development. Before joining Northern Trust, Mr. Cherecwich served in several executive and operational roles at State Street Corporation.

Jeffrey D. Cohodes - Mr. Cohodes, age 57, joined Northern Trust in 1993 and has served as Executive Vice President and President of Corporate & Institutional Services for North America since February 2017. Prior to that, Mr. Cohodes served as Executive Vice President and Chief Risk Officer from 2011 to 2017. Mr. Cohodes also served as an Executive Vice President in the Wealth Management business from 2010 to 2011 and as the Chief Operating Officer for Asset Management from 2009 to 2010.

Steven L. Fradkin - Mr. Fradkin, age 56, joined Northern Trust in 1985 and has served as Executive Vice President and President of Wealth Management since September 2014. Prior to that, Mr. Fradkin served as President of Corporate & Institutional Services from 2009 to 2014. He served as Chief Financial Officer from 2004 to 2009.

Wilson Leech - Mr. Leech, age 56, joined Northern Trust in 2004 and has served as Executive Vice President and Chief Risk Officer since February 2017. Prior to that Mr. Leech served as Executive Vice President, Corporate & Institutional Services for Europe, Middle East and Africa from 2010 to 2017 and as Head of Global Fund Services from 2005 to 2010. From 2004 to 2005, he served as Chief Financial Officer for Europe, Middle East and Africa and Asia Pacific. Before joining Northern Trust, Mr. Leech served in various operational and financial roles at State Street Corporation and the Royal Bank of Scotland.

Susan C. Levy - Ms. Levy, age 60, joined Northern Trust in 2014 as Executive Vice President and General Counsel. Before joining Northern Trust, Ms. Levy served as Managing Partner of the law firm Jenner & Block from 2008 to 2014, where she was a partner since 1990.

William L. Morrison - Mr. Morrison, age 67, joined Northern Trust in 1996 and has served as Vice Chairman since October 2016. Prior to that, Mr. Morrison served as President from 2011 to 2016 and as Executive Vice President and Chief Financial Officer from 2009 to 2011. From 2003 to 2009, he served as President of Wealth Management.

Teresa A. Parker - Ms. Parker, age 57, joined Northern Trust in 1982 and has served as Executive Vice President and President of Corporate & Institutional Services for Europe, Middle East and Africa since June 2017. Prior to that, Ms. Parker served as Chief Operating Officer of Corporate & Institutional Services from 2014 to 2017. From 2009 to 2014, she served as Executive Vice President, Corporate & Institutional Services for Asia Pacific.

S. Gillian Pembleton - Ms. Pembleton, age 59, joined Northern Trust in 1991 and has served as Executive Vice President, Human Resources since 2014. Prior to that, Ms. Pembleton was responsible for Human Resources and Administration for Europe, Middle East and Africa from 2006 to 2014. From 2001 to 2006, she was the Global Head of Staffing and Development.

Stephen N. Potter - Mr. Potter, age 61, joined Northern Trust in 1982 and has served as Vice Chairman since October 2017. Prior to that, Mr. Potter served as Executive Vice President and President of Asset Management from 2008 to 2017. From 2001 to 2008, Mr. Potter served as Executive Vice President, Corporate & Institutional Services for Europe, Middle East and Africa.

Joyce M. St. Clair - Ms. St. Clair, age 58, joined Northern Trust in 1992 and has served as Executive Vice President and Chief Capital Management Officer since 2015. Prior to that, Ms. St. Clair served as Executive Vice President and President of Enterprise Operations from 2014 to 2015, as President of Operations & Technology from 2011 to 2014, and as Chief Risk Officer from 2007 to 2011.

Jana R. Schreuder - Ms. Schreuder, age 59, joined Northern Trust in 1980 and has served as Executive Vice President and Chief Operating Officer since 2014. Prior to that, Ms. Schreuder served as President of Wealth Management from 2011 to 2014. She served as President of Operations & Technology from 2006 to 2011, and as Chief Risk Officer from 2005 to 2006.

Shundrawn A. Thomas - Mr. Thomas, age 44, joined Northern Trust in 2004 and has served as Executive Vice President and President of Asset Management since October 2017. Prior to that, Mr. Thomas served as Executive Vice President and Head of the Funds and Managed Accounts Group from 2014 to 2017 and as Head of the Exchange-Traded Funds Group from 2010 to 2014. He also previously served as President and Chief Executive Officer of Northern Trust Securities, Inc. from 2009 to 2010 and as Head of Corporate Strategy from 2006 to 2009.

All officers are appointed annually by the Board of Directors. Officers continue to hold office until their successors are duly elected or until their death, resignation or removal by the Board.

PART II

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

Our common stock is listed on The NASDAQ Stock Market LLC under the symbol "NTRS." There were 1,897 shareholders of record as of January 31, 2018 . The information required by this item concerning the market prices of, and dividends on, our common stock during the past two years is provided under "Quarterly Financial Data (Unaudited)" included under "Supplemental Item – Selected Statistical and Supplemental Financial Data," and is incorporated herein by reference.

Information regarding dividend restrictions applicable to the Corporation and its banking subsidiaries is incorporated herein by reference to "Supervision and Regulation – Payment of Dividends," " – Capital Planning and Stress Testing" and " – Capital Adequacy Requirements" included under Item 1, "Business," of this Annual Report on Form 10-K, and Note 30, "Restrictions on Subsidiary Dividends and Loans or Advances," to the "Notes to Consolidated Financial Statements" included under Item 8, "Financial Statements and Supplementary Data," of this Annual Report on Form 10-K.

The following table shows certain information relating to the Corporation's purchases of common stock for the three months ended December 31, 2017 .

TABLE 2: PURCHASES OF COMMON STOCK IN THE FOURTH QUARTER OF 2017

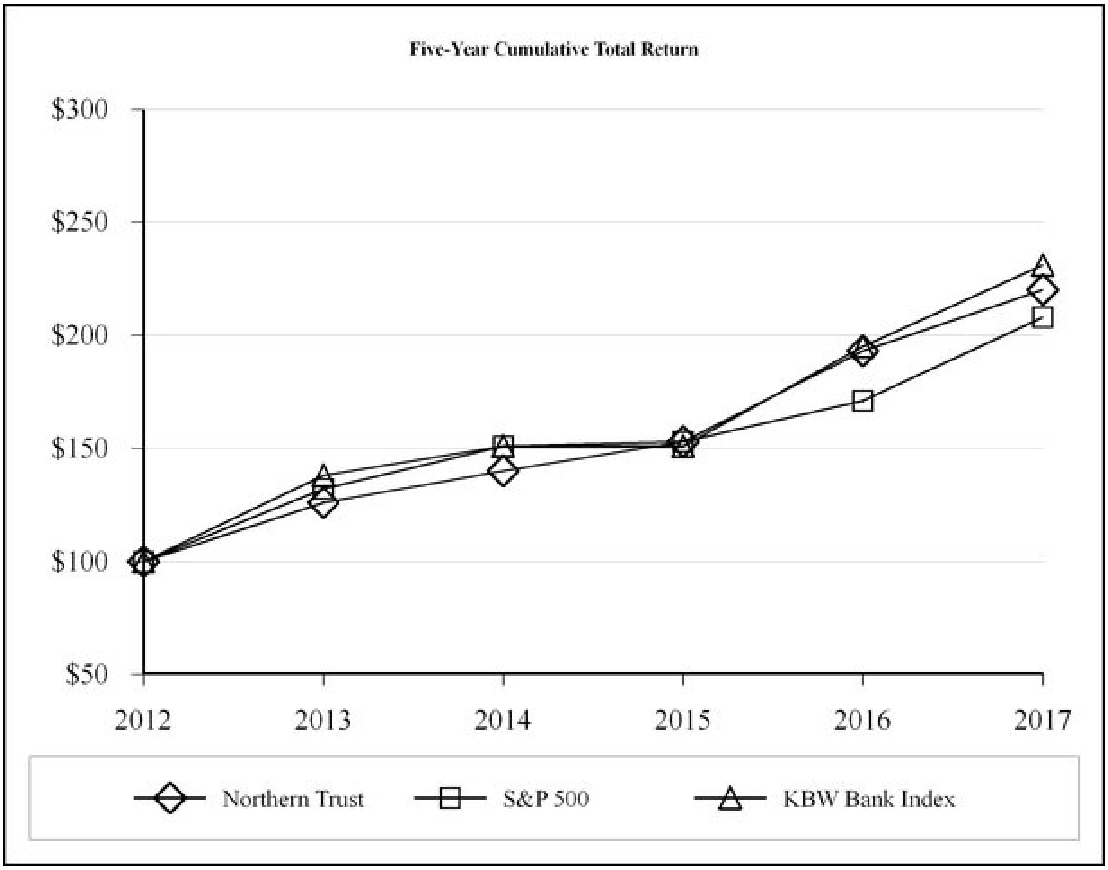
PERIOD	TOTAL NUMBER OF SHARES PURCHASED	AVERAGE PRICE PAID PER SHARE	TOTAL NUMBER OF SHARES PURCHASED AS PART OF A PUBLICLY ANNOUNCED PLAN (1)	MAXIMUM NUMBER OF SHARES THAT MAY YET BE PURCHASED UNDER THE PLAN
October 1-31, 2017	146,598	$ 95.50	146,598	7,985,577
November 1-30, 2017	1,567,473	93.78	1,567,473	6,418,104
December 1-31, 2017	71,248	98.25	71,248	6,346,856
Total (Fourth Quarter)	1,785,319	$ 94.10	1,785,319	6,346,856

(1) Repurchases were made pursuant to the repurchase program announced by the Corporation on July 18, 2017 under which the Corporation's Board of Directors authorized the Corporation to repurchase up to 9.5 million shares of the Corporation's common stock. The repurchase program has no expiration date.

COMPARISON OF FIVE-YEAR CUMULATIVE TOTAL RETURN

The graph below compares the cumulative total stockholder return on the Corporation's common stock to the cumulative total return of the S&P 500 Index and the KBW Bank Index for the five fiscal years which ended December 31, 2017 . The cumulative total stockholder return assumes the investment of $100 in the Corporation's common stock and in each index on December 31, 2012 and assumes reinvestment of dividends. The KBW Bank Index is a modified-capitalization-weighted index made up of 24 of the largest banking companies in the United States. The Corporation is included in the S&P 500 Index and the KBW Bank Index.

Total Return Assumes $100 Invested on
December 31, 2012 with Reinvestment of Dividends



	DECEMBER 31,					
	2012	2013	2014	2015	2016	**2017**
Northern Trust	100	126	140	153	193	**220**
S&P 500	100	132	151	153	171	**208**
KBW Bank Index	100	138	151	151	195	**231**

ITEM 6 – SELECTED FINANCIAL DATA

	2017	2016	2015	2014	2013
FOR THE YEAR ENDED DECEMBER 31,					
CONDENSED STATEMENTS OF INCOME (In Millions)					
Noninterest Income	**$ 3,946.1**	$ 3,726.9	$ 3,632.5	$ 3,325.7	$ 3,156.2
Net Interest Income	**1,429.2**	1,234.9	1,070.1	1,005.5	933.1
Total Revenue	**$ 5,375.3**	$ 4,961.8	$ 4,702.6	$ 4,331.2	$ 4,089.3
Provision for Credit Losses	**(28.0)**	(26.0)	(43.0)	6.0	20.0
Noninterest Expense	**3,769.4**	3,470.7	3,280.6	3,135.0	2,993.8
Income before Income Taxes	**$ 1,633.9**	$ 1,517.1	$ 1,465.0	$ 1,190.2	$ 1,075.5
Provision for Income Taxes	**434.9**	484.6	491.2	378.4	344.2
Net Income	**$ 1,199.0**	$ 1,032.5	$ 973.8	$ 811.8	$ 731.3
Preferred Stock Dividends	**49.8**	23.4	23.4	9.5	—
Net Income Applicable to Common Stock	**$ 1,149.2**	$ 1,009.1	$ 950.4	$ 802.3	$ 731.3
PER COMMON SHARE					
Net Income – Basic	**$ 4.95**	$ 4.35	$ 4.03	$ 3.34	$ 3.01
– Diluted	**4.92**	4.32	3.99	3.32	2.99
Cash Dividends Declared Per Common Share	**1.60**	1.48	1.41	1.30	1.23
Book Value – End of Period (EOP)	**41.28**	38.88	36.27	34.54	33.34
Market Price – EOP	**99.89**	89.05	72.09	67.40	61.89
SELECTED BALANCE SHEET DATA (In Millions)					
At Year End:					
Earning Assets	**$ 129,656.6**	$ 115,446.4	$ 106,848.9	$ 100,889.8	$ 93,367.2
Total Assets	**138,590.5**	123,926.9	116,749.6	109,946.5	102,947.3
Deposits	**112,390.8**	101,651.7	96,868.9	90,757.0	84,098.1
Senior Notes	**1,497.3**	1,496.6	1,497.4	1,497.0	1,996.6
Long-Term Debt	**1,449.5**	1,330.9	1,371.3	1,615.1	1,709.2
Stockholders' Equity	**10,216.2**	9,770.4	8,705.9	8,448.9	7,912.0
Average Balances:					
Earning Assets	**$ 111,178.3**	$ 107,037.6	$ 102,249.8	$ 95,947.5	$ 85,628.3
Total Assets	**119,607.4**	115,570.3	110,715.1	104,083.5	94,857.7
Deposits	**96,504.8**	93,613.9	90,768.0	84,656.6	75,596.3
Senior Notes	**1,496.9**	1,496.6	1,497.2	1,661.2	2,247.0
Long-Term Debt	**1,519.4**	1,392.4	1,426.4	1,654.9	1,211.7
Stockholders' Equity	**9,980.6**	9,085.3	8,624.5	8,166.5	7,667.7
CLIENT ASSETS (In Billions)					
Assets Under Custody/Administration	**$ 10,722.6**	$ 8,541.3	$ 7,797.0	N/A	N/A
Assets Under Custody	**8,084.6**	6,720.5	6,072.1	5,968.8	5,575.7
Assets Under Management	**1,161.0**	942.4	875.3	934.1	884.5
SELECTED RATIOS AND METRICS					
Financial Ratios and Metrics:					
Return on Average Common Equity	**12.6%**	11.9%	11.5%	10.0%	9.5%
Return on Average Assets	**1.00%**	0.89%	0.88%	0.78%	0.77%
Dividend Payout Ratio	**32.5**	34.3	35.3	39.2	41.1
Net Interest Margin (*)	**1.33**	1.18	1.07	1.08	1.13
Average Stockholders' Equity to Average Assets	**8.3**	7.9	7.8	7.8	8.1

Capital Ratios:	**DECEMBER 31, 2017**		DECEMBER 31, 2016		DECEMBER 31, 2015		December 31, 2014		December 31, 2013 (d)
	ADVANCED APPROACH (a)	**STANDARDIZED APPROACH (b)**	ADVANCED APPROACH (a)	STANDARDIZED APPROACH (b)	ADVANCED APPROACH (a)	STANDARDIZED APPROACH (b)	ADVANCED APPROACH (a)	STANDARDIZED APPROACH (b)	
Common Equity Tier 1	**13.5%**	**12.6%**	12.4%	11.8%	11.9%	10.8%	12.4%	12.5%	12.9%
Tier 1	**14.8**	**13.8**	13.7	12.9	12.5	11.4	13.2	13.3	13.4
Total	**16.7**	**15.8**	15.1	14.5	14.2	13.2	15.0	15.5	15.8
Tier 1 Leverage	**7.8**	**7.8**	8.0	8.0	7.5	7.5	N/A	7.8	7.9
Supplementary Leverage (c)	**6.8**	**N/A**	6.8	N/A	6.2	N/A	N/A	N/A	N/A

(*) Net interest margin is presented on a fully taxable equivalent (FTE) basis, a non-generally-accepted-accounting-principle (GAAP) financial measure that facilitates the analysis of asset yields. The net interest margin on a GAAP basis and a reconciliation of net interest income on a GAAP basis to net interest income on an FTE basis are presented on page 86.
(a) Effective with the second quarter of 2014, Northern Trust exited its parallel run. Accordingly, the December 31, 2017 , 2016 , 2015 , and 2014 capital balances and ratios are calculated in accordance with the Basel III Advanced Approach final rules released by the Federal Reserve Board on July 2, 2013.
(b) In 2014, Standardized Approach risk-weighted assets were determined by Basel I requirements. Effective with the first quarter of 2015, risk-weighted assets are calculated in accordance with the Basel III Standardized Approach final rules.
(c) Effective with the first quarter of 2015, advanced approaches banking organizations must calculate and report their supplementary leverage ratio. Effective January 1, 2018, the Corporation will be subject to a minimum supplementary leverage ratio of 3 percent.
(d) The December 31, 2013 ratios are calculated in accordance with Basel I requirements.

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

BUSINESS OVERVIEW

Northern Trust Corporation (Corporation) is a financial holding company that is a leading provider of asset servicing, fund administration, asset management, fiduciary and banking solutions for corporations, institutions, families and individuals worldwide. Northern Trust focuses on managing and servicing client assets through its two client-focused reporting segments: Corporate & Institutional Services (C&IS) and Wealth Management. Asset management and related services are provided to C&IS and Wealth Management clients primarily by the Asset Management business.

The Corporation conducts business through various U.S. and non-U.S. subsidiaries, including The Northern Trust Company (Bank). The Corporation was originally formed as a holding company for the Bank in 1971. The Corporation has a network of offices in 19 U.S. states, Washington, D.C., and 23 international locations in Canada, Europe, the Middle East, and the Asia-Pacific region. Except where the context otherwise requires, the term "Northern Trust" refers to Northern Trust Corporation and its subsidiaries on a consolidated basis.

FINANCIAL OVERVIEW

Net income in 2017 totaled $1.20 billion , up $166.5 million or 16% , from $1.03 billion in 2016 . Earnings per diluted common share totaled $4.92 in 2017 compared to $4.32 in 2016 . Return on average common equity improved to 12.6% in 2017 from 11.9% in 2016 .

Revenue increased 8% to $5.38 billion in 2017 from $4.96 billion in the prior year, driven by a 10% increase in trust, investment and other servicing fees and a 16% increase in net interest income, partially offset by a 35% decline in other operating income.

Client assets under custody/administration (AUC/A) and under custody, a component of AUC/A, were up 26% and 20% , respectively, as of December 31, 2017 as compared to December 31, 2016 levels. Client assets under management were up 23% as of December 31, 2017 as compared to December 31, 2016 levels. As of December 31, 2017 , AUC/A increased to $10.72 trillion from $8.54 trillion in 2016 , including an increase of $568.1 billion related to the acquisition and integration of UBS Asset Management's fund administration units in Luxembourg and Switzerland ("the UBS acquisition"). As of December 31, 2017 , client assets under custody increased to $8.08 trillion from $6.72 trillion , and included $4.94 trillion of global custody assets, up 24% from $3.97 trillion in 2016 . As of December 31, 2017 , client assets under management increased to $1.16 trillion from $942.4 billion in 2016 .

Trust, investment and other servicing fees, which represent the largest component of total revenue, increased 10% to $3.43 billion , from $3.11 billion in 2016 , primarily due to favorable markets, new business, and revenue associated with the UBS acquisition.

Foreign exchange trading income of $209.9 million decreased 11% from $236.6 million in 2016 , primarily resulting from lower volatility and client volumes.

Other operating income was $157.5 million in 2017 , down 35% from $241.2 million in the prior year, primarily due to income recorded in the prior year from the sale of Visa Inc. Class B common shares partially offset by impairment charges associated with our leasing portfolio.

Net interest income on a fully taxable equivalent (FTE) basis in 2017 was $1.48 billion , an increase of $215.0 million , or 17% , from $1.26 billion in 2016 , due to higher levels of average earning assets and an increased net interest margin. The net interest margin on an FTE basis increased to 1.33% in 2017 from 1.18% in 2016 primarily due to an increase in short-term interest rates.

The provision for credit losses in 2017 was a credit of $28.0 million , reflecting continued improvement in the credit quality of the Corporation ' s loan portfolio and reductions in outstanding loans and undrawn loan commitments and standby letters of credit. The provision for credit losses in 2016 was a credit of $26.0 million , which reflected improved credit quality across the portfolio. Loans and leases as of December 31, 2017 totaled $32.6 billion , down 4% from $33.8 billion in 2016 . Net charge-offs for the year ended December 31, 2017 were $10.2 million , down from $15.2 million in 2016 . Nonperforming assets as of December 31, 2017 were $155.3 million , a decline from $165.4 million in 2016 .

Noninterest expense totaled $3.77 billion in 2017 , up $298.7 million , or 9% , from $3.47 billion in the prior year, reflecting increased compensation, increased equipment and software expense, and increased outside services, including current-year severance-related charges, expense associated with the UBS acquisition, and a one-time employee cash bonus recorded in connection with the Tax Cuts and Jobs Act. The prior year included charges relating to certain securities lending litigation, contractual modifications associated with certain existing asset servicing clients, and severance and other personnel related charges.

The provision for income taxes in 2017 totaled $434.9 million , representing an effective tax rate of 26.6% . The provision for income taxes in 2016 totaled $484.6 million , representing an effective tax rate of 31.9% . The current year includes a net benefit to the tax provision attributable to the Tax Cuts and Jobs Act, an increased income tax benefit derived from vesting of restricted stock units and stock option exercises, and Federal and State research tax credits related to the Corporation's technology spend between 2013 and 2017, each of which resulted in a reduction of the effective tax rate.

Northern Trust continued to maintain a strong capital position during 2017 , with all capital ratios exceeding those required for classification as "well-capitalized" under federal bank regulatory capital requirements. Total stockholders' equity was $10.2 billion at year-end, up 5% from $9.8 billion in 2016 . During the year ended December 31, 2017 , Northern Trust increased its quarterly common stock dividend to $0.42 per share and repurchased 5.8 million shares of common stock, returning $895.6 million in capital to common stockholders, compared to $754.7 million in 2016 .

CONSOLIDATED RESULTS OF OPERATIONS

Revenue

Northern Trust generates the majority of its revenue from noninterest income that primarily consists of trust, investment and other servicing fees. Net interest income comprises the remainder of revenue and consists of interest income generated by earning assets, net of interest expense on deposits and borrowed funds.

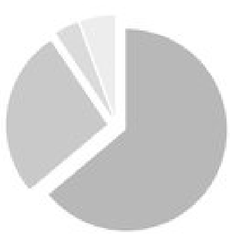
Revenue in 2017 was $5.38 billion , an increase of 8% from $4.96 billion in 2016 . Noninterest income represented 73% of total revenue in 2017 compared to 75% in 2016 , and totaled $3.95 billion , up 6% from $3.73 billion in 2016 .

The current-year increase in noninterest income primarily reflected higher trust, investment and other servicing fees, including revenue associated with the UBS acquisition, partially offset by lower other operating income, primarily due to income recorded in the prior year from the sale of Visa Inc. Class B common shares partially offset by impairment charges associated with our leasing portfolio, and lower foreign exchange trading income. Trust, investment and other servicing fees totaled $3.43 billion in 2017 , up $326.2 million , or 10% , from $3.11 billion in 2016 , primarily due to favorable markets, new business, and revenue associated with the UBS acquisition of $21.1 million . Foreign exchange trading income in 2017 totaled $209.9 million , down $26.7 million , or 11% , compared with $236.6 million in 2016 , primarily resulting from lower volatility and client volumes. Other operating income was $157.5 million in 2017 , down 35% from $241.2 million in the prior year. The prior year included the sale of 1.1 million Visa Inc. Class B common shares, net of the valuation adjustment to existing swap agreements, for a net gain of $118.2 million , partially offset by impairment charges and the loss on sale related to the decision to exit a portion of a non-strategic loan and lease portfolio and impairment charges related to the residual value of certain aircraft and rail cars of $18.9 million .

Net interest income on an FTE basis in 2017 was $1.48 billion , an increase of $215.0 million , or 17% , from $1.26 billion in 2016 , due to higher levels of average earning assets and an increased net interest margin. Average earning assets increased $4.1 billion , or 4% , in 2017 , reflecting higher levels of securities and short-term interest bearing deposits, partially offset by a decrease in loans and leases. The net interest margin on an FTE basis increased to 1.33% in 2017 from 1.18% in 2016 , primarily due to an increase in short-term interest rates.

Additional information regarding Northern Trust's revenue by type is provided below.

2017 TOTAL REVENUE OF $5.38 BILLION



64% - Trust, Investment and Other Servicing Fees

27% - Net Interest Income

4% - Foreign Exchange Trading Income

5% - Other Noninterest Income

Noninterest Income

The components of noninterest income, and a discussion of significant changes during 2017 and 2016 , are provided below.

TABLE 3: NONINTEREST INCOME

	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
($ In Millions)	**2017**	2016	2015	**2017 / 2016**	2016 / 2015
Trust, Investment and Other Servicing Fees	**$ 3,434.3**	$ 3,108.1	$ 2,980.5	**10 %**	4 %
Foreign Exchange Trading Income	**209.9**	236.6	261.8	**(11)**	(10)
Treasury Management Fees	**56.4**	62.8	64.7	**(10)**	(3)
Security Commissions and Trading Income	**89.6**	81.4	78.7	**10**	3
Other Operating Income	**157.5**	241.2	247.1	**(35)**	(2)
Investment Security Losses, net	**(1.6)**	(3.2)	(0.3)	**(50)**	N/M
Total Noninterest Income	**$ 3,946.1**	$ 3,726.9	$ 3,632.5	**6 %**	3 %

Trust, Investment and Other Servicing Fees

Trust, investment and other servicing fees were $3.43 billion in 2017 compared with $3.11 billion in 2016 . Trust, investment and other servicing fees are based primarily on the market value of assets held in custody, managed and serviced; the volume of transactions; securities lending volume and spreads; and fees for other services rendered. Certain market value calculations on which fees are based are performed on a monthly or quarterly basis in arrears. Based on an analysis of historical trends and current asset and product mix, management estimates that a 10% rise or fall in overall equity markets would cause a corresponding increase or decrease in Northern Trust's trust, investment and other servicing fees of approximately 3% and in total revenue of approximately 2%. For a more detailed discussion of 2017 trust, investment and other servicing fees, refer to the "Reporting Segments and Related Information" section.

When considering the impact of markets on the Corporation's results, the following tables present selected market indices and the percentage changes year over year.

TABLE 4: EQUITY MARKET INDICES

	DAILY AVERAGES			YEAR-END		
	2017	2016	**CHANGE**	**2017**	2016	**CHANGE**
S&P 500	**2,448**	2,094	**17%**	**2,674**	2,239	**19%**
MSCI EAFE (U.S. dollars)	**1,886**	1,646	**15**	**2,051**	1,684	**22**
MSCI EAFE (local currency)	**1,105**	956	**16**	**1,164**	1,037	**12**

TABLE 5: FIXED INCOME MARKET INDICES

	AS OF DECEMBER 31,		
	2017	2016	**CHANGE**
Barclays Capital U.S. Aggregate Bond Index	**2,046**	1,976	**4%**
Barclays Capital Global Aggregate Bond Index	**485**	451	**7**

ASSETS UNDER CUSTODY/ADMINISTRATION AND ASSETS UNDER MANAGEMENT

AUC/A and assets under management form the primary drivers of our trust, investment and other servicing fees. For the purposes of disclosing AUC/A, to the extent that both custody and administration services are provided, the value of the assets is included only once. At December 31, 2017 , AUC/A were $10.72 trillion , up 26% from $8.54 trillion at December 31, 2016 . The increase in AUC/A primarily reflected favorable markets, client assets obtained in the UBS acquisition, net inflows, and the favorable impact from foreign currency translation. Assets under custody, a component of AUC/A, were $8.08 trillion at December 31, 2017 , up 20% from $6.72 trillion at December 31, 2016 , and included $4.94 trillion of global custody assets, compared to $3.97 trillion at December 31, 2016 . The increase in assets under custody primarily reflected favorable markets, net inflows, and the favorable impact from foreign currency translation. Assets under management totaled $1.16 trillion , up 23% from $942.4 billion at the end of 2016 . The increase primarily reflected the favorable impact of markets and net inflows.

AUC/A by reporting segment were as follows:

TABLE 6: ASSETS UNDER CUSTODY/ADMINISTRATION BY REPORTING SEGMENT

	DECEMBER 31,			CHANGE	
($ In Billions)	**2017**	2016	2015	**2017 /2016**	**2016 /2015**
Corporate & Institutional	**$ 10,066.8**	$ 7,987.0	$ 7,279.7	**26%**	10%
Wealth Management	**655.8**	554.3	517.3	**18**	7
Total Assets Under Custody/Administration	**$ 10,722.6**	$ 8,541.3	$ 7,797.0	**26%**	10%

Assets under custody by reporting segment were as follows:

TABLE 7: ASSETS UNDER CUSTODY BY REPORTING SEGMENT

	DECEMBER 31,					CHANGE		FIVE-YEAR COMPOUND GROWTH RATE
($ In Billions)	**2017**	2016	2015	2014	2013	**2017 /2016**	2016 / 2015	
Corporate & Institutional	**$ 7,439.1**	$ 6,176.9	$ 5,565.8	$ 5,453.1	$ 5,079.7	**20%**	11%	**11%**
Wealth Management	**645.5**	543.6	506.3	515.7	496.0	**19**	7	**8**
Total Assets Under Custody	**$ 8,084.6**	$ 6,720.5	$ 6,072.1	$ 5,968.8	$ 5,575.7	**20%**	11%	**11%**

Assets under custody were invested as follows:

TABLE 8: ASSETS UNDER CUSTODY BY INVESTMENT TYPE

	DECEMBER 31,				
	2017	2016	2015	2014	2013
Equities	**47%**	46%	44%	45%	47%
Fixed Income Securities	**35**	36	37	36	34
Cash and Other Assets	**16**	17	17	17	17
Securities Lending Collateral	**2**	1	2	2	2

Assets under management by reporting segment were as follows:

TABLE 9: ASSETS UNDER MANAGEMENT BY REPORTING SEGMENT

	DECEMBER 31,					CHANGE		FIVE-YEAR COMPOUND GROWTH RATE
($ In Billions)	**2017**	2016	2015	2014	2013	**2017 / 2016**	2016 / 2015	
Corporate & Institutional	**$ 871.2**	$ 694.0	$ 648.0	$ 709.6	$ 662.7	**26%**	7%	**9%**
Wealth Management	**289.8**	248.4	227.3	224.5	221.8	**17**	9	**8**
Total Assets Under Management	**$ 1,161.0**	$ 942.4	$ 875.3	$ 934.1	$ 884.5	**23%**	8%	**9%**

Assets under management were invested and managed as follows:

TABLE 10: ASSETS UNDER MANAGEMENT BY INVESTMENT TYPE

	DECEMBER 31,				
	2017	2016	2015	2014	2013
Equities	**51%**	51%	51%	52%	54%
Fixed Income Securities	**16**	17	17	17	17
Cash and Other Assets	**19**	20	20	18	17
Securities Lending Collateral	**14**	12	12	13	12

TABLE 11: ASSETS UNDER MANAGEMENT BY MANAGEMENT STYLE

	DECEMBER 31,				
	2017	2016	2015	2014	2013
Index	**46%**	47%	47%	49%	51%
Active	**41**	40	40	39	43
Multi-Manager	**5**	5	4	6	4
Other	**8**	8	9	6	2

Foreign Exchange Trading Income

Northern Trust provides foreign exchange services in the normal course of business as an integral part of its global custody services. Active management of currency positions, within conservative limits, also contributes to foreign exchange trading income. Foreign exchange trading income totaled $209.9 million in 2017 compared with $236.6 million in the prior year. The decrease of $26.7 million , or 11% , was primarily due to lower volatility and client volumes in 2017 .

Treasury Management Fees

Treasury management fees, generated from cash and treasury management products and services provided to clients, totaled $56.4 million in 2017 , down 10% from $62.8 million in 2016 , primarily due to lower transaction volumes.

Security Commissions and Trading Income

Security commissions and trading income is generated primarily from securities brokerage services provided by Northern Trust Securities, Inc., and totaled $89.6 million in 2017 , up 10% , or $8.2 million , from $81.4 million in 2016 , primarily due to higher core brokerage revenues.

Other Operating Income

The components of other operating income include:

TABLE 12: OTHER OPERATING INCOME

	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
($ In Millions)	**2017**	2016	2015	**2017 / 2016**	2016 / 2015
Loan Service Fees	**$ 50.7**	$ 56.6	$ 59.1	**(10)%**	(4)%
Banking Service Fees	**48.6**	50.6	48.2	**(4)**	5
Other Income	**58.2**	134.0	139.8	**(57)**	(4)
Total Other Operating Income	**$ 157.5**	$ 241.2	$ 247.1	**(35)%**	(2)%

Loan service fees totaled $50.7 million in 2017 , down $5.9 million or 10% , from $56.6 million in 2016 , primarily due to lower loan-related commitment fees in the current year. Other income totaled $58.2 million in 2017 , down $75.8 million or 57% , from $134.0 million in 2016 . The prior-year other income included the gain on the sale of 1.1 million Visa Inc. Class B common shares, net of the valuation adjustment to existing swap agreements, totaling $118.2 million , offset by impairment charges and the loss on sale related to the decision to exit a portion of a non-strategic loan and lease portfolio, as well as impairment charges related to the residual value of certain aircraft and rail cars of $18.9 million .

Investment Security Losses, Net

Net investment security losses totaled $1.6 million and $3.2 million in 2017 and 2016 , respectively. Losses in 2017 and 2016 include $0.2 million and $3.7 million of charges related to the other-than-temporary impairment (OTTI) of certain Community Reinvestment Act (CRA) eligible held-to-maturity securities, respectively.

NONINTEREST INCOME – 2016 COMPARED WITH 2015

Trust, investment and other servicing fees were $3.11 billion in 2016 , up 4% from $2.98 billion in 2015 , primarily due to new business and lower money market mutual fund fee waivers, partially offset by the unfavorable impact of movements in foreign exchange rates and markets. Foreign exchange trading income decreased 10% to $236.6 million in 2016 from $261.8 million in 2015 , attributable to lower client volumes in 2016 .

Other operating income totaled $241.2 million in 2016 , a decrease of 2% from $247.1 million in 2015 . Other operating income in 2016 included the gain on the sale of 1.1 million Visa Inc. Class B common shares, net of the valuation adjustment to existing swap agreements, totaling $118.2 million , offset by impairment charges and the loss on sale related to the decision to exit a portion of a non-strategic loan and lease portfolio, as well as impairment charges related to the residual value of certain aircraft and rail cars of $18.9 million . Other income in 2015 included a $99.9 million net gain on the sale of 1.0 million Visa Class B common shares.

Net investment security losses totaled $3.2 million and $0.3 million in 2016 and 2015 , respectively. There were $3.7 million of charges in 2016 related to the OTTI of certain CRA eligible held-to-maturity securities. There were no OTTI losses in 2015 .

Net Interest Income

Net interest income stated on an FTE basis is a non-generally-accepted-accounting-principle (GAAP) financial measure that facilitates the analysis of asset yields. Management believes an FTE presentation provides a clearer indication of net interest margins for comparative purposes. When adjusted to an FTE basis, yields on taxable, nontaxable, and partially taxable assets are comparable; however, the adjustment to an FTE basis has no impact on net income. A reconciliation of net interest income on a GAAP basis to net interest income on an FTE basis is provided on page 86.

An analysis of net interest income on an FTE basis, major balance sheet components impacting net interest income and related ratios are provided below.

TABLE 13: ANALYSIS OF NET INTEREST INCOME (FTE)

	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
($ In Millions)	**2017**	2016	2015	**2017 / 2016**	2016 / 2015
Interest Income – GAAP	**$ 1,769.4**	$ 1,416.9	$ 1,224.0	**25 %**	16 %
FTE Adjustment	**45.8**	25.1	25.3	**82**	(1)
Interest Income – FTE	**1,815.2**	1,442.0	1,249.3	**26**	15
Interest Expense	**340.2**	182.0	153.9	**87**	18
Net Interest Income – FTE Adjusted	**1,475.0**	1,260.0	1,095.4	**17**	15
Net Interest Income – GAAP	**1,429.2**	1,234.9	1,070.1	**16**	15
AVERAGE BALANCE					
Earning Assets	**$ 111,178.3**	$ 107,037.6	$ 102,249.8	**4 %**	5 %
Interest-Related Funds	**83,422.0**	76,886.0	74,252.7	**9**	4
Net Noninterest-Related Funds	**27,756.3**	30,151.6	27,997.1	**(8)**	8
				CHANGE IN PERCENTAGE	
AVERAGE RATE					
Earning Assets	**1.63%**	1.35%	1.22%	**0.28**	0.13
Interest-Related Funds	**0.41**	0.24	0.21	**0.17**	0.03
Interest Rate Spread	**1.22**	1.11	1.01	**0.11**	0.10
Total Source of Funds	**0.31**	0.17	0.15	**0.14**	0.02
Net Interest Margin – GAAP	**1.29%**	1.15%	1.05%	**0.14**	0.10
Net Interest Margin – FTE	**1.33%**	1.18%	1.07%	**0.15**	0.11

Refer to pages 163 and 164 for additional analysis of net interest income.

Net interest income is defined as the total of interest income and amortized fees on earning assets, less interest expense on deposits and borrowed funds, adjusted for the impact of interest-related hedging activity. Earning assets – including federal funds sold, securities purchased under agreements to resell, interest-bearing due from banks and interest-bearing deposits with banks, Federal Reserve and other central bank deposits, securities, and loans and leases – are financed by a large base of interest-bearing funds that include client deposits, short-term borrowings, senior notes and long-term debt. Earning assets also are funded by net noninterest-related funds, which include demand deposits, and stockholders' equity, reduced by nonearning assets such as noninterest-bearing cash and due from banks, items in process of collection, and buildings and equipment. Net interest income is subject to variations in the level and mix of earning assets and interest-bearing funds and their relative sensitivity to interest rates. In addition, the levels of nonperforming assets and client compensating deposit balances used to pay for services impact net interest income.

Net interest income in 2017 was $1.43 billion , up $194.3 million , or 16% , from $1.23 billion in 2016 . Net interest income on an FTE basis for 2017 was $1.48 billion , an increase of $215.0 million , or 17% , from $1.26 billion in 2016 , due to higher levels of average earning assets and an increased net interest margin. Average earning assets increased $4.1 billion , or 4% , to $111.2 billion from $107.0 billion in 2016 , primarily reflecting higher levels of securities and short-term interest-bearing deposits, partially offset by reductions in loans and leases. The net interest margin in 2017 was 1.29% , up from 1.15% in 2016 . The net interest margin on an FTE basis in 2017 was 1.33% , up from 1.18% in 2016 .

Growth in average earning assets primarily reflected higher levels of Federal Reserve and other bank deposits and securities, partially offset by reductions in interest-bearing due from and deposits with banks and loans and leases. Federal Reserve and other bank deposits averaged $23.9 billion , an increase of $3.5 billion or 17% , from $20.4 billion in 2016 . Securities, inclusive of Federal Reserve and Federal Home Loan Bank stock and certain community development investments which are classified in other assets in the consolidated balance sheets, averaged $44.7 billion , an increase of $2.7 billion , or 6% , from $42.0 billion in 2016 . Interest-bearing due from and deposits with banks averaged $7.1 billion in 2017 , down $1.6 billion , or 18% , from $8.7 billion in 2016 . Loans and leases averaged $33.6 billion , a decrease of $478.3 million , or 1% , from $34.0 billion in 2016 .

The increase in average earning assets was primarily funded by higher levels of interest-bearing deposits and short-term borrowings, partially offset by reductions of demand and other noninterest-bearing deposits. Average interest-bearing deposits increased $6.0 billion , or 9% , to $73.4 billion in 2017 from $67.4 billion in 2016 . Average short-term borrowings increased $359.0 million , or 6% , to $6.7 billion in 2017 from $6.3 billion in 2016 . Average demand and other noninterest-bearing deposits decreased $3.1 billion , or 12% , to $23.1 billion in 2017 from $26.2 billion in 2016 .

Stockholders' equity averaged $10.0 billion in 2017 , compared with $9.1 billion in 2016 . The increase of $895.3 million , or 10% , was attributable to current-year earnings, partially offset by the repurchase of common stock pursuant to the Corporation's share repurchase program and dividend declarations. During the year ended December 31, 2017 , the Corporation increased its quarterly common stock dividend by 11% to $0.42 per share and repurchased 5.8 million shares, returning $895.6 million in capital to common stockholders, compared to $754.7 million in 2016 .

Under the Corporation's 2017 Capital Plan, which was reviewed without objection by the Federal Reserve, the Corporation may repurchase up to $454.6 million of common stock after December 31, 2017 , through June 2018.

For additional analysis of average balances and interest rate changes affecting net interest income, refer to the Average Balance Sheets with Analysis of Net Interest Income included in "Supplemental Item – Selected Statistical and Supplemental Financial Data."

NET INTEREST INCOME – 2016 COMPARED WITH 2015

Net interest income on an FTE basis increased 15% to $1.26 billion in 2016 from $1.10 billion in 2015 , reflecting higher levels of earning assets and an increased net interest margin. The net interest margin on an FTE basis in 2016 was 1.18% , up from 1.07% in 2015 . The net interest margin on an FTE basis in 2015 reflects the impact of a $17.8 million impairment of the residual value of certain assets under leveraged lease agreements.

Average earning assets increased $4.8 billion , or 5% , to $107.0 billion in 2016 from $102.2 billion in 2015 . Growth in average earning assets primarily reflected higher levels of securities and loans and leases, partially offset by a decrease in interest-bearing due from and deposits with banks.

Stockholders' equity averaged $9.1 billion and $8.6 billion in 2016 and 2015 , respectively. The increase in 2016 reflected retained earnings and the issuance of our Series D preferred stock, partially offset by the repurchase of common stock pursuant to the Corporation's share repurchase program and dividend declarations.

Provision for Credit Losses

The provision for credit losses was a credit of $28.0 million in 2017 compared with a credit provision of $26.0 million in 2016 , and a credit provision of $43.0 million in 2015 . The current-year provision primarily reflected continued improvement in the credit quality of the Corporation's loan portfolio and reductions in outstanding loans and undrawn loan commitments and standby letters of credit. Nonperforming assets at December 31, 2017 decreased 6% from the prior year-end. Residential real estate, commercial, and commercial real estate loans accounted for 77% , 17% , and 6% respectively, of nonperforming loans and leases at December 31, 2017 . For further discussion of the allowance and provision for credit losses for 2017 , 2016 , and 2015 , refer to the "Asset Quality" section.

Noninterest Expense

Noninterest expense for 2017 totaled $3.77 billion , up $298.7 million , or 9% , from $3.47 billion in 2016 , primarily reflecting increased compensation, equipment and software expense, and outside services, including current-year severance-related charges of $45.4 million , expense associated with the UBS acquisition of $24.2 million , and a one-time employee cash bonus of $12.9 million recorded in connection with the Tax Cuts and Jobs Act. The prior year included charges relating to certain securities lending litigation of $50.0 million , charges related to contractual modifications associated with existing C&IS clients of $18.6 million , and severance and other personnel related charges of $17.5 million .

The components of noninterest expense and a discussion of significant changes during 2017 and 2016 are provided below.

TABLE 14: NONINTEREST EXPENSE

	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
($ In Millions)	**2017**	2016	2015	**2017 / 2016**	2016 / 2015
Compensation	**$ 1,733.7**	$ 1,541.1	$ 1,443.3	**13 %**	**7%**
Employee Benefits	**319.9**	293.3	285.3	**9**	**3**
Outside Services	**668.4**	627.1	595.7	**7**	**5**
Equipment and Software	**524.0**	467.4	454.8	**12**	**3**
Occupancy	**191.8**	177.4	173.5	**8**	**2**
Other Operating Expense	**331.6**	364.4	328.0	**(9)**	**11**
Total Noninterest Expense	**$ 3,769.4**	$ 3,470.7	$ 3,280.6	**9 %**	**6%**

Compensation

Compensation expense, the largest component of noninterest expense, totaled $1.73 billion in 2017 , up $192.6 million , or 13% , compared to $1.54 billion in 2016 , reflecting higher salary expense, performance-based incentive compensation, severance-related charges, a one-time employee cash bonus recorded in connection with the Tax Cuts and Jobs Act, and expense associated with the UBS acquisition. The current year included $39.6 million in severance-related charges, compared to $13.0 million in the prior year. The current year also included $12.0 million in compensation expense related to a one-time employee cash bonus recorded in connection with the Tax Cuts and Jobs Act. The increase in salary expense was driven by staff growth and base-pay adjustments. Staff on a full-time equivalent basis totaled approximately 18,100 at December 31, 2017 , up 6% from approximately 17,100 at December 31, 2016 .

Employee Benefits

Employee benefits expense totaled $319.9 million in 2017 , up $26.6 million , or 9% , from $293.3 million in 2016 reflecting increases in payroll taxes, medical expense, severance-related charges, expense associated with the UBS acquisition, and payroll taxes on a one-time employee cash bonus recorded in connection with the Tax Cuts and Jobs Act. The current year included $4.2 million in severance-related charges, compared to $1.5 million in the prior year.

Outside Services

Outside services expense totaled $668.4 million in 2017 , up $41.3 million , or 7% , from $627.1 million in 2016 , reflecting an increase in technical services, subcustodian expense, expense associated with the UBS acquisition, and severance-related charges.

Equipment and Software

Equipment and software expense, comprised of depreciation and amortization, rental, and maintenance costs, increased $56.6 million , or 12% , to $524.0 million in 2017 compared to $467.4 million in 2016 , reflecting increased software amortization, software support costs, computer maintenance and rental costs, and expense associated with the UBS acquisition.

Occupancy
Occupancy expense totaled $191.8 million in 2017 , up $14.4 million , or 8% , from $177.4 million in 2016 , primarily reflecting accelerated depreciation expense related to a previously-announced facility exit, higher rent expense, and higher costs associated with the UBS acquisition.

Other Operating Expense
Other operating expense in 2017 totaled $331.6 million , down $32.8 million , or 9% , from $364.4 million in 2016 . The components of other operating expense are as follows:

TABLE 15: OTHER OPERATING EXPENSE

	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
($ In Millions)	**2017**	2016	2015	**2017 / 2016**	2016 / 2015
Business Promotion	**$ 95.4**	$ 83.6	$ 85.1	**14 %**	(2)%
FDIC Insurance Premiums	**34.7**	31.7	25.2	**9**	26
Staff Related	**42.8**	43.0	40.5	**(1)**	6
Other Intangibles Amortization	**11.4**	8.8	10.9	**30**	(19)
Other Expenses	**147.3**	197.3	166.3	**(25)**	19
Total Other Operating Expense	**$ 331.6**	$ 364.4	$ 328.0	**(9)%**	11 %

Business promotion expense increased $11.8 million , or 14% compared to the prior year, primarily related to higher costs associated with the Northern Trust-sponsored PGA TOUR golf tournament. Other expenses decreased $50.0 million , or 25% compared to the prior year. Other expenses in 2016 included charges in connection with an agreement to settle certain securities lending litigation of $50.0 million and charges related to contractual modifications associated with existing C&IS clients of $18.6 million . Other expenses in in the current year reflect higher charges associated with account servicing activities, expense associated with supplemental compensation plans, costs associated with the UBS acquisition, and increases in various other operating expense categories.

NONINTEREST EXPENSE – 2016 COMPARED WITH 2015
Noninterest expense in 2016 totaled $3.47 billion , up 6% from $3.28 billion in 2015 . Results for 2016 included charges relating to certain securities lending litigation of $50.0 million , contractual modifications associated with certain existing asset servicing clients of $18.6 million , and severance and other personnel related charges of $17.5 million . Results for 2015 included a $45.8 million charge related to voluntary cash contributions to certain constant dollar NAV funds.

Compensation expense increased 7% to $1.54 billion in 2016 from $1.44 billion in 2015 , reflecting severance-related charges of $13.0 million as well as higher salary expenses and performance-based incentive compensation.

Employee benefits expense totaled $293.3 million in 2016 , up 3% from $285.3 million in 2015 , primarily reflecting higher medical expense and payroll taxes, partially offset by a decrease in retirement-related expense.

Outside services expense totaled $627.1 million in 2016 , up 5% from $595.7 million in 2015 , primarily reflecting increased technical services and consulting services, partially offset by a reduction in third-party advisory fees.

Equipment and software expense increased 3% to $467.4 million in 2016 compared to $454.8 million in 2015 , primarily related to increased software amortization, partially offset by a decrease in software dispositions.

Occupancy expense for 2016 was $177.4 million , up 2% from $173.5 million in 2015 , primarily related to an early termination penalty recorded in 2016 and higher rent expense.

Other operating expense totaled $364.4 million in 2016 , up 11% from $328.0 million in 2015 , reflecting charges relating to certain securities lending litigation of $50.0 million and contractual modifications associated with certain existing asset servicing clients of $18.6 million , as well as increases in FDIC deposit protection expense and other miscellaneous expense categories. Other operating expense in 2015 included a $45.8 million charge related to voluntary cash contributions to certain constant dollar NAV funds.

Provision for Income Taxes
Provisions for income tax and effective tax rates are impacted by levels of pre-tax income, tax rates, and the impact of certain non-U.S. subsidiaries whose earnings are reinvested indefinitely outside the United States, as well as nonrecurring items such as the resolution of tax matters and changes in income tax rates and tax laws. The 2017 provision for income taxes was $434.9 million , representing an effective rate of 26.6% . This compares with a provision for income taxes of $484.6 million and an effective rate of 31.9% in 2016 .

The current-year tax provision includes a net benefit attributable to the Tax Cuts and Jobs Act of $53.1 million as outlined below, an increased income tax benefit derived from the vesting of restricted stock units and stock option exercises, and Federal and State research tax credits of $20.9 million , $17.6 million of which were recognized related to the Corporation's technology spend between 2013 and 2016, each resulting in a reduction of the effective tax rate.

The Tax Cuts and Jobs Act was enacted on December 22, 2017. The Act reduces the U.S. federal corporate tax rate from 35% to 21%. It also requires companies to pay a mandatory deemed repatriation tax on earnings of certain foreign subsidiaries that were previously tax deferred. At December 31, 2017 , Northern Trust has made a reasonable estimate as to the impact of the Tax Cuts and Jobs Act as follows:

TABLE 16: IMPACT OF TAX CUTS AND JOBS ACT

(In Millions)		2017
Federal Taxes on Mandatory Deemed Repatriation	$	**150.0**
Impact Related to Federal Deferred Taxes		**(210.0)**
Other Adjustments		**6.9**
Provision (Benefit) for Income Taxes	$	**(53.1)**

The amounts related to federal taxes on mandatory deemed repatriation and certain other adjustments are considered provisional as of December 31, 2017 , as Northern Trust did not have the necessary information available to complete its accounting for the change in tax law and as such has provided a reasonable estimate. Northern Trust will continue to refine the related calculations as additional analyses are completed. In addition, these provisional amounts may require adjustment based on an evolving understanding of the new tax law and the issuance of guidance by the Internal Revenue Service (IRS). As a result of the changes in U.S. tax law, Northern Trust expects its effective tax rate to be approximately 23% to 24% in 2018.

The income tax provision for 2017 reflects reductions totaling $50.0 million related to certain non-U.S. subsidiaries whose earnings are being reinvested indefinitely outside of the United States. As a result of the Tax Cuts and Jobs Act being enacted on December 22, 2017, these earnings and the earnings from prior years which have been reinvested indefinitely outside of the United States are deemed to have been repatriated to the United States and subject to a repatriation tax. Northern Trust's repatriation tax has been estimated to be $150.0 million and recorded as an income tax provision. The repatriation tax will be paid in installments over eight years as permitted under U.S. income tax laws.

The income tax provision of $484.6 million for 2016 reflects reductions totaling $50.1 million related to certain non-U.S. subsidiaries whose earnings were reinvested indefinitely outside of the United States. The 2015 income tax provision of $491.2 million represented an effective tax rate of 33.5% , and reflects reductions of $43.6 million related to non-U.S. subsidiaries whose earnings were reinvested indefinitely outside the United States.

REPORTING SEGMENTS AND RELATED INFORMATION

Northern Trust is organized around its two client-focused reporting segments: C&IS and Wealth Management. Asset management and related services are provided to C&IS and Wealth Management clients primarily by the Asset Management business. The revenue and expenses of Asset Management and certain other support functions are allocated fully to C&IS and Wealth Management. Income and expense associated with the Corporation's and the Bank's wholesale funding activities and investment portfolios, as well as certain corporate-based expense, executive level compensation and nonrecurring items are not allocated to C&IS and Wealth Management, and are reported in Northern Trust's third reporting segment, Treasury and Other, in the following pages.

C&IS and Wealth Management results are presented to promote a greater understanding of their financial performance. The information, presented on an internal management-reporting basis, is derived from internal accounting systems that support Northern Trust's strategic objectives and management structure. Management has developed accounting systems to allocate revenue and expense related to each segment. These systems incorporate processes for allocating assets, liabilities and equity, and the applicable interest income and expense. Equity is allocated to the reporting segments based on a variety of factors including, but not limited to, risk, regulatory considerations, and internal metrics. Allocations of capital and certain corporate expense may not be representative of levels that would be required if the segments were independent entities. The accounting policies used for management reporting are consistent with those described in Note 1, "Summary of Significant Accounting Policies," to the consolidated financial statements provided in Item 8, "Financial Statements and Supplementary Data." Transfers of income and expense items are recorded at cost; there is no consolidated profit or loss on sales or transfers between reporting segments. Northern Trust's presentations are not necessarily consistent with similar information for other financial institutions.

TABLE 17: CONSOLIDATED FINANCIAL INFORMATION

($ In Millions)	FOR THE YEAR ENDED DECEMBER 31, 2017	2016	2015	CHANGE 2017 / 2016	2016 / 2015
Noninterest Income					
Trust, Investment and Other Servicing Fees	**$ 3,434.3**	$ 3,108.1	$ 2,980.5	**10 %**	4 %
Foreign Exchange Trading Income	**209.9**	236.6	261.8	**(11)**	(10)
Other Noninterest Income	**301.9**	382.2	390.2	**(21)**	(2)
Net Interest Income (Note)	**1,475.0**	1,260.0	1,095.4	**17**	15
Revenue (Note)	**5,421.1**	4,986.9	4,727.9	**9**	5
Provision for Credit Losses	**(28.0)**	(26.0)	(43.0)	**8**	(40)
Noninterest Expense	**3,769.4**	3,470.7	3,280.6	**9**	6
Income before Income Taxes (Note)	**1,679.7**	1,542.2	1,490.3	**9**	3
Provision for Income Taxes (Note)	**480.7**	509.7	516.5	**(6)**	(1)
Net Income	**$ 1,199.0**	$ 1,032.5	$ 973.8	**16 %**	6 %
Average Assets	**$ 119,607.4**	$ 115,570.3	$ 110,715.1	**3 %**	4 %

Note: Stated on an FTE basis. The consolidated figures include $45.8 million , $25.1 million , and $25.3 million of FTE adjustments for 2017 , 2016 , and 2015 , respectively.

Corporate & Institutional Services

C&IS is a leading global provider of asset servicing and related services to corporate and public retirement funds, foundations, endowments, fund managers, insurance companies, sovereign wealth funds, and other institutional investors around the globe. Asset servicing and related services encompass a full range of capabilities including but not limited to: global custody; fund administration; investment operations outsourcing; investment management; investment risk and analytical services; employee benefit services; securities lending; foreign exchange; treasury management; brokerage services; transition management services; banking and cash management. Client relationships are managed through the Bank and the Bank's and the Corporation's other subsidiaries, including support from locations in North America, Europe, the Middle East, and the Asia-Pacific region.

The following table summarizes the results of operations of C&IS for the years ended December 31, 2017 , 2016 , and 2015 on a management-reporting basis.

TABLE 18: C&IS RESULTS OF OPERATIONS

($ In Millions)	FOR THE YEAR ENDED DECEMBER 31, 2017	2016	2015	CHANGE 2017 / 2016	2016 / 2015
Noninterest Income					
Trust, Investment and Other Servicing Fees	**$ 1,984.6**	$ 1,787.8	$ 1,696.9	**11 %**	5 %
Foreign Exchange Trading Income	**197.9**	224.4	249.4	**(12)**	(10)
Other Noninterest Income	**176.1**	147.0	170.5	**20**	(14)
Net Interest Income (Note)	**733.8**	565.0	414.4	**30**	36
Revenue (Note)	**3,092.4**	2,724.2	2,531.2	**14**	8
Provision for Credit Losses	**3.4**	1.9	(22.6)	**79**	N/M
Noninterest Expense	**2,194.5**	2,012.2	1,856.4	**9**	8
Income before Income Taxes (Note)	**894.5**	710.1	697.4	**26**	2
Provision for Income Taxes (Note)	**279.5**	212.9	212.8	**31**	—
Net Income	**$ 615.0**	$ 497.2	$ 484.6	**24 %**	3 %
Percentage of Consolidated Net Income	**51%**	48%	50%		
Average Assets	**$ 80,105.6**	$ 76,194.7	$ 73,598.4	**5 %**	4 %

Note: Stated on an FTE basis.

The 24% increase in C&IS net income in 2017 compared to 2016 primarily resulted from higher trust, investment and other servicing fees, which includes revenue associated with the UBS acquisition of $21.1 million , net interest income, and other noninterest income, partially offset by higher noninterest expense, which includes $24.2 million of higher costs associated with the UBS acquisition, and lower foreign exchange trading income. The 3% increase in C&IS net income in 2016 primarily resulted from higher net interest income and trust, investment and other servicing fees, partially offset by higher noninterest expense and provision for credit losses and lower foreign exchange trading income and other noninterest income.

C&IS Trust, Investment and Other Servicing Fees

C&IS trust, investment and other servicing fees are primarily attributable to services related to custody, fund administration, investment management, and securities lending. Custody and fund administration fees are driven primarily by values of client assets under custody/administration, transaction volumes, and number of accounts. The asset values used to calculate these fees vary depending on the individual fee arrangements negotiated with each client. Custody fees related to asset values are client specific and are priced based on quarter-end or month-end values, values at the beginning of each quarter or average values for a month or quarter. The fund administration fees that are asset-value-related are priced using month-end, quarter-end, or average daily balances. Investment management fees, which are based generally on client assets under management, are based primarily on market values throughout a period.

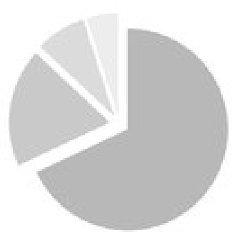
Securities lending revenue is affected by market values; the demand for securities to be lent, which drives volumes; and the interest rate spread earned on the investment of cash deposited by investment firms as collateral for securities they have borrowed. The other services fee category in C&IS includes such products as investment risk and analytical services, benefit payments, and other services. Revenue from these products is based generally on the volume of services provided or a fixed fee.

Provided below are the components of C&IS trust, investment and other servicing fees.

TABLE 19: C&IS TRUST, INVESTMENT AND OTHER SERVICING FEES

	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
($ In Millions)	**2017**	2016	2015	**2017 / 2016**	2016 / 2015
Custody and Fund Administration	**$ 1,342.1**	$ 1,182.2	$ 1,150.8	**14 %**	3%
Investment Management	**403.5**	371.8	325.2	**9**	14
Securities Lending	**96.4**	97.7	90.5	**(1)**	8
Other	**142.6**	136.1	130.4	**5**	4
Total Trust, Investment and Other Servicing Fees	**$ 1,984.6**	$ 1,787.8	$ 1,696.9	**11 %**	5%

2017 C&IS TRUST, INVESTMENT, AND OTHER SERVICING FEES



68% Custody and Fund Administration

20% Investment Management

7% Other Services

5% Securities Lending

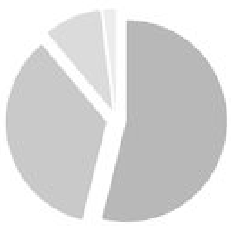
Custody and fund administration fees, the largest component of trust, investment and other servicing fees, increased $159.9 million , or 14% , from 2016 to 2017 primarily due to new business, favorable markets, and revenue associated with the UBS acquisition of $21.1 million . Fees from investment management increased $31.7 million , or 9% , from 2016 to 2017 due to higher market levels. Securities lending revenue decreased 1% from 2016 to 2017 due to lower spreads, partially offset by higher loan volumes. C&IS other trust, investment and servicing fees increased $6.5 million , or 5% , from 2016 to 2017 primarily due to an increase in investment risk and analytical services. C&IS trust, investment, and other servicing fees totaled $1.79 billion in 2016 , an increase of $90.9 million or 5% , from $1.70 billion in 2015 , primarily reflecting new business and lower money market mutual fund fee waivers, partially offset by lower equity markets and the unfavorable impact of movements in foreign exchange rates. Money market mutual fund fee waivers in C&IS totaled $1.9 million and $48.8 million in 2016 and 2015 , respectively.

Provided below is a breakdown of the C&IS assets under custody and under management.

TABLE 20: C&IS ASSETS UNDER CUSTODY

	DECEMBER 31,			CHANGE	
($ In Billions)	**2017**	2016	2015	**2017 / 2016**	2016 / 2015
North America	**$ 3,972.1**	$ 3,334.5	$ 2,999.0	**19%**	11%
Europe, Middle East, and Africa	**2,602.4**	2,152.2	1,971.1	**21**	9
Asia Pacific	**697.1**	578.4	492.0	**21**	18
Securities Lending	**167.5**	111.8	103.7	**50**	8
Total Assets Under Custody	**$ 7,439.1**	$ 6,176.9	$ 5,565.8	**20%**	11%

2017 C&IS ASSETS UNDER CUSTODY



54% North America

35% Europe, Middle East, and Africa

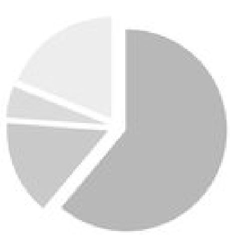
9% Asia Pacific

2% Securities Lending

TABLE 21: C&IS ASSETS UNDER MANAGEMENT

	DECEMBER 31,			CHANGE	
($ In Billions)	**2017**	2016	2015	**2017 / 2016**	2016 / 2015
North America	**$ 533.5**	$ 450.2	$ 410.4	**19%**	10 %
Europe, Middle East, and Africa	**127.3**	98.8	102.0	**29**	(3)
Asia Pacific	**42.9**	33.2	31.9	**29**	4
Securities Lending	**167.5**	111.8	103.7	**50**	8
Total Assets Under Management	**$ 871.2**	$ 694.0	$ 648.0	**26%**	7 %

2017 C&IS ASSETS UNDER MANAGEMENT



61% North America

- 15% Europe, Middle East, and Africa
- 5% Asia Pacific
- 19% Securities Lending

2017 C&IS ASSETS UNDER MANAGEMENT BY INVESTMENT TYPE

C&IS assets under custody were $7.44 trillion at December 31, 2017 , 20% higher than $6.18 trillion at December 31, 2016 . Assets under management increased 26% to $871.2 billion at December 31, 2017 , from $694.0 billion at December 31, 2016 . Cash and other assets deposited by investment firms as collateral for securities borrowed from custody clients are managed by Northern Trust and are included in assets under custody and under management. This securities lending collateral totaled $167.5 billion and $111.8 billion at December 31, 2017 and 2016 , respectively.

C&IS Foreign Exchange Trading Income
Foreign exchange trading income totaled $197.9 million in 2017 , a $26.5 million , or 12% , decrease from $224.4 million in 2016 . The decrease is attributable to lower volatility and client volumes. Foreign exchange trading income in 2016 of $224.4 million decreased $25.0 million , or 10% , from $249.4 million in 2015 , due to lower client volumes as compared to 2015 .

C&IS Other Noninterest Income
Other noninterest income for 2017 totaled $176.1 million , up $29.1 million , or 20% , from $147.0 million in 2016 , which in turn was down $23.5 million , or 14% , from $170.5 million in 2015 . The year-over-year variances from 2015 - 2017 were primarily due to impairment charges and loss on sales related to the decision to exit a portion of a non-strategic loans and leases portfolio in 2016 .

C&IS Net Interest Income
Net interest income on an FTE basis increased $168.8 million , or 30% , in 2017 to $733.8 million from $565.0 million in 2016 , primarily attributable to an increase in the net interest margin and average earning assets. Net interest margin on an FTE basis increased to 0.99% from 0.81% , primarily reflecting higher yields on earning assets. Average earning assets totaled $74.3 billion , an increase of $4.6 billion , or 7% , from $69.7 billion in the prior year. The earning assets in C&IS consisted primarily of intercompany assets and loans and leases. Funding sources were primarily comprised of non-U.S. custody-related interest-bearing deposits, which averaged $53.8 billion in 2017 , up from $46.6 billion in 2016 . Net interest income on an FTE basis increased $150.6 million or 36% , in 2016 to $565.0 million from $414.4 million in 2015 , primarily attributable to an increase in the net interest margin and average earning assets. Results from 2015 included a $17.8 million charge related to the residual value of certain aircraft under leveraged lease agreements.

C&IS Provision for Credit Losses
The provision for credit losses was $3.4 million for 2017 , compared to a provision of $1.9 million in 2016 , and a provision credit of $22.6 million in 2015 . The 2017 provision reflected an increase to a specific reserve in the commercial portfolio which was partially charged-off during the year, partially offset by improved credit quality across the portfolio. The 2016 provision reflected an increase to a specific reserve in the commercial portfolio that was charged-off during the prior year, partially offset by improved credit quality across the portfolio. The provision credit in 2015 primarily reflected improved credit quality across the portfolio coupled with the adoption of a change in estimation methodology for inherent losses.

C&IS Noninterest Expense

Total C&IS noninterest expense, which includes the direct expense of the reporting segment, indirect expense allocations for product and operating support, and indirect expense allocations for certain corporate support services, totaled $2.19 billion in 2017 , an increase of $182.3 million , or 9% , from $2.01 billion in 2016 . The increase was primarily due to higher indirect expense allocations, compensation expense, severance-related charges of $25.9 million , higher expense associated with the UBS acquisition of $24.2 million , and higher outside services expense, partially offset by lower other operating expenses. Noninterest expense in 2016 included charges relating to certain securities lending litigation of $50.0 million , charges related to contractual modifications associated with existing C&IS clients of $18.6 million , and severance and other personnel related charges of $7.4 million . Noninterest expense for 2016 increased $155.8 million , or 8% , from $1.86 billion in 2015 . The increase was primarily due to higher indirect expense allocations, other operating expenses, and compensation expense in 2016 .

Wealth Management

Wealth Management focuses on high-net-worth individuals and families, business owners, executives, professionals, retirees, and established privately-held businesses in its target markets. The business also includes the Global Family Office, which provides customized services to meet the complex financial needs of individuals and family offices in the United States and throughout the world with assets typically exceeding $200 million. In supporting these targeted segments, Wealth Management provides trust, investment management, custody, and philanthropic services; financial consulting; guardianship and estate administration; family business consulting; family financial education; brokerage services; and private and business banking. Wealth Management is one of the largest providers of advisory services in the United States with $645.5 billion of assets under custody and $289.8 billion of assets under management at December 31, 2017 . Wealth Management services are delivered by multidisciplinary teams through a network of offices in 18 U.S. states and Washington, D.C., as well as offices in London, Guernsey, and Abu Dhabi.

The following table summarizes the results of operations of Wealth Management for the years ended December 31, 2017 , 2016 , and 2015 on a management-reporting basis.

TABLE 22: WEALTH MANAGEMENT RESULTS OF OPERATIONS

	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
($ In Millions)	**2017**	2016	2015	**2017 / 2016**	2016 / 2015
Noninterest Income					
Trust, Investment and Other Servicing Fees	**$ 1,449.7**	$ 1,320.3	$ 1,283.6	**10 %**	3 %
Foreign Exchange Trading Income	**3.1**	8.6	12.4	**(64)**	(32)
Other Noninterest Income	**103.9**	105.7	111.8	**(2)**	(6)
Net Interest Income (Note)	**736.2**	651.4	568.1	**13**	15
Revenue (Note)	**2,292.9**	2,086.0	1,975.9	**10**	6
Provision for Credit Losses	**(31.4)**	(27.9)	(20.4)	**13**	38
Noninterest Expense	**1,405.3**	1,315.3	1,291.9	**7**	2
Income before Income Taxes (Note)	**919.0**	798.6	704.4	**15**	13
Provision for Income Taxes (Note)	**347.2**	301.1	264.7	**15**	14
Net Income	**$ 571.8**	$ 497.5	$ 439.7	**15 %**	13 %
Percentage of Consolidated Net Income	**48%**	48%	45%		
Average Assets	**$ 26,599.9**	$ 26,525.0	$ 25,048.7	**— %**	6 %

Note: Stated on an FTE basis.

Wealth Management net income increased 15% in 2017 , primarily reflecting higher trust, investment and other servicing fees and net interest income and, partially offset by higher noninterest expense and a higher provision for income taxes. The 13% increase in Wealth Management net income in 2016 from 2015 is primarily attributable to higher net interest income and trust, investment and other servicing fees, partially offset by a higher provision for income taxes and higher noninterest expense.

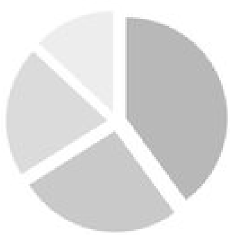
Wealth Management Trust, Investment and Other Servicing Fees

Provided below is a summary of Wealth Management trust, investment and other servicing fees and assets under custody and under management.

TABLE 23: WEALTH MANAGEMENT TRUST, INVESTMENT AND OTHER SERVICING FEES

	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
($ In Millions)	**2017**	2016	2015	**2017 / 2016**	2016 / 2015
Central	**$ 575.5**	$ 523.8	$ 514.3	**10%**	2%
East	**356.2**	334.4	332.7	**7**	1
West	**291.7**	268.9	267.7	**8**	—
Global Family Office	**226.3**	193.2	168.9	**17**	14
Total Trust, Investment and Other Servicing Fees	**$ 1,449.7**	$ 1,320.3	$ 1,283.6	**10%**	3%

2017 WEALTH MANAGEMENT FEES



40% Central

24% East

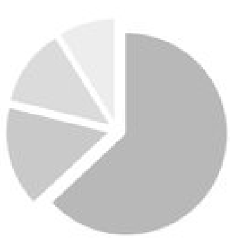
20% West

16% Global Family Office

TABLE 24: WEALTH MANAGEMENT ASSETS UNDER CUSTODY

	DECEMBER 31,			CHANGE	
($ In Billions)	**2017**	2016	2015	**2017 / 2016**	2016 / 2015
Global Family Office	**$ 422.9**	$ 347.7	$ 321.4	**22%**	8%
Central	**94.8**	83.8	79.5	**13**	5
East	**70.5**	61.7	58.5	**14**	6
West	**57.3**	50.4	46.9	**14**	7
Total Assets Under Custody	**$ 645.5**	$ 543.6	$ 506.3	**19%**	7%

2017 WEALTH MANAGEMENT ASSETS UNDER CUSTODY



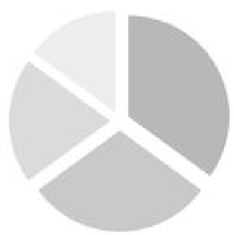
65% Global Family Office

- 15% Central
- 11% East
- 9% West

TABLE 25: WEALTH MANAGEMENT ASSETS UNDER MANAGEMENT

	DECEMBER 31,			CHANGE	
($ In Billions)	**2017**	2016	2015	**2017 / 2016**	2016 / 2015
Central	**$ 102.1**	$ 89.7	$ 81.8	**14%**	10%
Global Family Office	**87.1**	69.3	61.9	**26**	12
East	**57.0**	50.9	47.4	**12**	7
West	**43.6**	38.5	36.2	**13**	6
Total Assets Under Management	**$ 289.8**	$ 248.4	$ 227.3	**17%**	9%

2017 WEALTH MANAGEMENT ASSETS UNDER MANAGEMENT



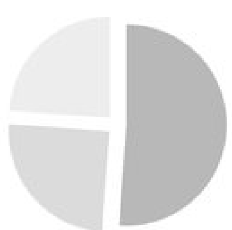
35% Central

30% Global Family Office

20% East

15% West

2017 WEALTH MANAGEMENT ASSETS UNDER MANAGEMENT BY INVESTMENT TYPE



51% Equities

25% Fixed Income Securities

24% Cash and Other Assets

The Wealth Management regions shown above are comprised of the following: Central includes Illinois, Michigan, Minnesota, Missouri, Ohio and Wisconsin; East includes Connecticut, Delaware, Florida, Georgia, Massachusetts, New York and Washington, D.C.; West includes Arizona, California, Colorado, Nevada, Texas and Washington. Global Family Office provides specialized asset management, investment consulting, global custody, fiduciary, and private banking services to ultra-wealthy domestic and international clients.

Wealth Management fee income is calculated primarily based on market values. Wealth Management trust, investment and other servicing fees were $1.45 billion in 2017 , up $129.4 million , or 10% , from $1.32 billion in 2016 , which in turn was up $36.7 million , or 3% , from $1.28 billion in 2015 . The results in 2017 benefited from favorable markets and new business. The 3% increase in trust, investment and other servicing fees in 2016 compared to 2015 was attributable to lower money market mutual fund fee waivers. Wealth Management money market mutual fund fee waivers totaled $6.2 million and $60.4 million in 2016 and

2015 , respectively.

At December 31, 2017 , assets under custody in Wealth Management were $645.5 billion compared with $543.6 billion at December 31, 2016 . Assets under management were $289.8 billion at December 31, 2017 compared to $248.4 billion at the previous year end.

Wealth Management Foreign Exchange Trading Income
Foreign exchange trading income totaled $3.1 million in 2017 , a $5.5 million , or 64% , decrease from $8.6 million in 2016 . The decrease is attributable to lower volatility and client volumes. Foreign exchange trading income in 2016 decreased $3.8 million , or 32% , as compared to 2015 , reflecting lower client volumes in 2016 .

Wealth Management Other Noninterest Income
Other noninterest income for 2017 totaled $103.9 million , a decrease of $1.8 million , or 2% , from $105.7 million in 2016 , due to decreases in banking fees and credit-related service charges. Other noninterest income in 2016 decreased $6.1 million , or 6% , as compared to 2015 , primarily reflecting lower security commissions and trading income.

Wealth Management Net Interest Income
Net interest income on an FTE basis was $736.2 million for 2017 , up $84.8 million , or 13% , from $651.4 million in 2016 , primarily attributable to an increase in the net interest margin. Net interest margin on an FTE basis increased to 2.80% from 2.48% , reflecting higher yields on earning assets. Average earning assets totaled $26.3 billion in the current year and prior year. Net interest income on an FTE basis in 2016 increased $83.3 million , or 15% , from 2015 and the net interest margin on an FTE basis in 2016 of 2.48% increased from the 2015 margin of 2.29% . The higher net interest margin in 2016 as compared to 2015 was attributable to higher yields on earning assets. Earning assets and funding sources in 2017 , 2016 , and 2015 were primarily comprised of loans and domestic interest-bearing deposits.

Wealth Management Provision for Credit Losses
The provision for credit losses was a credit of $31.4 million for 2017 , compared to a provision credit of $27.9 million in 2016 , and a provision credit of $20.4 million in 2015 . The 2017 provision credit was primarily driven by continued improvement in the credit quality of the commercial real estate and residential real estate portfolios, partially offset by charge offs in the current year. The 2016 provision credit was primarily driven by continued improvement in the credit quality of the residential real estate and private client portfolios. The 2015 provision credit primarily reflected improved credit quality of commercial real estate and residential real estate loan classes coupled with the adoption of a change in estimation methodology for inherent losses.

Wealth Management Noninterest Expense
Total noninterest expense, which includes the direct expense of the reporting segment, indirect expense allocations for product and operating support, and indirect expense allocations for certain corporate support services, totaled $1.41 billion in 2017 , an increase of $90.0 million , or 7% , from $1.32 billion in the prior year. The increase was primarily due to higher indirect expense allocations, severance-related charges of $19.5 million , compensation expense, and outside services expense in the current year. Noninterest expense for 2016 increased $23.4 million , or 2% , from $1.29 billion in 2015 . The increase was primarily due to higher compensation expense and indirect expense allocations in 2016 .

Treasury and Other

Treasury and Other includes income and expense associated with the wholesale funding activities and the investment portfolios of the Corporation and the Bank. Treasury and Other also includes certain corporate-based expense, executive level compensation and nonrecurring items not allocated to the reporting segments.

The following table summarizes the results of operations of Treasury and Other for the years ended December 31, 2017 , 2016 , and 2015 on a management-reporting basis.

TABLE 26: TREASURY AND OTHER RESULTS OF OPERATIONS

	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
($ In Millions)	**2017**	2016	2015	**2017 / 2016**	2016 / 2015
Noninterest Income	**$ 30.8**	$ 133.1	$ 107.9	**(77)%**	23 %
Net Interest Income (Note)	**5.0**	43.6	112.9	**(89)**	(61)
Revenue (Note)	**35.8**	176.7	220.8	**(80)**	(20)
Noninterest Expense	**169.6**	143.2	132.3	**18**	8
Income (Loss) before Income Taxes (Note)	**(133.8)**	33.5	88.5	**N/M**	(62)
Provision (Benefit) for Income Taxes (Note)	**(146.0)**	(4.3)	39.0	**N/M**	N/M
Net Income	**$ 12.2**	$ 37.8	$ 49.5	**(68)%**	(24)%
Percentage of Consolidated Net Income	**1%**	4%	5%		
Average Assets	**$ 12,901.9**	$ 12,850.6	$ 12,068.0	**— %**	6 %

Note: Stated on an FTE basis.

Treasury and Other noninterest income in 2017 was $30.8 million compared to $133.1 million in 2016 . The decrease primarily reflects a decrease in other operating income, a component of other noninterest income, due to a prior-year gain on the sale of 1.1 million Visa Class B common shares.

Treasury and Other net interest income on an FTE basis in 2017 was $5.0 million , down $38.6 million , or 89% , from $43.6 million in 2016 . The decrease reflected a decline in the net interest margin and lower levels of earning assets. Net interest income on an FTE basis in 2016 decreased $69.3 million , or 61% , to $43.6 million from $112.9 million in 2015 . The decrease reflected a decline in the net interest margin, partially offset by higher levels of earning assets.

Treasury and Other noninterest expense in 2017 equaled $169.6 million , up $26.4 million , or 18% , from $143.2 million in 2016 . The increase is primarily attributable to higher general overhead costs, including compensation and equipment and software expense, partially offset by an increase in indirect expense allocations to C&IS and Wealth Management.

The benefit from income taxes was $146.0 million in 2017 compared to a benefit of $4.3 million in the prior year, primarily due to lower income before income taxes, the net benefit attributable to the Tax Cuts and Jobs Act of $53.1 million , an increase in the excess tax benefit related to share-based compensation, and Federal and State research tax credits of $17.6 million related to the Corporation's technology spend between 2013 and 2016 and recorded in 2017 .

Asset Management

Asset Management, through the Corporation's various subsidiaries, supports the C&IS and Wealth Management reporting segments by providing a broad range of asset management and related services and other products to clients around the world. Investment solutions are delivered through separately managed accounts, bank common and collective funds, registered investment companies, exchange traded funds, non-U.S. collective investment funds, and unregistered private investment funds. Asset Management's capabilities include active, passive and engineered equity; active and passive fixed income; cash management; alternative asset classes (such as private equity and hedge funds of funds); and multi-manager advisory services and products. Asset Management's activities also include overlay services and other risk management services. Asset Management operates internationally through subsidiaries and distribution arrangements and its revenue and expense are allocated fully to C&IS and Wealth Management.

At December 31, 2017 , Northern Trust managed $1.16 trillion in assets for personal and institutional clients, including $871.2 billion for C&IS clients and $289.8 billion for Wealth Management clients. The following table presents consolidated assets under management as of December 31, 2017 , 2016 and 2015 by investment type.

TABLE 27: CONSOLIDATED ASSETS UNDER MANAGEMENT BY INVESTMENT TYPE

	DECEMBER 31,			CHANGE	
($ In Billions)	**2017**	2016	2015	**2017 / 2016**	2016 / 2015
Equities	**$ 592.3**	$ 480.6	$ 446.6	**23%**	8%
Fixed Income Securities	**183.5**	160.5	147.1	**14**	9
Cash and Other Assets	**217.5**	189.3	177.7	**15**	7
Securities Lending Collateral	**167.7**	112.0	103.9	**50**	8
Total Assets Under Management	**$ 1,161.0**	$ 942.4	$ 875.3	**23%**	8%

Assets under management increased $218.6 billion , or 23% , from $942.4 billion at year-end 2016 . The increase primarily reflected the favorable impact of markets and net inflows. The following table presents activity in consolidated assets under management by investment type during the year ended December 31, 2017 .

TABLE 28: ACTIVITY IN CONSOLIDATED ASSETS UNDER MANAGEMENT BY INVESTMENT TYPE

($ In Billions)	**2017**	2016	2015
Balance as of January 1,	**$ 942.4**	$ 875.3	$ 934.1
Inflows by Investment Type			
Equity	**192.1**	136.0	116.2
Fixed Income	**68.1**	59.3	41.7
Cash & Other Assets	**407.9**	383.4	281.0
Securities Lending Collateral	**132.4**	93.8	28.8
Total Inflows	**800.5**	672.5	467.7
Outflows by Investment Type			
Equity	**(185.7)**	(136.1)	(143.0)
Fixed Income	**(57.2)**	(48.0)	(54.6)
Cash & Other Assets	**(384.0)**	(363.6)	(273.3)
Securities Lending Collateral	**(76.7)**	(85.7)	(41.2)
Total Outflows	**(703.6)**	(633.4)	(512.1)
Net Inflows	**96.9**	39.1	(44.4)
Market Performance, Currency & Other			
Market Performance & Other	**111.6**	32.0	—
Currency	**10.1**	(4.0)	—
Total Market Performance, Currency & Other	**121.7**	28.0	(14.4)
Balance as of December 31,	**$ 1,161.0**	**$ 942.4**	**$ 875.3**

ASSET QUALITY

Securities Portfolio

The following table presents the book values of Northern Trust's held to maturity, available for sale, and trading investment securities by type as of December 31, 2017 , 2016 and 2015 .

TABLE 29: SECURITIES PORTFOLIO

	DECEMBER 31,		
($ In Millions)	**2017**	2016	2015
Securities Held to Maturity			
U.S. Government	**$ 35.0**	$ 15.0	$ 26.0
Obligations of States and Political Subdivisions	**34.6**	63.6	89.2
Government Sponsored Agency	**5.8**	7.4	9.9
Other	**12,973.6**	8,835.1	5,123.2
Total Securities Held to Maturity	**$ 13,049.0**	$ 8,921.1	$ 5,248.3
Securities Available for Sale			
U.S. Government	**$ 5,700.3**	$ 7,522.6	$ 6,178.3
Obligations of States and Political Subdivisions	**746.4**	885.2	36.4
Government Sponsored Agency	**18,676.6**	17,892.8	16,366.8
Asset-Backed	**2,726.4**	2,556.7	2,500.1
Auction Rate	**4.3**	4.7	17.1
Other	**5,888.1**	6,717.8	7,219.2
Total Securities Available for Sale	**$ 33,742.1**	$ 35,579.8	$ 32,317.9
Trading Account	**$ 0.5**	$ 0.3	$ 1.2
Total Securities at Year-End	**$ 46,791.6**	$ 44,501.2	$ 37,567.4
Average Total Securities	**$ 44,715.7**	$ 42,041.3	$ 37,407.9

Northern Trust maintains a high quality securities portfolio, with 79% of the combined available for sale, held to maturity, and trading account portfolios at December 31, 2017 composed of U.S. Treasury and government sponsored agency securities and triple-A rated corporate notes, asset-backed securities, covered bonds, sub-sovereign, supranational, sovereign & non-U.S. agency bonds, commercial mortgage-backed securities and obligations of states and political subdivisions. The remaining portfolio was composed of corporate notes, asset-backed securities, negotiable certificates of deposit, obligations of states and political subdivisions, auction rate securities and other securities, of which as a percentage of the total securities portfolio, 8% were rated double-A, 3% were rated below double-A, and 10% were not rated by Moody's Investors Service or Standard and Poor's (primarily negotiable certificates of deposits of banks and non-U.S. sovereign securities whose long-term ratings are at least A).

At December 31, 2017 , 29% of corporate debt was rated triple-A, 31% was rated double-A, and 40% was rated below double-A or not rated. Securities classified as "other asset-backed" at December 31, 2017 had average lives of less than 5 years, and 100% were rated triple-A.

Unrealized losses within the investment securities portfolio at December 31, 2017 were $249.4 million as compared to $176.0 million at December 31, 2016 , primarily reflecting higher market rates since purchase; 36% of the corporate debt portfolio is backed by guarantees provided by U.S. and non-U.S. governmental entities. There were $0.2 million and $3.7 million of losses recognized in 2017 and 2016 , respectively, in connection with the write-down of CRA securities determined to be OTTI. There were no OTTI losses recognized in 2015 .

Securities purchased under agreements to resell and securities sold under agreements to repurchase are accounted for as collateralized financings and recorded at the amounts at which the securities were acquired or sold plus accrued interest. To minimize any potential credit risk associated with these transactions, the fair value of the securities purchased or sold is monitored, limits are set on exposure with counterparties, and the financial condition of counterparties is regularly assessed. It is Northern Trust's policy to take possession, either directly or via third-party custodians, of securities purchased under agreements to resell. Securities sold under agreements to repurchase are held by the counterparty until the repurchase.

Loans and Leases

During 2017, the Corporation implemented a change in the classification of certain loans and leases to enhance the consistency of its reporting across various regulatory regimes. As a result, the prior-period loan and lease balances below have been adjusted to conform with current-period presentation. The adjustments generally reflected reclassification of loans and leases from the commercial and institutional class to the residential real estate class. There was no impact on total loans and leases previously reported.

The following table presents the amounts outstanding of loans and leases by segment and class as of December 31, 2017 and the preceding four year-ends.

TABLE 30: COMPOSITION OF LOAN PORTFOLIO

	DECEMBER 31,				
($ In Millions)	**2017**	2016	2015	2014	2013
Commercial					
Commercial and Institutional	**$ 9,042.2**	$ 9,287.4	$ 9,307.5	$ 8,343.7	$ 7,341.6
Commercial Real Estate	**3,482.7**	4,002.5	3,848.8	3,333.3	2,955.8
Non-U.S.	**1,538.5**	1,877.8	1,137.7	1,530.6	954.7
Lease Financing, net	**229.2**	293.9	544.4	916.3	975.1
Other	**265.4**	205.1	194.1	191.5	358.6
Total Commercial	**$ 14,558.0**	$ 15,666.7	$ 15,032.5	$ 14,315.4	$ 12,585.8
Personal					
Private Client	**$ 10,753.1**	$ 10,052.0	$ 9,136.4	$ 7,466.9	$ 6,445.6
Residential Real Estate	**7,247.6**	8,077.5	8,974.7	9,820.8	10,305.5
Other	**33.5**	25.9	37.3	37.1	48.6
Total Personal	**$ 18,034.2**	$ 18,155.4	$ 18,148.4	$ 17,324.8	$ 16,799.7
Total Loans and Leases	**$ 32,592.2**	$ 33,822.1	$ 33,180.9	$ 31,640.2	$ 29,385.5

Residential Real Estate

The residential real estate loan portfolio is primarily composed of mortgages and home equity credit lines provided as an accommodation to clients. Residential real estate loans totaled $7.2 billion at December 31, 2017 , or 22% of total U.S. loans, compared with $8.1 billion , or 24% of total U.S. loans, at December 31, 2016 . All residential real estate loans are underwritten utilizing Northern Trust's credit policies, which do not support the origination of loan types generally considered to be of high risk in nature, such as option ARM loans, subprime loans, loans with initial "teaser" rates, and loans with excessively high loan-to-value ratios. Residential real estate loans consist of traditional first lien mortgages and equity credit lines that generally require a loan-to-collateral value of no more than 65% to 80% at inception. Appraisals of supporting collateral for residential real estate loans are obtained upon refinancing or default or when otherwise considered warranted. Residential real estate collateral appraisals are performed and reviewed by independent third parties.

Of the total $7.2 billion in residential real estate loans at December 31, 2017 , $1.9 billion were in Florida, $1.4 billion were in the greater Chicago area, and $1.4 billion were in California, with the remainder distributed throughout the other geographic regions within the United States served by Northern Trust. Legally binding commitments to extend residential real estate credit, which are primarily equity credit lines, totaled $1.0 billion and $1.2 billion at December 31, 2017 and 2016 , respectively.

Commercial Real Estate

In managing its credit exposure, management has defined a commercial real estate loan as one where: (1) the borrower's principal business activity is the acquisition or the development of real estate for commercial purposes; (2) the principal collateral is real estate held for commercial purposes, and loan repayment is expected to flow from the operation of the property; or (3) the loan repayment is expected to flow from the sale or refinance of real estate as a normal and ongoing part of the business. Unsecured lines of credit to firms or individuals engaged in commercial real estate endeavors are included without regard to the use of loan proceeds. The commercial real estate portfolio consists of commercial mortgages and construction, acquisition and development loans extended primarily to investors well known to Northern Trust. Underwriting standards generally reflect conservative loan-to-value ratios and debt service coverage requirements. Recourse to owners through guarantees also is commonly required.

Commercial mortgage financing is provided for the acquisition or refinancing of income-producing properties. Cash flows from the properties generally are sufficient to amortize the loan. These loans are primarily located in the Illinois , California , Florida , Texas , and Arizona markets. Construction, acquisition and development loans provide financing for commercial real estate prior to rental income stabilization. The intent is generally that the borrower will sell the project or refinance the loan through a commercial mortgage with Northern Trust or another financial institution upon completion.

The table below provides additional detail regarding commercial real estate loan types:

TABLE 31: COMMERCIAL REAL ESTATE LOANS

	DECEMBER 31,	
($ In Millions)	**2017**	2016
Commercial Mortgages:		
Office	**$ 825.2**	$ 866.1
Apartment/Multi-family	**623.3**	784.8
Retail	**631.1**	698.1
Industrial / Warehouse	**311.1**	359.7
Other	**445.6**	457.6
Total Commercial Mortgages	**2,836.3**	3,166.3
Construction, Acquisition and Development Loans	**350.8**	445.0
Single Family Investment	**164.8**	179.6
Other Commercial Real Estate Related	**130.8**	211.6
Total Commercial Real Estate Loans	**$ 3,482.7**	$ 4,002.5

At December 31, 2017 , legally binding commitments to extend credit and standby letters of credit to commercial real estate borrowers totaled $312.5 million and $13.8 million , respectively. At December 31, 2016 , legally binding commitments and standby letters of credit totaled $546.1 million and $15.7 million , respectively.

Nonperforming Assets and 90 Days Past Due Loans

During 2017, the Corporation implemented a change in the classification of certain nonperforming loans and leases to enhance the consistency of its reporting across various regulatory regimes. As a result, the prior-period balances below have been adjusted to conform with current-period presentation. These adjustments generally reflect reclassification of nonperforming loans and leases from commercial and institutional class to the residential real estate class. There was no impact on total nonperforming loans and leases previously reported.

Nonperforming assets consist of nonperforming loans and leases and other real estate owned (OREO). OREO is comprised of commercial and residential properties acquired in partial or total satisfaction of loans. Loans that are delinquent 90 days or more and still accruing interest can fluctuate widely at any reporting period based on the timing of cash collections, renegotiations and renewals. The following table presents nonperforming assets and loans that were delinquent 90 days or more and still accruing at December 31, 2017 and each of the prior four year-ends.

TABLE 32: NONPERFORMING ASSETS

	DECEMBER 31,				
($ In Millions)	**2017**	2016	2015	2014	2013
Nonperforming Loans and Leases					
Commercial					
Commercial and Institutional	**$ 26.0**	$ 9.2	$ 18.1	$ 15.0	$ 23.1
Commercial Real Estate	**8.3**	11.6	16.7	37.1	49.2
Total Commercial	**34.3**	20.8	34.8	52.1	72.3
Personal					
Residential Real Estate	**$ 116.4**	$ 139.1	$ 144.9	$ 162.4	$ 189.1
Private Client	**—**	0.3	0.4	1.2	1.4
Total Personal	**116.4**	139.4	145.3	163.6	190.5
Total Nonperforming Loans and Leases	**150.7**	160.2	180.1	215.7	262.8
Other Real Estate Owned	**4.6**	5.2	8.2	16.6	11.9
Total Nonperforming Assets	**$ 155.3**	$ 165.4	$ 188.3	$ 232.3	$ 274.7
90 Day Past Due Loans Still Accruing	**$ 8.0**	$ 31.0	$ 7.1	$ 22.7	$ 16.4
Nonperforming Loans and Leases to Total Loans and Leases	**0.46%**	0.47%	0.54%	0.68%	0.89%
Allowance for Credit Losses Assigned to Loans and Leases to Nonperforming Loans and Leases	**0.9x**	1.0x	1.1x	1.2x	1.1x

Nonperforming assets of $155.3 million as of December 31, 2017 , decreased $10.1 million , or 6% , reflecting improved credit quality in the residential real estate portfolio, partially offset by additional impaired loans in the commercial and institutional portfolio. Changes in the level of nonperforming assets may be indicative of changes in the credit quality of one or more loan classes. Changes in credit quality impact the allowance for credit losses through the resultant adjustment of the specific allowance and of the qualitative factors used in the determination of the inherent allowance levels within the allowance for credit losses.

Allowance and Provision for Credit Losses

During 2017, the Corporation implemented a change in the classification of certain loans and leases to enhance the consistency of its reporting across various regulatory regimes. The previously reported allowance for credit losses remains unadjusted, as the impact of the reclassification on the allowance was immaterial.

TABLE 33: CHANGES IN THE ALLOWANCE FOR CREDIT LOSSES

($ In Millions)	**2017**	2016	2015
Balance at January 1	**$ 192.0**	$ 233.3	$ 295.9
Charge-Offs	**(21.5)**	(27.3)	(30.7)
Recoveries	**11.3**	12.1	11.2
Net Charge-Offs	**(10.2)**	(15.2)	(19.5)
Provision for Credit Losses	**(28.0)**	(26.0)	(43.0)
Effects of Foreign Exchange Rates	**—**	(0.1)	(0.1)
Balance at December 31	**$ 153.8**	$ 192.0	$ 233.3

The provision for credit losses is the charge to current period earnings that is determined by management, through a disciplined credit review process, to be the amount needed to maintain the allowance for credit losses at an appropriate level to absorb probable credit losses that have been identified with specific borrower relationships (specific loss component) and for probable losses that are believed to be inherent in the loan and lease portfolios, undrawn commitments, and standby letters of credit (inherent loss component).

The following table shows the specific portion of the allowance and the allocated inherent portion of the allowance and its components by loan category at December 31, 2017 , and at each of the prior four year-ends.

TABLE 34: ALLOCATION OF THE ALLOWANCE FOR CREDIT LOSSES

	DECEMBER 31,									
	2017		2016		2015		2014		2013	
($ In Millions)	ALLOWANCE AMOUNT	PERCENT OF LOANS TO TOTAL LOANS	ALLOWANCE AMOUNT	PERCENT OF LOANS TO TOTAL LOANS	ALLOWANCE AMOUNT	PERCENT OF LOANS TO TOTAL LOANS	ALLOWANCE AMOUNT	PERCENT OF LOANS TO TOTAL LOANS	ALLOWANCE AMOUNT	PERCENT OF LOANS TO TOTAL LOANS
Specific Allowance	**$ 5.4**	**—%**	$ 2.1	—%	$ 3.1	—%	$ 21.1	—%	$ 24.9	—%
Allocated Inherent Allowance										
Commercial										
Commercial and Institutional	**34.7**	**27**	34.7	27	40.4	28	73.0	26	67.5	25
Commercial Real Estate	**43.3**	**11**	69.2	12	69.5	12	69.4	10	71.5	10
Lease Financing, net	**0.2**	**1**	0.4	1	1.9	2	3.6	3	4.2	3
Non-U.S.	**—**	**5**	—	5	—	3	3.3	5	2.1	3
Other	**1.5**	**1**	0.6	1	—	1	—	1	—	2
Total Commercial	**79.7**	**45**	104.9	46	111.8	46	149.3	45	145.3	43
Personal										
Residential Real Estate	**57.3**	**22**	69.0	24	96.2	27	107.7	31	118.7	35
Private Client	**9.5**	**33**	13.8	30	19.7	27	17.8	24	19.0	22
Other	**1.9**	**—**	2.2	—	2.5	—	—	—	—	—
Total Personal	**68.7**	**55**	85.0	54	118.4	54	125.5	55	137.7	57
Total Allocated Inherent Allowance	**$ 148.4**	**100%**	$ 189.9	100%	$ 230.2	100%	$ 274.8	100%	$ 283.0	100%
Total Allowance for Credit Losses	**$ 153.8**	**100%**	$ 192.0	100%	$ 233.3	100%	$ 295.9	100%	$ 307.9	100%
Allowance Assigned to:										
Loans and Leases	**$ 131.2**		$ 161.0		$ 193.8		$ 267.0		$ 278.1	
Undrawn Commitments and Standby Letters of Credit	**22.6**		31.0		39.5		28.9		29.8	
Total Allowance for Credit Losses	**$ 153.8**		$ 192.0		$ 233.3		$ 295.9		$ 307.9	
Allowance Assigned to Loans and Leases to Total Loans and Leases	**0.40%**		0.48%		0.58%		0.84%		0.95%	

Specific Component of the Allowance: The amount of specific allowance is determined through an individual evaluation of loans and lending-related commitments considered impaired that is based on expected future cash flows, collateral value, and other factors that may impact the borrower's ability to pay.

At December 31, 2017 , the specific allowance component amounted to $5.4 million compared with $2.1 million at the end of 2016 . The $3.3 million increase is primarily attributable to additional allowances provided for new nonperforming loans, partially offset by charge-offs and pay-offs.

The decrease in the specific component of the allowance from $3.1 million in 2015 to $2.1 million in 2016 was primarily attributable to charge-offs and pay-offs, partially offset by additional allowances provided for new nonperforming loans.

Inherent Component of the Allowance: The inherent component of the allowance addresses exposure relating to probable but unidentified credit-related losses. The inherent component of the allowance also covers the credit exposure associated with undrawn loan commitments and standby letters of credit. To estimate the allowance for credit losses on these instruments, management uses conversion rates to determine the estimated amount that will be drawn and assigns an allowance factor determined in accordance with the methodology utilized for outstanding loans.

The inherent portion of the allowance decreased $41.5 million to $148.4 million at December 31, 2017 , compared with $189.9 million at December 31, 2016 , which decreased $40.3 million from $230.2 million at December 31, 2015 .

The decrease in 2017 was primarily driven by continued improvement in the credit quality of the commercial real estate and residential real estate portfolios. The decrease in 2016 was primarily driven by continued improvement in the credit quality of the residential real estate and private client portfolios.

Overall Allowance: The evaluation of the specific component and the inherent component above resulted in a total allowance for credit losses of $153.8 million at December 31, 2017 , compared with $192.0 million at the end of 2016 . The allowance of $131.2 million assigned to loans and leases, as a percentage of total loans and leases, was 0.40% at December 31, 2017 , down from a $161.0 million allowance, representing 0.48% of total loans and leases, at December 31, 2016 . Allowances assigned to undrawn loan commitments and standby letters of credit totaled $22.6 million and $31.0 million at December 31, 2017 and December 31, 2016 , respectively, and are included in other liabilities in the consolidated balance sheets.

Provision: The provision for credit losses was a credit of $28.0 million and net charge-offs totaled $10.2 million in 2017 . This compares with a credit provision of $26.0 million and net charge-offs of $15.2 million in 2016 , and a $43.0 million credit provision and net charge-offs of $19.5 million in 2015 .

Impaired Loans

A loan is impaired when, based on current information and events, it is probable that a creditor will be unable to collect all amounts due according to the contractual terms of the loan agreement or when its terms have been modified as a concession resulting from the debtor's financial difficulties, referred to as a troubled debt restructuring. As of December 31, 2017 , impaired loans totaled $139.8 million and included $98.4 million of loans deemed troubled debt restructurings as compared to total impaired loans of $156.1 million at December 31, 2016 , which included $127.6 million of loans deemed troubled debt restructurings. Impaired loans had $5.4 million and $2.1 million of the allowance for credit losses allocated to them at December 31, 2017 , and December 31, 2016 , respectively. Impaired loans are measured based upon the loan's market price, the present value of expected future cash flows, discounted at the loan's effective interest rate, or at the fair value of the collateral if the loan is collateral dependent. If the loan valuation is less than the recorded value of the loan, dependent upon the level of certainty of loss, either a specific allowance is established or a charge-off is recorded for the difference. Smaller balance (individually less than $1 million as of December 31, 2017) homogeneous loans are collectively evaluated for impairment and excluded from impaired loan disclosures as allowed under applicable accounting standards.

CRITICAL ACCOUNTING ESTIMATES

Our significant accounting policies are described in Note 1, "Summary of Significant Accounting Policies," to the consolidated financial statements provided in Item 8, "Financial Statements and Supplementary Data." The use of estimates and assumptions is required in the preparation of financial statements in conformity with GAAP and actual results could differ from those estimates. The SEC has issued guidance relating to the disclosure of critical accounting estimates. Critical accounting estimates are those that require management to make subjective or complex judgments about the effect of matters that are inherently uncertain and may change in subsequent periods. Changes that may be required in the underlying assumptions or estimates in these areas could have a material impact on Northern Trust's future financial condition and results of operations.

For Northern Trust, accounting estimates that are viewed as critical are those relating to the allowance for credit losses and pension plan accounting. Management has discussed the development and selection of each critical accounting estimate with the Audit Committee of the Board of Directors (Audit Committee).

Allowance for Credit Losses

The allowance for credit losses represents management's estimate of probable losses which have been incurred as of the date of the consolidated financial statements. The loan and lease portfolio and other lending-related credit exposures are regularly reviewed to evaluate the level of the allowance for credit losses. In determining an appropriate allowance level, Northern Trust evaluates the allowance necessary for impaired loans and lending-related commitments and also estimates losses inherent in other lending-related credit exposures.

The allowance for credit losses consists of the following components:

Specific Allowance: The specific allowance is determined through an individual evaluation of loans and lending-related commitments considered impaired that is based on expected future cash flows, collateral value, and other factors that may impact the borrower's ability to pay. For impaired loans where the amount of specific allowance, if any, is determined based on the value of the underlying real estate collateral, third-party appraisals are typically obtained and utilized by management. These appraisals are generally less than twelve months old and are subject to adjustments to reflect management's judgment as to the realizable value of the collateral.

Inherent Allowance: The inherent allowance estimation methodology is based on internally developed loss data specific to the Northern Trust loan and lease portfolio. The estimation methodology and the related qualitative adjustment framework segregate the loan and lease portfolio into segments. For each segment, the probability of default and the loss given default are applied to the total exposure at default to determine a quantitative inherent allowance. The estimated allowance is reviewed by the Loan Loss Reserve Committee within a qualitative adjustment framework to determine an appropriate adjustment to the quantitative inherent allowance for each segment of the loan portfolio. In determining the appropriate adjustment, management applies judgment by assessing internal risk factors, potential limitations in the quantitative methodology and environmental factors that are not contemplated in the quantitative methodology. The Loan Loss Reserve Committee is comprised of representatives from Credit Risk Management, the reporting segments and Corporate Finance.

The quarterly analysis of the specific and inherent allowance components and the control process maintained by Credit Risk Management and the lending staff are the principal methods relied upon by management for the timely identification of, and adjustment for, changes in estimated credit loss levels. In addition to Northern Trust's own experience, management also considers regulatory guidance. Control processes and analyses employed to determine an appropriate level of allowance for credit losses are reviewed on at least an annual basis and modified as considered appropriate.

Loans, leases and other extensions of credit deemed uncollectible are charged to the allowance for credit losses. Subsequent recoveries, if any, are credited to the allowance. Determinations as to whether loan balances for which the collectability is in question are charged-off or a specific reserve is established based on management's assessment as to the level of certainty regarding the amount of loss. The provision for credit losses, which is charged to income, is the amount necessary to adjust the allowance for credit losses to the level deemed to be appropriate through the above process. Actual losses may vary from current estimates and the amount of the provision for credit losses may be either greater than or less than actual net charge-offs.

Management's estimates utilized in establishing an appropriate level of allowance for credit losses are not dependent on any single assumption. Management evaluates numerous variables, many of which are interrelated or dependent on other assumptions and estimates, in determining an appropriate allowance level. Due to the inherent imprecision in accounting estimates, other estimates or assumptions could reasonably have been used in 2017 and changes in estimates are reasonably likely to occur from period to period.

Additionally, as an integral part of their examination process, various federal and state regulatory agencies also review the allowance for credit losses. These agencies may require that certain loan balances be classified differently or charged off when their credit evaluations differ from those of management, based on their judgments about information available to them at the time of their examination. However, management believes that the allowance for credit losses adequately addresses these uncertainties and has been established at an appropriate level to cover probable losses which have occurred as of the date of the consolidated financial statements.

Pension Plan Accounting

Northern Trust maintains a noncontributory defined benefit pension plan covering substantially all U.S. employees (the Qualified Plan) and a U.S. noncontributory supplemental pension plan (the Nonqualified Plan). Certain European-based employees also retain benefits in local defined benefit pension plans, of which the majority are closed to new employees and to future benefit accruals. Measuring cost and reporting liabilities resulting from defined benefit pension plans requires the use of several assumptions regarding future interest rates, asset returns, compensation increases, mortality rates, and other actuarially-based projections relating to the plans. Due to the long-term nature of this obligation and the estimates that are required to be made, the assumptions used in determining the periodic pension expense and the projected pension obligation are closely monitored and reviewed annually for adjustments that may be required. Pension accounting guidance requires that differences between estimates and actual experience be recognized as other comprehensive income in the period in which they occur. The differences are amortized into net periodic pension expense from accumulated other comprehensive income over the future working lifetime of eligible participants. As a result, differences between the estimates made in the calculation of periodic pension expense and the projected pension obligation and actual experience affect stockholders' equity in the period in which they occur but continue to be recognized as expense systematically and gradually over subsequent periods.

Northern Trust recognizes the significant impact that these pension-related assumptions have on the determination of the pension obligations and related expense and has established procedures for monitoring and setting these assumptions each year. These procedures include an annual review of actual demographic and investment experience with the pension plans' actuaries. In addition to actual experience, adjustments to these assumptions consider observable yields on fixed income securities, known compensation trends and policies, as well as economic conditions and investment strategies that may impact the estimated long-term rate of return on plan assets.

In determining the pension expense for the U.S. plans in 2017 , Northern Trust utilized a discount rate of 4.46% for both the Qualified Plan and the Nonqualified Plan. The rate of increase in the compensation level is based on a graded schedule from 9.00% to 2.50% that averaged 4.39% . The expected long-term rate of return on Qualified Plan assets was 6.75% .

In evaluating possible revisions to pension-related assumptions for the U.S. plans as of Northern Trust's December 31, 2017 measurement date, the following were considered:

- **Discount Rate:** Northern Trust estimates the discount rate for its U.S. pension plans by applying the projected cash flows for future benefit payments to the Aon Hewitt AA Above Median yield curve as of the measurement date. This yield curve is composed of individual zero-coupon interest rates for 198 different time periods over a 99-year time horizon. Zero-coupon rates utilized by the yield curve are mathematically derived from observable market yields for AA-rated corporate bonds. This yield curve model referenced by Northern Trust in establishing the discount rate resulted in a rate of 3.79% at December 31, 2017 for the Qualified and Nonqualified plans, a decrease from 4.46% at December 31, 2016 .
- **Compensation Level:** Based on a review of actual and anticipated salary experience, the compensation scale assumption is based on a graded schedule from 9.00% to 2.50% that averages 4.39% .
- **Rate of Return on Plan Assets:** The expected return on plan assets is based on an estimate of the long-term (30 years) rate of return on plan assets, which is determined using a building block approach that considers the current asset mix and estimates of return by asset class based on historical experience, giving proper consideration to diversification and rebalancing. Current market factors such as inflation and interest rates are also evaluated before long-term capital market assumptions are determined. Peer data and historical returns are reviewed to check for reasonability and appropriateness. As a result of these analyses, Northern Trust's rate of return assumption for the Qualified Plan decreased from 6.75% for 2017 to 6.00% for 2018 .
- **Mortality Table:** Northern Trust uses the aggregate RP-2014 mortality table with adjustment from 2014 to 2006. Northern Trust's pension obligations reflect proposed future improvement under scale MP-2017, released by the Society of Actuaries in October 2017. This assumption was updated at December 31, 2017 from improvement scale MP-2016. The updated improvement scale applies to annuity payments only and results in generally lower projected mortality improvements than estimated by the MP-2016 improvement scale. Mortality assumptions on lump sum payments remain static and continue to be in line with the IRS prescribed table for minimum lump sums in 2018. The IRS prescribed table for 2018 now reflects the aggregate RP-2014 mortality table with adjustment from 2014 to 2006, and future improvements under scale MP-2016.

Annual net pension expense in 2018 is expected to increase by approximately $19 million , primarily driven by the decrease in discount rate and a lower expected rate of return on plan assets.

In order to illustrate the sensitivity of these assumptions on the expected U.S Plans’ periodic pension expense in 2018 and the projected benefit obligation as of December 31, 2017 , the following table is presented to show the effect of increasing or decreasing each of these assumptions by 25 basis points.

TABLE 35: SENSITIVITY OF U.S. PENSION PLANS ASSUMPTIONS

($ In Millions)	25 BASIS POINT INCREASE	25 BASIS POINT DECREASE
Increase (Decrease) in 2018 Pension Expense		
Discount Rate Change	$ (4.2)	$ 4.4
Compensation Level Change	1.8	(1.7)
Rate of Return on Plan Assets Change	(3.7)	3.7
Increase (Decrease) in 2017 Projected Benefit Obligation		
Discount Rate Change	(49.7)	52.6
Compensation Level Change	6.7	(6.4)

Pension Contributions: The deduction limits specified by the Internal Revenue Code for contributions made by sponsors of defined benefit pension plans are based on a “Target Liability” under the provisions of the Pension Protection Act of 2006. There were no contributions to the Qualified Plan in 2017 and 2016 . Northern Trust contributed $50.0 million to the Qualified Plan at the beginning of 2018. The minimum required contribution to the Qualified Plan is expected to be zero in 2018 . The remaining maximum deductible contribution is estimated at $250 million for 2018 .

FAIR VALUE MEASUREMENTS

The preparation of financial statements in conformity with GAAP requires certain assets and liabilities to be reported at fair value. As of December 31, 2017 , approximately 25% of Northern Trust’s total assets and approximately 1% of its total liabilities were carried on the consolidated balance sheets at fair value. As discussed more fully in Note 3, “Fair Value Measurements,” to the consolidated financial statements provided in Item 8, “Financial Statements and Supplementary Data,” GAAP requires entities to categorize financial assets and liabilities carried at fair value according to a three-level valuation hierarchy. The hierarchy gives the highest priority to quoted, active market prices for identical assets and liabilities (Level 1) and the lowest priority to valuation techniques that require significant management judgment because one or more of the significant inputs are unobservable in the market place (Level 3). Approximately 17% of Northern Trust’s assets carried at fair value are classified as Level 1. Northern Trust typically does not hold equity securities or other instruments that are actively traded on an exchange.

Approximately 83% of Northern Trust’s assets and 98% of its liabilities carried at fair value are categorized as Level 2, as they are valued using models in which all significant inputs are observable in active markets. Investment securities classified as available for sale make up 97% of Level 2 assets with the remaining 3% primarily consisting of derivative financial instruments. Level 2 liabilities are comprised solely of derivative financial instruments.

Northern Trust’s Level 2 assets include available for sale and trading account securities, the fair values of which are determined predominantly by external pricing vendors. Northern Trust has a well-established process to validate prices received from pricing vendors as discussed more fully in Note 3, “Fair Value Measurements,” to the consolidated financial statements provided in Item 8, “Financial Statements and Supplementary Data.”

As of December 31, 2017 , all derivative assets and liabilities, excluding the swap related to the sale of certain Visa Class B common shares described below, were classified as Level 2 and approximately 96% , measured on a notional value basis, related to client-related and trading activities, predominantly consisting of foreign exchange contracts. Derivative instruments are valued internally using widely accepted income-based models that incorporate inputs readily observable in actively quoted markets and reflect contractual terms of contracts. Northern Trust evaluated the impact of counterparty credit risk and its own credit risk on the valuation of derivative instruments. Factors considered included the likelihood of default by Northern Trust and its counterparties, the remaining maturities of the instruments, net exposures after giving effect to master netting agreements, available collateral, and other credit enhancements in determining the appropriate fair value of derivative instruments. The resulting valuation adjustments are not considered material.

As of December 31, 2017 , the fair value of Northern Trust’s Level 3 assets was $4.3 million . Level 3 assets consist of auction rate securities purchased from Northern Trust clients. To estimate the fair value of auction rate securities, Northern Trust uses external pricing vendors that incorporate transaction details and market based inputs such as past auction results, trades and bids. The significant unobservable inputs used in the fair value measurements are the prices of the securities supported by little market activity and for which trading is limited.

As of December 31, 2017 , Northern Trust's Level 3 liabilities consisted of swaps that Northern Trust entered into with the purchaser of 1.1 million and 1.0 million shares of Visa Class B common shares previously held by Northern Trust and sold in June 2016 and 2015, respectively. Pursuant to the swaps, Northern Trust retains the risks associated with the ultimate conversion of the Visa Class B common shares into shares of Visa Inc. Class A common stock (Visa Class A common shares), such that the counterparty will be compensated for any dilutive adjustments to the conversion ratio and Northern Trust will be compensated for any anti-dilutive adjustments to the ratio. The swaps also require periodic payments from Northern Trust to the counterparty calculated by reference to the market price of Visa Class A common shares and a fixed rate of interest. The fair value of the swaps are determined using a discounted cash flow methodology. The significant unobservable inputs used in the fair value measurement are Northern Trust's own assumptions about estimated changes in the conversion rate of the Visa Class B common shares into Visa Class A common shares, the date on which such conversion is expected to occur and the estimated growth rate of the Visa Class A common share price. See "Visa Class B Common Shares" under Note 24, "Contingent Liabilities," provided in Item 8, "Financial Statements and Supplementary Data," of this Annual Report on Form 10-K for further information.

While Northern Trust believes its valuation methods for its assets and liabilities carried at fair value are appropriate and consistent with other market participants, the use of different methodologies or assumptions, particularly as applied to Level 3 assets, could have a material effect on the computation of their estimated fair values.

RECENT ACCOUNTING PRONOUNCEMENTS AND DEVELOPMENTS

In May 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2014-09, "Revenue from Contracts with Customers (Topic 606)" (ASU 2014-09). ASU 2014-09 is a converged standard between the FASB and the International Accounting Standards Board (IASB) that provides a single comprehensive revenue recognition model for all contracts with customers across transactions and industries. The primary objective of ASU 2014-09 is revenue recognition that represents the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. ASU 2014-09 is effective for interim and annual reporting periods beginning after December 15, 2017. Northern Trust adopted ASU 2014-09 as of January 1, 2018 using the modified retrospective method.

In 2017, Northern Trust focused efforts on completing an extensive contract review, covering services offered in each of its respective locations throughout the world, principal versus agent considerations, developing detailed disclosures required by ASU 2014-09 and assessing the extent of changes to the internal control environment. Northern Trust recognizes the majority of its revenues "over time" under current policy and will continue this practice for periods beginning on or after January 1, 2018. ASU 2014-09 is not expected to require significant changes to revenue-related information technology applications. As a result of completing its implementation project, Northern Trust will disclose additional information related to revenue recognition and implement certain changes to gross vs. net presentation for periods beginning on or after January 1, 2018. The adoption of ASU 2014-09 will not impact significantly Northern Trust's consolidated financial condition or results of operations.

In January 2016, the FASB issued ASU No. 2016-01, "Financial Instruments - Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities" (ASU 2016-01). ASU 2016-01 requires equity investments (except those accounted for under the equity method or those that result in consolidation) to be measured at fair value with changes in fair value recognized in net income unless a policy election is made for investments without readily determinable fair values. Additionally, ASU 2016-01 requires public entities to use the exit price notion when measuring the fair value of financial instruments for measurement purposes and eliminates the requirement to disclose the method(s) and significant assumptions used to estimate the fair value of financial instruments measured at amortized cost on the balance sheet. Furthermore, it requires separate presentation of financial assets and financial liabilities by measurement category and form of financial asset on the balance sheet or in the accompanying notes to the financial statements. ASU 2016-01 is effective for interim and annual periods beginning after December 15, 2017. Northern Trust adopted ASU 2016-01 as of January 1, 2018. The adoption of ASU 2016-01 will not impact significantly Northern Trust's consolidated financial condition or results of operations.

In February 2016, the FASB issued ASU No. 2016-02, "Leases (Topic 842)" (ASU 2016-02). ASU 2016-02 introduces a lessee model that brings most leases onto the balance sheet, with certain specified scope exceptions. Specifically within the lessee model under ASU 2016-02, a lessee is required to recognize in the statement of financial position a liability to make future lease payments, known as the lease liability, and a right-of-use asset (ROU asset) representing its right to use the underlying asset over the lease term. ASU 2016-02 is effective for interim and annual reporting periods beginning after December 15, 2018, with certain practical expedients available. Northern Trust has established an overall governance structure and a detailed project plan for its implementation efforts, along with taking further action in defining the future operating model for lease accounting and administration. Northern Trust does not expect a significant change in leasing activity between now and adoption on January 1, 2019. Although Northern Trust is currently assessing the impact of ASU 2016-02, it is expected to have a significant impact on Northern Trust’s consolidated financial condition , with the most significant changes related to the recognition of ROU assets and lease liabilities for operating leases. ASU 2016-02 is not expected to impact significantly Northern Trust’s consolidated results of operations.

In June 2016, the FASB issued ASU No. 2016-13, “Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments” (ASU 2016-13). ASU 2016-13 significantly changes the way impairment of financial instruments is recognized by requiring immediate recognition of estimated credit losses expected to occur over the remaining life of financial instruments. The main provisions of ASU 2016-13 include (1) replacing the “incurred loss” approach under current GAAP with an “expected loss” model for instruments measured at amortized cost, (2) requiring entities to record an allowance for available-for-sale debt securities rather than reduce the carrying amount of the investments, as is required by the other-than-temporary-impairment model under current GAAP, and (3) a simplified accounting model for purchased credit-impaired debt securities and loans. ASU 2016-13 is effective for interim and annual reporting periods beginning after December 15, 2019, although early adoption is permitted.

Northern Trust has established a working group across various functions, an overall governance structure, and has finalized a detailed project plan for its implementation efforts. Further, Northern Trust assessed its current inventory of underlying credit models along with the suitability of these models for the overall expected loss impairment model under ASU 2016-13 and prepared a comprehensive gap analysis. Development activities for new and modified credit loss models have commenced. Northern Trust continues to evaluate specific application issues and the overall impact of the adoption of ASU 2016-13.

In March 2017, the FASB issued ASU No. 2017-08, “Receivables-Nonrefundable Fees and Other Costs (Subtopic 310-20): Premium Amortization on Purchased Callable Securities” (ASU 2017-08), which amends the amortization period for certain callable debt securities held at a premium and shortens the amortization period for the premium to the earliest call date. ASU 2017-08 is effective for interim and annual reporting periods beginning after December 15, 2018, although early adoption is permitted. Northern Trust is currently assessing the impact of adoption of ASU 2017-08.

In August 2017, the FASB issued ASU No. 2017-12, “Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities” (ASU 2017-12). The main provisions of ASU 2017-12 better align an entity’s risk management activities and financial reporting for hedging relationships through changes to both the designation and measurement guidance for qualifying hedging relationships. ASU 2017-12 eliminates the requirement to separately measure and report hedge ineffectiveness and generally requires the entire change in the fair value of a hedging instrument to be presented in the same income statement line as the hedged item. Further, ASU 2017-12 eases certain documentation and assessment requirements and modifies the accounting for components excluded from the assessment of hedge effectiveness. ASU 2017-12 is effective for interim and annual reporting periods beginning after December 15, 2018, although early adoption is permitted. Northern Trust plans to early adopt ASU 2017-12 in the first half of 2018. Northern Trust currently applies the “shortcut” method of accounting available under GAAP for substantially all fair value hedges and other aspects of Northern Trust’s current hedge accounting program and therefore ASU 2017-12 is not expected to impact significantly Northern Trust’s consolidated financial condition or results of operations upon adoption.

In February 2018, the FASB issued ASU No. 2018-02, “Income Statement - Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income” (ASU 2018-02). The amendments in ASU 2018-02 allow a reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from the Tax Cuts and Jobs Act . ASU 2018-02 is effective for interim and annual reporting periods beginning after December 15, 2018. Early adoption of the amendments in ASU 2018-02 is permitted. The amendments in ASU 2018-02 may be applied either in the period of adoption or retrospectively to each period (or periods) in which the effect of the change in the U.S. federal corporate income tax rate in the Tax Cuts and Jobs Act is recognized. Northern Trust plans to early adopt ASU 2018-02 in the first quarter of 2018, and expects to reclassify approximately $25 million from accumulated other comprehensive income to retained earnings.

CAPITAL EXPENDITURES

Capital expenditures in 2017 included ongoing enhancements to Northern Trust’s software and hardware capabilities, the opening of new offices, and the expansion and renovation of several existing offices. Capital expenditures for 2017 totaled $472.8 million , of which $381.2 million was for software, $58.3 million was for computer hardware, $27.1 million was for building and leasehold improvements, and $6.2 million was for furnishings. These capital expenditures principally support and enhance Northern Trust’s investment management, asset servicing and asset management capabilities, as well as relationship management and client interaction. Additional capital expenditures committed for systems technology will result in future expense for the depreciation of hardware and amortization of software. Software amortization and depreciation on computer hardware and machinery are charged to equipment and software expense. Depreciation on building and leasehold improvements and on furnishings is charged to occupancy expense and equipment expense, respectively. Capital expenditures for 2016 totaled $473.4 million , of which $362.1 million was for software, $66.1 million was for computer hardware, $37.2 million was for building and leasehold improvements, and $8.0 million was for furnishings.

OFF-BALANCE-SHEET ARRANGEMENTS

Assets Under Custody/Administration and Assets Under Management

Northern Trust, in the normal course of business, holds assets under custody/administration and management in a fiduciary or agency capacity for its clients. In accordance with GAAP, these assets are not assets of Northern Trust and are not included in its consolidated balance sheets.

Commitments, Letters of Credit and Securities Lent with Indemnification

Northern Trust, in the normal course of business, enters into various types of commitments and issues letters of credit to meet the liquidity and credit enhancement needs of its clients. The contractual amounts of these instruments represent the potential credit exposure should the instrument be drawn fully upon and the client default. To control the credit risk associated with entering into commitments and issuing letters of credit, Northern Trust subjects such activities to the same credit quality and monitoring controls as its lending activities. The following table provides details of Northern Trust's off-balance-sheet financial instruments as of December 31, 2017 and 2016 .

TABLE 36: SUMMARY OF OFF-BALANCE-SHEET FINANCIAL INSTRUMENTS WITH CONTRACT AMOUNTS

	DECEMBER 31,	
($ In Millions)	**2017**	2016
Undrawn Commitments to Extend Credit		
One Year and Less	**$ 8,617.3**	$ 10,953.5
Over One Year	**18,205.3**	21,814.6
Total	**$ 26,822.6**	$ 32,768.1
Standby Letters of Credit	**$ 2,970.0**	$ 3,846.1
Commercial Letters of Credit	**37.7**	24.0
Custody Securities Lent with Indemnification	**143,568.2**	102,325.2

Undrawn commitments to extend credit generally have fixed expiration dates or other termination clauses. Since a significant portion of the commitments are expected to expire without being drawn upon, the total commitment amount does not necessarily represent future loans or liquidity requirements. The following table provides information about the industry sector and expiration dates of undrawn commitments to extend credit as of December 31, 2017 .

TABLE 37: UNDRAWN COMMITMENTS TO EXTEND CREDIT BY INDUSTRY SECTOR

AS OF DECEMBER 31, 2017		COMMITMENT EXPIRATION		
($ In Millions)	TOTAL COMMITMENTS	ONE YEAR AND LESS	OVER ONE YEAR	OUTSTANDING LOANS
Commercial				
Commercial and Institutional				
Finance and Insurance	$ 3,384.4	$ 1,609.0	$ 1,775.4	$ 1,056.2
Holding Companies	9.2	9.2	—	28.9
Manufacturing	7,221.9	752.3	6,469.6	1,747.3
Mining	707.5	187.1	520.4	54.4
Public Administration	209.5	101.8	107.7	72.1
Retail Trade	900.6	162.1	738.5	160.1
Services	5,765.2	1,987.3	3,777.9	4,873.2
Transportation and Warehousing	285.1	1.6	283.5	309.3
Utilities	1,162.9	20.7	1,142.2	13.1
Wholesale Trade	679.0	27.6	651.4	458.5
Other Commercial	294.0	262.4	31.6	269.1
Commercial and Institutional (Note)	20,619.3	5,121.1	15,498.2	9,042.2
Commercial Real Estate	312.5	49.3	263.2	3,482.7
Lease Financing, net	—	—	—	229.2
Non-U.S.	1,617.4	1,028.9	588.5	1,538.5
Other	155.2	155.2	—	265.4
Total Commercial	22,704.4	6,354.5	16,349.9	14,558.0
Personal				
Residential Real Estate	1,008.3	237.7	770.6	7,247.6
Private Client	3,090.3	2,005.5	1,084.8	10,753.1
Other	19.6	19.6	—	33.5
Total Personal	4,118.2	2,262.8	1,855.4	18,034.2
Total	$ 26,822.6	$ 8,617.3	$ 18,205.3	$ 32,592.2

Note: Commercial and Institutional industry sector information is presented on the basis of the North American Industry Classification System (NAICS).

Standby letters of credit obligate Northern Trust to meet certain financial obligations of its clients, if, under the contractual terms of the agreement, the clients are unable to do so. These instruments are primarily issued to support public and private financial commitments, including commercial paper, bond financing, initial margin requirements on futures exchanges and similar transactions. Northern Trust is obligated to meet the entire financial obligation of these agreements and in certain cases is able to recover the amounts paid through recourse against collateral received or other participants. Standby letters of credit of $3.0 billion and $3.8 billion at December 31, 2017 and 2016 , respectively, include $92.5 million and $134.2 million , respectively, of standby letters of credit secured by cash deposits or participated to others. The weighted average maturity of standby letters of credit was 24 months at December 31, 2017 and 2016 .

As part of its securities custody activities and at the direction of its clients, Northern Trust lends securities owned by clients to borrowers who are reviewed and approved by the Northern Trust Capital Markets Credit Committee. In connection with these activities, Northern Trust has issued indemnifications to certain clients against certain losses that are a direct result of a borrower's failure to return securities when due, should the value of such securities exceed the value of the collateral required to be posted. Borrowers are required to collateralize fully securities received with cash or marketable securities. As securities are loaned, collateral is maintained at a minimum of 100% of the fair value of the securities plus accrued interest. The collateral is revalued on a daily basis. The amount of securities loaned subject to indemnification was $143.6 billion and $102.3 billion at December 31, 2017 and 2016 , respectively. Because of the credit quality of the borrowers and the requirement to collateralize fully securities borrowed, management believes that the exposure to credit loss from this activity is not significant and no liability was recorded at December 31, 2017 , or 2016 related to these indemnifications.

Additional information about Northern Trust's off-balance-sheet financial instruments is included in Note 27, "Off-Balance-Sheet Financial Instruments," to the consolidated financial statements provided in Item 8, "Financial Statements and Supplementary Data."

Variable Interest Entities

Variable Interest Entities (VIEs) are defined within GAAP as entities which either have a total equity investment that is insufficient to permit the entity to finance its activities without additional subordinated financial support or whose equity investors lack the characteristics of a controlling financial interest. Investors that finance a VIE through debt or equity interests, or other counterparties that provide other forms of support, such as guarantees, subordinated fee arrangements, or certain types of derivative contracts, are variable interest holders in the entity and the variable interest holder, if any, that has both the power to direct the activities that most significantly impact the entity and a variable interest that could potentially be significant to the entity is deemed to be the VIE's primary beneficiary and is required to consolidate the VIE.

Leveraged Leases. In leveraged leasing transactions, Northern Trust acts as lessor of the underlying asset subject to the lease and typically funds 20 - 30% of the asset's cost via an equity ownership in a trust with the remaining 70 - 80% provided by third-party non-recourse debt holders. In such transactions, the trusts, which are VIEs, are created to provide the lessee use of the property with substantially all of the rights and obligations of ownership. The lessee's maintenance and operation of the leased property has a direct effect on the fair value of the underlying property, and the lessee also has the ability to increase the benefits it can receive and limit the losses it can suffer by the manner in which it uses the property. As a result, Northern Trust has determined that it is not the primary beneficiary of these VIEs given it lacks the power to direct the activities that most significantly impact the economic performance of the VIEs.

Tax Credit Structures. Northern Trust invests in qualified affordable housing projects and community development entities (collectively, community development projects) that are designed to generate a return primarily through the realization of tax credits. The community development projects are formed as limited partnerships and limited liability companies in which Northern Trust invests as a limited partner/investor member through equity contributions. The economic performance of the community development projects, which are VIEs, is subject to the performance of their underlying investment and their ability to operate in compliance with the rules and regulations necessary for the qualification of tax credits generated by equity investments. Northern Trust has determined that it is not the primary beneficiary of any community development projects as it lacks the power to direct the activities that most significantly impact the economic performance of the underlying investments or to affect their ability to operate in compliance with the rules and regulations necessary for the qualification of tax credits generated by equity investments. This power is held by the general partners and managing members who exercise full and exclusive control of the operations of the VIEs.

Investment Funds. Northern Trust acts as asset manager for various funds in which clients of Northern Trust are investors. As an asset manager of funds, Northern Trust earns a competitively priced fee that is based on assets managed and varies with each fund's investment objective. Based on its analysis, Northern Trust has determined that it is not the primary beneficiary of these VIEs under GAAP.

LIQUIDITY AND CAPITAL RESOURCES

Liquidity

As the Corporation's principal subsidiary encompassing all of Northern Trust's banking activities, the Bank centrally manages liquidity for all U.S. and international banking operations. Liquidity is provided by a variety of sources, including client deposits (institutional and personal) from the C&IS and Wealth Management businesses, wholesale funding from the capital markets, maturities of short-term investments, Federal Home Loan Bank advances, and unencumbered liquid assets that can be sold or pledged to secure additional funds. While management does not view central bank discount windows as primary sources of liquidity, at December 31, 2017 , the Bank had over $32.9 billion of securities and loans readily available as collateral to support discount window borrowings. The Bank also is active in the U.S. interbank funding market, providing an important source of additional liquidity and low-cost funds. Liquidity supports a variety of activities, including client withdrawals, purchases of securities, net loan growth, and draws on commitments to extend credit. Northern Trust maintains a very liquid balance sheet, with cash and due from banks, deposits with the Federal Reserve and other central banks, short-term money market assets and investment securities in aggregate representing 70% of total assets as of December 31, 2017 . The market value of unencumbered securities at the Bank, which include those placed at the Federal Reserve discount window, totaled $39.2 billion at December 31, 2017 . The Corporation and the Bank each satisfied the U.S. liquidity coverage ratio requirements during 2017 .

The liquidity of the Corporation is managed separately from that of the Bank. The primary sources of cash for the Corporation are issuances of debt or equity, dividend payments from the Bank and interest earned on investment securities and money market assets. On May 8, 2017, the Corporation issued $350 million of 3.375% fixed-to-floating rate subordinated notes, due May 8, 2032. The Corporation also received $525.0 million of dividends from the Bank in 2017 . Dividends from the Bank are subject to certain restrictions, as discussed in further detail in Note 30, "Restrictions on Subsidiary Dividends and Loans or Advances," to the consolidated financial statements provided in Item 8, "Financial Statements and Supplementary Data."

The Corporation's uses of cash consist mainly of dividend payments to the Corporation's stockholders; the payment of principal and interest to note holders; repurchases of its common stock; and investments in, or loans to, its subsidiaries. The most significant uses of cash by the Corporation during 2017 were $523.1 million of common stock repurchases and $356.8 million of common stock dividends.

The Corporation's liquidity, defined as the amount of cash and highly marketable assets, was $1.0 billion and $757.0 million at December 31, 2017 and 2016 , respectively. During, and at year-end, 2017 and 2016 , these assets were comprised almost entirely of cash in a demand deposit account at the Bank or overnight money market placements, both of which were fully available to the Corporation to support its own cash flow requirements or those of its subsidiaries, as needed. Average liquidity during 2017 and 2016 was $750.5 million and $562.8 million , respectively. The cash flows of the Corporation are shown in Note 33, "Northern Trust Corporation (Corporation only)," to the consolidated financial statements provided in Item 8, "Financial Statements and Supplementary Data."

A significant source of liquidity for both the Corporation and the Bank is the ability to draw funding from capital markets globally. The credit ratings of the Corporation and the Bank as of December 31, 2017 , provided below, allow Northern Trust to access capital markets on favorable terms.

TABLE 38: NORTHERN TRUST CREDIT RATINGS AS OF DECEMBER 31, 2017

	CREDIT RATING		
	STANDARD & POOR'S	MOODY'S	FITCHRATINGS
Northern Trust Corporation:			
Senior Debt	A+	A2	AA-
Subordinated Debt	A	A2	A+
Preferred Stock	BBB+	Baa1	BBB
Trust Preferred Capital Securities	BBB+	A3	BBB+
Outlook	Stable	Stable	Stable
The Northern Trust Company:			
Short-Term Deposit	A-1+	P-1	F1+
Long-Term Deposit	AA-	Aa2	AA
Subordinated Debt	A+	A2	A+
Outlook	Stable	Stable	Stable

A significant downgrade in one or more of these ratings could limit Northern Trust's access to capital markets and/or increase the rates paid for short-term borrowings, including deposits, and future long-term debt issuances. The size of these rate increases would depend on multiple factors, including the extent of the downgrade, Northern Trust's relative debt rating compared to other financial institutions, current market conditions, and other factors. In addition, as discussed in Note 25, "Derivative Financial Instruments," to the consolidated financial statements provided in Item 8, "Financial Statements and Supplementary Data," Northern Trust enters into certain master netting arrangements with derivative counterparties that contain credit-risk-related contingent features in which the counterparty has the option to declare Northern Trust in default and accelerate cash settlement of net derivative liabilities with the counterparty in the event Northern Trust's credit rating falls below specified levels. The net maximum amount of these termination payments that Northern Trust could have been required to pay at December 31, 2017 , was $187.9 million . Other than these credit-risk-related contingent derivative counterparty payments, Northern Trust had no long-term debt covenants or other credit-risk-related payments at December 31, 2017 , that would be triggered by a significant downgrade in its debt ratings.

Statements of Cash Flows

For the year ended December 31, 2017 , net cash provided by operating activities was $1.7 billion , primarily reflecting period earnings and the impact of non-cash charges such as amortization of computer software, partially offset by other operating activities.

Net cash provided by operating activities for the year ended December 31, 2016 , was $1.5 billion and was primarily the result of period earnings and other operating activities.

Net cash used in investing activities was $14.0 billion for the year ended December 31, 2017 , primarily attributable to an increase in deposits with Federal Reserve and other central banks as well as net purchases of securities held to maturity.

Net cash used in investing activities of $10.2 billion for the year ended December 31, 2016 , primarily attributable to net purchases of securities available for sale and held to maturity as well as an increase in deposits with Federal Reserve and other central banks.

For the year ended December 31, 2017 , net cash provided by financing activities totaled $11.3 billion , primarily reflecting higher levels of total deposits, federal funds purchased, increases in short-term other borrowings, and the proceeds from the issuance by the Corporation of 3.375% fixed-to-floating rate subordinated notes, partially offset by the repurchase of common stock pursuant to the Corporation's share repurchase program, dividends paid on common and preferred stock, and repayments of the 5.85% subordinated notes previously issued by the Bank and due November 2017.

For the year ended December 31, 2016 , net cash provided by financing activities totaled $7.5 billion , primarily reflecting higher levels of total deposits, increases in short-term other borrowings, the issuance of Series D Preferred Stock, and net proceeds received from the exercise of stock options, partially offset by the repurchase of common stock pursuant to the Corporation's share repurchase program and dividends paid on common and preferred stock.

Regulatory Environment

Northern Trust actively follows regulatory developments and regularly evaluates its liquidity risk management framework against proposed rulemaking and industry best practices in order to comply with applicable regulations and further enhance its liquidity policies. Please refer to "Liquidity Standards" under "Supervision and Regulation" in Item 1, "Business," of this Annual Report on Form 10-K for a discussion of applicable liquidity standards.

Contractual Obligations

The following table shows Northern Trust's contractual obligations as of December 31, 2017 .

TABLE 39: CONTRACTUAL OBLIGATIONS AS OF DECEMBER 31, 2017

		PAYMENT DUE BY PERIOD			
($ In Millions)	TOTAL	ONE YEAR AND LESS	1-3 YEARS	3-5 YEARS	OVER 5 YEARS
Senior Notes (1)	$ 1,497.3	$ —	$ 499.6	$ 997.7	$ —
Subordinated Debt (1)	1,435.1	305.5	—	—	1,129.6
Floating Rate Capital Debt (1)	277.5	—	—	—	277.5
Capital Lease Obligations (2)	15.4	8.4	7.0	—	—
Operating Leases (2)	787.8	95.9	188.2	143.2	360.5
Purchase Obligations (3)	641.7	222.3	287.2	108.4	23.8
Federal Taxes on Mandatory Deemed Repatriation (4)	150.0	12.0	24.0	24.0	90.0
Total Contractual Obligations	$ 4,804.8	$ 644.1	$ 1,006.0	$ 1,273.3	$ 1,881.4

Note: Obligations as shown do not include deposit liabilities or interest requirements on funding sources.
(1) Refer to Note 12, "Senior Notes and Long-Term Debt," and Note 13, "Floating Rate Capital Debt," to the consolidated financial statements provided in Item 8, "Financial Statements and Supplementary Data," for further details.
(2) Refer to Note 10, "Lease Commitments," to the consolidated financial statements provided in Item 8, "Financial Statements and Supplementary Data," for further details.
(3) Purchase obligations consist primarily of ongoing operating costs related to outsourcing arrangements for certain cash management services and the support and maintenance of the Corporation's technological requirements. Certain obligations are in the form of variable rate contracts and, in some instances, 2017 activity was used as a base to project future obligations.
(4) Northern Trust has elected to pay the net tax liability on deferred foreign earnings in eight installments as allowed under section 965(h) of the Tax Cuts and Jobs Act of 2017.

Capital Management

One of Northern Trust's primary objectives is to maintain a strong capital position to merit the confidence of clients, counterparties, creditors, regulators and stockholders. A strong capital position helps Northern Trust execute its strategies and withstand unforeseen adverse developments.

Senior management, with oversight from the Capital Governance Committee and the full Board of Directors, is responsible for capital management and planning. Northern Trust manages its capital on both a total Corporation basis and a legal entity basis. The Capital Committee is responsible for measuring and managing capital metrics against levels set forth within the Capital Policy approved by the Board of Directors. In establishing the metrics related to capital, a variety of factors are taken into consideration, including the unique risk profiles of Northern Trust's businesses, regulatory requirements, capital levels relative to peers, and the impact on credit ratings.

Capital levels were strengthened in 2017 as average stockholders' equity increased $895.3 million , or 10% , reaching $10.0 billion . Total stockholders' equity was $10.2 billion at December 31, 2017 , as compared to $9.8 billion at December 31, 2016 . In July 2017, the Board increased the quarterly common stock dividend by 11% to $0.42 per common share. Common dividends totaling $372.5 million were declared in 2017 . During the year ended December 31, 2017 , the Corporation repurchased 5.8 million shares of common stock, including 0.5 million shares withheld related to share-based compensation, at an average price per share of $90.25 . Preferred dividends totaling $49.8 million were declared in 2017 .

In accordance with Basel III requirements, capital ratios are calculated using both the standardized and advanced approaches. For each ratio, the lower of the result calculated under the standardized approach and the advanced approach serves as the effective ratio for purposes of determining capital adequacy. The following table provides a reconciliation of the Corporation's common stockholders' equity to total risk-based capital and its risk-based capital ratios, under the applicable U.S. regulatory rules as of December 31, 2017 and 2016 .

TABLE 40: CAPITAL ADEQUACY

($ In Millions)	December 31, 2017		December 31, 2016	
	Advanced Approach	Standardized Approach	Advanced Approach	Standardized Approach
Common Equity Tier 1 Capital				
Common Stockholders' Equity	**$ 9,334.2**	**$ 9,334.2**	$ 8,888.4	$ 8,888.4
Net Unrealized (Gains) Losses on Securities Available for Sale	**15.0**	**15.0**	12.9	12.9
Net Unrealized (Gains) Losses on Cash Flow Hedges	**(0.9)**	**(0.9)**	(2.4)	(2.4)
Goodwill and Other Intangible Assets, net of Deferred Tax Liability	**(697.4)**	**(697.4)**	(488.1)	(488.1)
Pension and Other Postretirement Benefit Adjustments	**68.4**	**68.4**	130.1	130.1
Other	**(93.0)**	**(93.0)**	(60.5)	(60.5)
Total Common Equity Tier 1	**8,626.3**	**8,626.3**	8,480.4	8,480.4
Additional Tier 1 Capital				
Preferred Stock	**882.0**	**882.0**	882.0	882.0
Other	**(34.9)**	**(34.9)**	(42.5)	(42.5)
Total Additional Tier 1 Capital	**847.1**	**847.1**	839.5	839.5
Total Tier 1 Capital	**9,473.4**	**9,473.4**	9,319.9	9,319.9
Tier 2 Capital				
Qualifying Allowance for Credit Losses	**—**	**153.8**	—	191.9
Qualifying Subordinated Debt	**1,099.4**	**1,099.4**	809.3	809.3
Floating Rate Capital	**134.6**	**134.6**	161.5	161.5
Other	**—**	**—**	(9.1)	(7.6)
Total Tier 2 Capital	**1,234.0**	**1,387.8**	961.7	1,155.1
Total Risk-Based Capital	**$ 10,707.4**	**$ 10,861.2**	$ 10,281.6	$ 10,475.0
Risk-Weighted Assets (1)	**$ 64,018.7**	**$ 68,616.4**	$ 68,257.6	$ 72,020.9
Total Assets – End of Period (EOP)	**138,590.5**	**138,590.5**	123,926.9	123,926.9
Adjusted Average Fourth Quarter Assets (2)	**121,517.1**	**121,517.1**	116,958.0	116,958.0
Total Loans and Leases – EOP	**32,592.2**	**32,592.2**	33,822.1	33,822.1
Common Stockholders' Equity to:				
Total Loans and Leases – EOP	**28.64%**	**28.64%**	26.28%	26.28%
Total Assets – EOP	**6.74**	**6.74**	7.17	7.17
Risk-Based Capital Ratios				
Common Equity Tier 1	**13.5%**	**12.6%**	12.4%	11.8%
Tier 1	**14.8**	**13.8**	13.7	12.9
Total (Tier 1 and Tier 2)	**16.7**	**15.8**	15.1	14.5
Leverage	**7.8**	**7.8**	8.0	8.0
Supplementary Leverage (3)	**6.8**	**N/A**	6.8	N/A

(1) Risk-weighted assets exclude, as applicable under each regulatory approach, amounts primarily related to goodwill, certain other intangible assets, and net unrealized gains or losses on securities and reflect adjustments for excess allowances for credit losses that have been excluded from Tier 1 and Tier 2 capital, if any.
(2) Adjusted average fourth quarter assets exclude amounts primarily related to goodwill, other intangible assets, and net unrealized gains or losses on securities.
(3) Beginning with the first quarter of 2015, advanced approaches banking organizations must calculate and report their supplementary leverage ratio. Effective January 1, 2018, the Corporation will be subject to a minimum supplementary leverage ratio of 3 percent.

As of December 31, 2017 and 2016 , the Corporation's capital ratios exceeded the minimum requirements for classification as "well-capitalized" under applicable U.S. regulatory requirements. Further information regarding the Corporation's and the Bank's capital ratios and the minimum requirements for classification as "well-capitalized" is provided in the

“Supervision and Regulation” section of Item 1, “Business,” and Note 32, “Regulatory Capital Requirements,” to the consolidated financial statements provided in Item 8, “Financial Statements and Supplementary Data.”

As of December 31, 2017 , the Corporation’s common equity Tier 1 capital ratio as calculated under the advanced approaches methodologies would have been 13.3% on a fully phased-in basis, while the Corporation’s common equity Tier 1 capital ratio under the standardized approach would have been 12.4% on a fully phased-in basis.

RISK MANAGEMENT

Risk Management Overview

Northern Trust employs an integrated enterprise risk management framework to support its strategies. The framework provides a methodology to identify, assess, monitor, measure, manage and report both internal and external risks to Northern Trust, and promotes a culture of risk awareness across the organization. Northern Trust’s risk culture encompasses the general awareness, attitude and conduct of employees with respect to risk and the management of risk across all lines of defense within the organization. The key risk categories that are inherent in Northern Trust’s business activities include: credit, operational, fiduciary, compliance, market, liquidity, and strategic risk.

Northern Trust reinforces a culture of effective risk management by defining risk management accountabilities, embedding such accountabilities in performance expectations across the company, training and developing employees and evaluating and rewarding employee performance.

Risk Governance and Oversight Overview

Risk governance is an integral aspect of corporate governance at Northern Trust, and includes clearly defined accountabilities, expectations, internal controls and processes for risk-based decision-making and escalation of issues. The diagram below provides a high-level overview of Northern Trust’s risk governance structure, highlighting the oversight of the Board of Directors and key risk-related committees.

TABLE 41: RISK GOVERNANCE STRUCTURE

Northern Trust Corporation Board of Directors			
Audit Committee	Business Risk Committee	Capital Governance Committee	Compensation and Benefit Committee

Global Enterprise Risk Committee (GERC)					
Credit Risk Committee	Operational Risk Committee	Fiduciary Risk Committee	Compliance & Ethics Oversight Committee	Market & Liquidity Risk Committee	Model Risk Oversight Committee

The Board of Directors provides oversight of risk management directly and through certain of its committees: the Audit Committee, the Business Risk Committee, the Capital Governance Committee and the Compensation and Benefits Committee. The Board of Directors approves Northern Trust’s enterprise risk management framework and Corporate Risk Appetite Statement. The Business Risk Committee assumes primary responsibility and oversight with respect to credit risk, operational risk, fiduciary risk, compliance risk, market risk, liquidity risk, and strategic risk. The Audit Committee provides oversight with respect to financial reporting and legal risk, while the Compensation and Benefits Committee oversees the development and operation of Northern Trust’s incentive compensation program. The Compensation and Benefits Committee annually reviews management’s assessment of the effectiveness of the design and performance of Northern Trust’s incentive compensation arrangements and practices in providing incentives that are consistent with Northern Trust’s safety and soundness. This assessment includes an evaluation of whether Northern Trust’s incentive compensation arrangements and practices discourage inappropriate risk-taking behavior by participants. The Capital Governance Committee of the Board assists the Board in discharging its oversight duties with respect to capital management and planning activities. Among other responsibilities, the Capital Governance Committee oversees Northern Trust’s capital adequacy assessments, forecasting, and stress testing processes and activities, including the annual CCAR exercise, and challenges management, as appropriate, on various elements of such processes and activities. Accordingly, the Capital Governance Committee provides oversight with respect to Northern Trust’s linkage of material risks to the capital adequacy assessment process.

The Chief Risk Officer (CRO) oversees Northern Trust's management of risk, promotes risk awareness and fosters a proactive risk management environment wherein risks inherent in the business strategy are identified, understood, appropriately monitored and mitigated. The CRO reports directly to the Business Risk Committee and the Corporation's Chief Executive Officer. The CRO regularly advises the Business Risk Committee and reports to the Committee at least quarterly on risk exposures, risk management deficiencies and emerging risks. In accordance with the enterprise risk management framework, the executive risk management team of Northern Trust, together with the Chief Financial Officer, Chief Capital Management Officer, General Counsel and General Auditor, meets as the Global Enterprise Risk Committee (GERC) to provide executive management oversight and guidance with respect to the management of the categories of risk within Northern Trust. Among other risk management responsibilities, GERC receives reports or recommendations from senior risk committees that are responsible for the management of risk, and from time to time may delegate responsibility to such committees for risk issues. Senior risk committees include:

The Credit Risk Committee (CRC) establishes and monitors credit-related policies and practices throughout Northern Trust and promotes their uniform application.

The Operational Risk Committee (ORC) provides independent oversight and is responsible for setting the Corporate Operational Risk Management Policy and developing the operational risk management framework and programs that support the coordination of operational risk activities.

The Fiduciary Risk Committee (FRC) is responsible for establishing and reviewing the fiduciary risk policies and establishing the fiduciary risk framework, governance and programs that support the coordination of fiduciary risk activities.

The Compliance & Ethics Oversight Committee (CEOC) provides oversight and direction with respect to compliance policies, implementation of the compliance and ethics program, and the coordination of regulatory compliance initiatives across the Corporation.

The Market & Liquidity Risk Committee (MLRC) oversees activities relating to the management of market and liquidity risks by facilitating a focused review of market and liquidity risk exposures and providing rigorous challenge of related policies, key assumptions, and practices.

The Model Risk Oversight Committee (MROC) is responsible for providing management attention, direction, and oversight of the model risk management framework and model risk within Northern Trust.

In addition to the aforementioned committees, Northern Trust deploys business and regional risk committees that also report into GERC.

Risk Identification and Risk Management Process

As part of the integrated enterprise risk framework, Northern Trust has established key risk identification and risk management processes, embedded within its businesses to enable prudent risk-taking behavior. Integral to the risk framework are Northern Trust's processes for definition and communication of acceptable risk appetite and reporting against risk appetite, dynamic assessment of risk against its strategic and business objectives, and a "three lines of defense" operating model. Northern Trust defines the organization's risk appetite as the amount and types of risk that it is willing to assume in its exposures and business activities to achieve its strategic and financial objectives. Northern Trust manages its business activities consistent with the Corporate Risk Appetite Statement, in which specific guidelines are detailed for each key risk category. Northern Trust's Corporate Risk Appetite Statement reflects the expectation that risk is consciously considered as part of day-to-day activities and strategic decisions. Northern Trust's risk assessment process, aligned with this expectation, consists of a series of programs that identify, measure, manage, and report risks in line with risk appetite and guidelines. A common risk language used across Northern Trust supports risk identification processes and consistent identification of risk, designation of material risks, and grouping of risks into risk themes for effective analysis, oversight, and management of Northern Trust's aggregate risk profile.

Northern Trust maintains a "three lines of defense" operating model to embed a robust risk management capability within its businesses. The model, used to communicate risk management expectations across the organization, contains three roles, each a complimentary level of risk management accountability. Within this operating model, Northern Trust's businesses are the first line of defense for protecting it against the risks inherent in its businesses and are supported by dedicated business risk management teams. The Risk Management function, the second line of defense, sets the direction for Northern Trust's risk management activities and provides aggregate risk oversight and reporting in support of risk governance. Audit Services, the third line of defense, provides independent assurance as to the effectiveness of the integrated enterprise risk framework.

Risk Control

Risk Control is an internal, independent review function within the Risk Management function. Risk Control is managed by the Chief Risk Control Officer and is comprised of Model Risk Management, Credit Review, Global Compliance Testing and Basel Independent Verification groups, each with its own risk focus and oversight. Model Risk Management is responsible for the implementation and management of the enterprise-wide model risk framework and independently validating new models and reviewing and re-validating existing models. Credit Review provides an independent, ongoing assessment of credit exposure and related credit risk management processes across Northern Trust. Global Compliance Testing evaluates the effectiveness of procedures and controls designed to comply with relevant laws and regulations, as well as corresponding Northern Trust policies governing regulatory compliance activities. Lastly, Basel Independent Verification promotes rigor and accuracy in Northern Trust's ongoing compliance with Basel III requirements and adherence to Enhanced Prudential Standards, including Liquidity Stress Testing. The Business Risk Committee oversees Risk Control generally as well as each of these groups.

Audit Services

Audit Services is an independent control function that assesses and validates controls within Northern Trust's enterprise risk management framework. Audit Services is managed by the General Auditor with oversight from the Audit Committee. Audit Services tests the overall adequacy and effectiveness of the system of internal controls associated with the advanced systems on an ongoing basis and reports the results of these audits directly to the Audit Committee. Audit Services includes professionals with a broad range of audit and industry experience, including risk management expertise. The General Auditor reports directly to the Audit Committee and the Corporation's Chief Executive Officer.

Credit Risk

Credit risk is the risk to interest income or principal from the failure of a borrower or counterparty to perform on an obligation.

Credit Risk Overview

Credit risk is inherent in many of Northern Trust's activities. A significant component of credit risk relates to loans, leases, securities, and counterparty-related exposures. Northern Trust's loan portfolio differs significantly from those of other large U.S. financial institutions in that Northern Trust is generally:

- not an originator of loan products to be sold into a secondary market or to be bundled into asset securitizations;
- not an agent bank or syndicator of loans, where risk management is achieved post-close through the sale of participations; and
- not a participant in leveraged financial transactions, such as project finance, private-equity-originated acquisition financing or hedge fund leveraging.

Credit Risk Framework and Governance

The Credit Risk Management function is the focal point of the credit risk framework and, while independent of the businesses, it works closely with them to achieve the goal of assuring proactive management of credit risk. To monitor and control credit risk, the Credit Risk Management function maintains a framework that consists of policies, standards, and practices designed to promote a conservative credit culture. This function also monitors adherence to corporate policies, standards, and external regulations.

The Credit Risk Management function provides a system of checks and balances for Northern Trust's diverse credit-related activities by monitoring these activities and practices and promoting their uniform application throughout Northern Trust.

The credit risk framework provides authorities for approval of the extension of credit. Individual credit authority for commercial and personal loans is limited to specified amounts and maturities. Credit requests exceeding individual authority because of amount, rating, term or other conditions, are referred to the relevant Group Credit Approval Committee. Credit decisions involving exposure in excess of these limits require the approval of the Senior Credit Committee. The Capital Markets Credit Committee has sole credit authority for the approval, modification, or renewal of credit exposure to all wholesale market counterparties.

The CRC establishes and monitors credit-related policies and practices throughout Northern Trust and promotes their uniform application. The Chief Credit Officer reports directly to the CRO and chairs the CRC. Independent oversight and review of the credit risk framework also is provided by Risk Control.

Credit Risk Measurement

An integral component of credit risk measurement is Northern Trust's internal risk rating system. Northern Trust's internal risk rating system enables identification, measurement, approval and monitoring of credit risk. Calculations include entity-specific information about the obligor's or counterparty's probability of default and exposure-specific information about loss given default, exposure at default and maturity.

The Credit Risk Management function is responsible for the ongoing oversight of each model that supports the internal risk-rating system. Independent model governance and oversight is further supported by the activities of Risk Control.

Loans and Other Extensions of Credit

A significant component of credit risk relates to the loan portfolio, including contractual obligations such as legally binding commitments to extend credit, commercial letters of credit, and standby letters of credit. These contractual obligations and arrangements are discussed in the "Off-Balance-Sheet Arrangements" section and in Note 27, "Off-Balance-Sheet Financial Instruments," to the consolidated financial statements provided in Item 8, "Financial Statements and Supplementary Data."

As part of Northern Trust's credit processes, the Credit Risk Management function oversees a range of portfolio reviews that focus on significant and/or weaker-rated credits. This approach allows management to take remedial action in an effort to deal with potential problems. An integral part of the Credit Risk Management function is a formal review of past due and potential problem loans to determine which credits, if any, need to be placed on nonperforming status or charged off. Northern Trust maintains a loan portfolio watch list for adversely classified credit exposures that includes all nonperforming credits as well as other loans with elevated risk of default. Independent from the Credit Risk Management function, Credit Review undertakes both on-site and off-site file reviews that evaluate effectiveness of management's implementation of the Credit Risk Management's requirements.

Counterparty Credit Risk

Counterparty credit risk for Northern Trust primarily arises from a variety of funding, treasury, trading and custody-related activities, including over-the-counter (OTC) currency and interest rate derivatives, and from indemnified securities lending transactions. Credit exposure to counterparties is managed by use of a framework for setting limits by product type and exposure tenor.

To calculate exposure, Northern Trust treats repurchase agreements, reverse repurchase agreements and indemnified securities lending transactions as repo-style transactions. Foreign exchange exposures and interest rate derivatives are treated as OTC derivatives. The exposure at default measurement methodology for each eligible type of counterparty credit exposure, including the use of netting and collateral as risk mitigants, is determined based on operational requirements, the characteristics of the contract type and the portfolio size and complexity.

Credit Risk Mitigation

Northern Trust considers cash flow to be the primary source of repayment for client-related credit exposures. However, Northern Trust employs several different types of credit risk mitigants to manage its overall credit risk in the event cash flow is not sufficient to repay a credit exposure. Northern Trust broadly groups its risk mitigation techniques into the following three primary categories.

Physical and Financial Collateral: Northern Trust's primary risk mitigation approaches include the requirement of collateral. Residential and commercial real estate exposures are typically secured by properly margined mortgages on the property. In cases where loans to commercial or certain Wealth Management clients are secured by marketable securities, the daily values of the securities are monitored closely to ensure adherence to collateral coverage policies.

Netting: On-balance-sheet netting is employed on a limited basis. Netting is primarily related to foreign exchange transactions with major banks and institutional clients subject to eligible master netting agreements. Northern Trust has elected to take the credit risk mitigation capital benefit of netting within its regulatory capital calculation at this time.

Guarantees: Personal and corporate guarantees are often taken to facilitate potential collection efforts and to protect Northern Trust's claims relative to other creditors. Northern Trust has elected not to take the credit risk mitigation capital benefit of guarantors within its regulatory capital calculation at this time.

Another important risk management practice is the avoidance of undue concentrations of exposure, such as in any single (or small number of related) obligor/counterparty, loan type, industry, geography, country or risk mitigant. Processes are in place to establish limits on certain concentrations and the monitoring of adherence to the limits.

Operational Risk

Operational risk is the risk of loss from inadequate or failed internal processes, human factors and systems, or from external events.

Operational Risk Overview

Operational risk is inherent in each of Northern Trust's businesses and corporate functions and reflects the potential for inadequate information systems, operating problems, product design and delivery difficulties, potential legal actions, or other catastrophes to result in losses.

Operational risk includes compliance, fiduciary and legal risks, which under the Corporation's risk structure are governed and managed explicitly.

Operational Risk Framework and Governance

To monitor and control operational risk, Northern Trust maintains a framework consisting of risk management policies, programs and practices designed to promote a sound operational environment and maintain the Corporation's operational risk profile and losses within approved risk appetites and guidelines. The framework is deployed consistently and globally across all businesses and its objective is to identify and measure the factors that impact risk and drive action to reduce future loss events. The Operational Risk Management function is responsible for defining the operational risk framework and providing independent oversight of the framework across Northern Trust. It is the responsibility of each business to implement the enterprise-wide operational risk framework and business-specific risk management programs to identify, monitor, measure, and manage operational risk and mitigate Northern Trust's exposure to loss. Several key programs support the operational risk framework, including:

- ***Loss Event Data Program*** - a program that collects internal and external loss data for use in monitoring operational risk exposure, various business analyses and a Basel Advanced Management Approach (AMA) capital quantification.
- ***Risk and Control Self-Assessment*** - a structured risk management process used by Northern Trust's businesses to analyze the risks that are present in their respective business environments, processes and activities and to assess the adequacy of associated internal controls.
- ***Operational Risk Scenario Analysis*** - a systematic process of obtaining expert opinions from business managers and risk management experts to derive reasoned assessments of the likelihood of occurrence and the potential loss impact of plausible high-severity operational losses.
- ***Product and Process Risk Management Program*** - a program used for evaluating and managing risks associated with the introduction of new and modified noncredit products and services, significant changes to operating processes, and related significant loss events.
- ***Outsourcing Risk Management Program*** - a program that provides processes for appropriate risk assessment, measurement, monitoring and management of outsourced technology and business process outsourcing.
- ***Information Security and Technology Risk Management*** - a program that communicates and implements compliance and risk management processes and controls to address information security, including cyber threats and technology risks to the organization.
- ***Significant New Business Opportunity*** - a program that assesses the resource requirements, impact on systems and controls, and other risk factors prior to taking on significant new business.
- ***Business Continuity Management Program*** - a program designed to minimize business impact and support the resumption of mission critical functions for clients following an incident.
- ***Physical Security*** - a program that provides for the safety of Northern Trust partners, clients, and visitors worldwide.
- ***Insurance Management Program*** - a program designed to reduce the monetary impact of certain operational loss events.

As discussed in Risk Control, Model Risk Management also is part of the operational risk framework.

The ORC is responsible for overseeing the activities of Northern Trust related to the management of operational risk including establishing the Corporate Operational Risk Policy and approving the operational risk framework and programs. This committee has the expanded role of coordinating operational risk issues related to compliance and fiduciary risks. The purpose of this committee is to provide executive management's insight and guidance to the management of existing and emerging operational risks.

Operational Risk Measurement

Northern Trust utilizes the AMA capital quantification process to estimate required capital for the Corporation and applicable U.S. banking subsidiaries. Northern Trust's AMA capital quantification process incorporates outputs from the Loss Event Data, Risk and Control Self-Assessment and Operational Risk Scenario Analysis programs to derive required capital. Business environment factor information is used to estimate loss frequency. The AMA capital quantification process uses a Loss Distribution Approach methodology to combine frequency and severity distributions to arrive at an estimate of the potential aggregate loss at the 99.9 th percentile of the aggregate loss distribution over a one-year time horizon.

Information Security and Technology Management

Effective management of risks related to the confidentiality, integrity and availability of information is crucial in an environment of increasing cyber threat and requires a structured approach to establish and communicate expectations and required practices. Northern Trust's approach to information security begins at a governance level with an organizational structure that reflects support from executive management and includes risk committees comprised of members from across Northern Trust's businesses. In addition to a strong governance process, internal controls and risk management practices are designed to keep risk at levels appropriate to Northern Trust's overall risk appetite and the inherent risk in the markets in which Northern Trust operates. Northern Trust employees are responsible for promoting information security as well as adhering to applicable policies and standards and other means provided to them to safeguard electronic information and business systems within their care. Training and awareness programs to educate employees on information security are on-going and include multiple approaches such as mandatory computer-based training, phishing simulations, and the designation of individuals as Information Security and Privacy Champions within the businesses. In cases where Northern Trust relies on vendors to perform services, controls are routinely reviewed for alignment with industry standards and their ability to protect information. Any findings identified are remediated following a risk-based approach.

In addition to the various information security controls managed and monitored within the organization, Northern Trust uses external third-party security teams on a regular basis to assess effectiveness. These teams perform security program maturity assessments, penetration tests, security assessments and reviews of Northern Trust's susceptibility to social engineering attacks such as spear phishing. Northern Trust operates a global security operations center for threat identification and response. This center aggregates security threat information from systems and platforms across the businesses, and alerts the organization in accordance with its documented Cyber Incident Response Plan.

The Cyber Incident Response Plan is used to respond to cybersecurity incidents. A cybersecurity incident is defined as an incident caused by damaging activity, which requires actions to prevent and respond to disruptions, denials, compromises or exfiltration that impact the confidentiality, integrity and availably of the assets of Northern Trust or its clients. The plan provides a streamlined approach that can be invoked rapidly to address matters that raise enterprise concern and to communicate impact, actions and status to senior management, including the Chief Information Security Officer, and appropriate stakeholders. The plan is designed to work with enterprise-level response plans and is tested routinely.

Business Resiliency and Continuity Management

Northern Trust's business resiliency approach encompasses business continuity and disaster recovery processes enterprise-wide (including staff, technology and facilities) to ensure that following a disaster or business interruption Northern Trust resumes mission-critical business and economic functions and fulfills all regulatory and legal requirements.

Northern Trust's business resiliency mitigation and preventative measures include sophisticated physical security, resilient designs and peer capacity for its corporate data centers, a highly redundant global network, robust network security, resiliency centers that offer alternative workstations, and transfer of work and work-from-home programs that provide further capability.

All of Northern Trust's businesses are required to risk-assess regularly their critical functions and develop business continuity plans covering resource requirements (people, systems, vendor relationships and other assets), arrangements for obtaining these resources and prioritizing the resumption of each function in compliance with corporate standards. The strength of the business continuity programs of all critical third-party vendors to Northern Trust are reviewed on a regular basis. All of Northern Trust's businesses test their plans at least annually.

The ORC annually reviews and presents the corporate business continuity plan to the Business Risk Committee.

Fiduciary Risk
Fiduciary risks are risks arising from the failure, in administering or managing financial and other assets in clients' fiduciary accounts: i) to adhere to a fiduciary standard of care if required under the terms of governing documents or applicable laws; or ii) to properly discharge fiduciary duties. Fiduciary status may hinge on the nature of a particular function being performed and fiduciary standards may vary by jurisdiction, type of relationship and governing document.

Fiduciary Risk Overview
The fiduciary risk management framework identifies, assesses, measures, monitors and reports on fiduciary risk matters deemed significant. Fiduciary risk is mitigated through internal controls and risk management practices that are designed to identify, understand and keep such risk at levels consistent with the organization's overall risk appetite while also managing the inherent risk in each relationship for which Northern Trust serves in a fiduciary capacity. Each business is responsible for complying with all corporate policies and external regulations and for establishing specific procedures, standards and guidelines to manage fiduciary risk within the desired risk appetite level.

Fiduciary Risk Framework and Governance
The FRC is responsible for establishing and reviewing the fiduciary risk policies and establishing the fiduciary risk framework, governance and programs that support the coordination of fiduciary risk activities to identify, monitor, manage and report on fiduciary risk. In addition, the FRC serves as an escalation point for significant issues raised by its subcommittees or elsewhere in the organization.

Compliance Risk
Compliance risk is the risk of legal or regulatory sanctions, financial loss, or damage to reputation resulting from failure to comply with laws, regulations, rules, other regulatory requirements, or codes of conduct and other standards of self-regulatory organizations applicable to Northern Trust. Compliance risk includes the following two subcategories:

- Regulatory Risk - risk arising from failure to comply with prudential and conduct of business or other regulatory requirements.
- Financial Crime Risk - risk arising from financial crime (e.g., money laundering, sanctions violations, fraud, insider dealing, theft, etc.) in relation to the products, services, or accounts of the institution, its clients, or others associated with the same.

Compliance Risk Framework and Governance
The compliance risk management framework identifies, assesses, controls, measures, monitors and reports on compliance risk. The framework is designed to minimize compliance risk and maintain an environment in which criminal or regulatory violations do not occur. The framework includes a comprehensive governance structure and a Compliance and Ethics Program approved by the Business Risk Committee.

Each business is responsible for the implementation and effectiveness of the Compliance and Ethics Program and specific compliance policies within their respective businesses. Each business is responsible for its respective employees' compliance with corporate policies and external regulations and for establishing specific procedures, standards and guidelines to manage compliance risk in accordance with Northern Trust's Compliance and Ethics Program.

The CEOC establishes and monitors adherence to Northern Trust's Compliance and Ethics Program. The Chief Compliance and Ethics Officer reports to the Business Risk Committee as appropriate and chairs the CEOC.

Liquidity Risk
Liquidity risk is the risk of not being able to raise sufficient funds or maintain collateral to meet balance sheet and contingent liability cash flow obligations when due, because of firm-specific or market-wide events.

Liquidity Risk Overview
Northern Trust maintains a strong liquidity position and conservative liquidity risk profile. Northern Trust's balance sheet is liability-driven. That is, the main driver of balance sheet changes comes from changing levels of client deposits, which are generally related to the level of global custody assets serviced and commercial and personal deposits. This liability-driven business model differs from a typical asset-driven business model, where increased levels of deposits and wholesale borrowings are required to support, for example, increased levels of lending for execution of the organization's investment strategy. Northern Trust's balance sheet generally consists of high-quality assets with relatively short durations, resulting in low liquidity risk.

Liquidity Risk Framework and Governance

Northern Trust maintains a liquidity risk framework consisting of risk management policies, and practices to keep its risk profile within the Board-approved Corporate Risk Appetite Statement. All liquidity risk activities are overseen by the Risk Management function, which is independent of the businesses undertaking the activities.

Exposure limits for liquidity risk are set by the Board and committee structures have been established to implement and monitor adherence to corporate policies, external regulations and established procedures. Limits are monitored based on measures such as the liquidity coverage ratio (LCR) and the liquidity stress-testing buffer across a range of time horizons.

The Asset and Liability Management Committee (ALCO) provides first line management oversight and is responsible for approving strategies and activities within the risk appetite, overseeing balance sheet resources, and reviewing reporting such as cash flows and stress test results. The MLRC provides second line oversight and is responsible for approving sub-policies and procedures, establishing and monitoring risk metrics, and approving methodologies and key assumptions that drive liquidity risk measurement.

Liquidity Risk Analysis, Monitoring, and Reporting

Liquidity risk is analyzed and monitored in order to ensure compliance with the approved risk appetite. Various liquidity analysis and monitoring activities are employed by Northern Trust to understand better the nature and sources of its liquidity risks, including: liquidity stress testing, liquidity metric monitoring, collateral management, intraday management, cash flow projections, operational deposit assessments, liquid asset buffer measurement, funds transfer pricing, and contingency funding planning.

The liquidity risk management process is supported through management and regulatory reporting. Both Northern Trust's Treasury and Market and Liquidity Risk Management functions produce management reports using the outputs from the liquidity assessment, monitoring, and analysis, enabling oversight bodies to make informed decisions and support management of risk within the approved risk appetite. Holistic liquidity metrics such as LCR and internal liquidity stress testing are actively monitored, along with a suite of other metrics that provide early warning indicators of changes in the risk profile.

Market Risk

There are two types of market risk, interest rate risk and trading risk. Interest rate risk is the potential for movements in interest rates to cause changes in net interest income and the market value of equity. Trading risk is the potential for movements in market variables such as foreign exchange and interest rates to cause changes in the value of trading positions.

Market Risk Framework and Governance

Northern Trust maintains a market risk framework consisting of risk management policies and practices to keep its risk profile within the Board-approved Corporate Risk Appetite Statement. All market risk activities are overseen by the Risk Management function, which is independent of the businesses undertaking the activities.

Exposure limits for market risk are set by the Board and committee structures have been established to implement and monitor adherence to corporate policies, external regulations and established procedures. Limits are monitored based on measures such as sensitivity of net interest income (NII), sensitivity of market value of equity (MVE), and Value-at-Risk (VaR) across a range of time horizons.

ALCO provides first line management oversight and is responsible for approving strategies and activities within the risk appetite, overseeing balance sheet resources, and reviewing reporting such as stress test results. The MLRC provides second line oversight and is responsible for approving sub-policies and procedures, establishing and monitoring risk metrics, and approving methodologies and key assumptions that drive market risk measurement.

Interest Rate Risk Overview

Interest rate risk is the risk to NII, associated with the balance sheet, or MVE due to changes in interest rates. Changes in interest rates can have a positive or negative impact on NII depending on the positioning of assets, liabilities and off-balance-sheet instruments. Changes in interest rates also can impact the values of assets, liabilities and off-balance-sheet positions, which indirectly impact the MVE. To mitigate interest rate risk, the structure of the balance sheet is managed so that movements of interest rates on assets and liabilities (adjusted for hedges) are highly correlated, which allows Northern Trust's interest-bearing assets and liabilities to contribute to NII even in periods of volatile interest rates.

There are four commonly recognized types of structured interest rate risk:
- repricing, which arises from differences in the maturity and repricing terms of assets and liabilities;
- yield curve, which arises from changes in the shape of the yield curve;
- basis, which arises from imperfect correlation in the adjustment of the rates earned and paid on different financial instruments with otherwise similar repricing characteristics; and
- behavioral characteristics embedded optionality, which arises from client or counterparty behavior in response to interest rate changes.

Interest Rate Risk Analysis, Monitoring, and Reporting
Northern Trust uses two primary measurement techniques to manage interest rate risk: NII and MVE sensitivity. NII sensitivity provides management with a short-term view of the impact of interest rate changes on NII. MVE sensitivity provides management with a long-term view of interest rate changes on MVE as of the period-end balance sheet. Both simulation models use the same initial market interest rates and product balances.

Northern Trust limits aggregate interest rate risk (as measured by the NII sensitivity and MVE sensitivity simulation techniques) to an acceptable level within the context of risk appetite. A variety of actions may be used to implement risk management strategies to modify interest rate risk including:
- purchase of securities;
- sale of securities that are classified as available for sale;
- issuance of senior notes and subordinated notes;
- collateralized borrowings from the Federal Home Loan Bank;
- placing and taking Eurodollar time deposits; and
- hedges with various types of derivative financial instruments.

NII Sensitivity
The modeling of NII sensitivity incorporates on-balance-sheet positions, as well as derivative financial instruments (principally interest rate swaps) that are used to manage interest rate risk. Northern Trust uses market implied forward interest rates as the base case and measures the sensitivity (i.e. change) of a static balance sheet to changes in interest rates. Stress testing of interest rates is performed to include such scenarios as immediate parallel shocks to rates, nonparallel (i.e. twist) changes to yield curves that result in their becoming steeper or flatter, and changes to the relationship among the yield curves (i.e. basis risk).

The NII sensitivity analysis incorporates certain critical assumptions such as interest rates and client behaviors under changing rate environments. These assumptions are based on a combination of historical analysis and future expected pricing behavior. The simulation cannot precisely estimate NII sensitivity given uncertainty in the assumptions; therefore, there could be a change in NII sensitivity to the extent that actual behavior differs from that assumed. The following key assumptions are incorporated into the NII simulation:
- the balance sheet size and mix remains constant over the simulation horizon with maturing assets and liabilities replaced with instruments with similar terms as those that are maturing, with the exception of certain nonmaturity deposits that are considered short-term in nature and therefore receive a more conservative interest-bearing treatment;
- prepayments on mortgage loans and securities collateralized by mortgages are projected under each rate scenario using a third-party mortgage analytics system that incorporates market prepayment assumptions;
- cash flows for structured securities are estimated using a third-party vendor in conjunction with the prepayments provided by the third-party mortgage analytics vendor;
- nonmaturity deposit pricing and lives are projected based on Northern Trust's actual historical patterns and management judgment, depending upon the availability of historical data and current pricing strategies/or judgment; and
- new business rates are based on current spreads to market indices.

The following table shows the estimated NII impact over the next twelve months of 100 and 200 basis point upward movements in interest rates relative to forward rates. Each rate movement is assumed to occur gradually over a one-year period. Given the low level of interest rates, the simulation of NII for rates 100 and 200 basis points lower would not provide meaningful results.

TABLE 42: NET INTEREST INCOME SENSITIVITY AS OF DECEMBER 31, 2017

($ In Millions)		INCREASE/(DECREASE) ESTIMATED IMPACT ON NEXT TWELVE MONTHS OF NET INTEREST INCOME
INCREASE IN INTEREST RATES ABOVE MARKET IMPLIED FORWARD RATES		
100 Basis Points	**$**	**102**
200 Basis Points		**161**

The NII sensitivity analysis does not incorporate any management actions that may be used to mitigate adverse effects of actual interest rate movement. For that reason and others, the estimated impacts do not reflect the likely actual results but serve as estimates of interest rate risk. NII sensitivity is not comparable to actual results disclosed elsewhere or directly predictive of future values of other measures provided. Further, the estimated impacts presented above are not directly comparable to those presented in prior periods due to changes to client deposit pricing assumptions and the implementation of interest rate risk model enhancements.

MVE Sensitivity

MVE is defined as the present value of assets minus the present value of liabilities, net of the value of instruments that are used to manage the interest rate risk of balance sheet items. The potential effect of interest rate changes on MVE is derived from the impact of such changes on projected future cash flows and the present value of these cash flows and is then compared to the established limit. Northern Trust uses current market rates (and the future rates implied by these market rates) as the base case and measures MVE sensitivity under various rate scenarios. Stress testing of interest rates is performed to include such scenarios as immediate parallel shocks to rates, nonparallel (i.e. twist) changes to yield curves that result in their becoming steeper or flatter, and changes to the relationship among the yield curves (i.e. basis risk).

The MVE sensitivity analysis incorporates certain critical assumptions such as interest rates and client behaviors under changing rate environments. These assumptions are based on a combination of historical analysis and future expected pricing behavior. The simulation cannot precisely estimate MVE sensitivity given uncertainty in the assumptions; therefore, there could be a change in MVE sensitivity to the extent that actual behavior differs from the incorporated assumptions. Many of the assumptions that apply to NII sensitivity also apply to MVE sensitivity simulations, with the following separate key assumptions incorporated into the MVE simulation:

- the present value of nonmaturity deposits are estimated using remaining lives, which are based on a combination of Northern Trust's actual historical runoff patterns and management judgment - some balances are assumed to be core and have longer lives while other balances are assumed to be temporary and have comparatively shorter lives; and
- the present values of most noninterest-related balances (such as receivables, equipment, and payables) are the same as their book values.

The following table shows the estimated impact on MVE of 100 and 200 basis point shocks up from current market implied forward rates. Given the low level of interest rates and assumed interest rate floors as rates approach zero, the simulation of MVE for rates 100 or 200 basis points lower would not provide meaningful results.

TABLE 43: MARKET VALUE OF EQUITY SENSITIVITY AS OF DECEMBER 31, 2017

($ In Millions)		INCREASE/(DECREASE) ESTIMATED IMPACT ON MARKET VALUE OF EQUITY
INCREASE IN INTEREST RATES ABOVE MARKET IMPLIED FORWARD RATES		
100 Basis Points	**$**	**383**
200 Basis Points		**258**

The MVE simulations do not incorporate any management actions that may be used to mitigate adverse effects of actual interest rate movements. For that reason and others, the estimated impacts do not reflect the likely actual results but serve as estimates of interest rate risk. MVE sensitivity is not comparable to actual results disclosed elsewhere or directly predictive of future values of other measures provided. Further, the estimated impacts presented above are not directly comparable to those presented in prior periods due to changes to client deposit pricing assumptions and the implementation of interest rate risk model enhancements.

During the year ended December 31, 2017 , Northern Trust did not exceed its NII sensitivity limits or its MVE sensitivity limits.

Foreign Currency Risk Overview
Northern Trust's balance sheet is exposed to nontrading foreign currency risk as a result of its holdings of non-U.S. dollar denominated assets and liabilities, investment in non-U.S. subsidiaries, and future non-U.S. dollar denominated revenue and expense. To manage currency exposures on the balance sheet, Northern Trust attempts to match its assets and liabilities by currency. If those currency offsets do not exist on the balance sheet, Northern Trust will use foreign exchange derivative contracts to mitigate its currency exposure. Foreign exchange contracts are also used to reduce Northern Trust’s currency exposure to future non-U.S. dollar denominated revenue and expense.

In addition, Northern Trust provides foreign exchange services to clients. Most of these services are provided in connection with Northern Trust’s growing global custody business. In the normal course of business Northern Trust also engages in trading of non-U.S. currencies for its own account. Both activities are considered trading activities. The primary market risk associated with global foreign exchange trading activities is foreign exchange risk.

Foreign currency trading positions exist when aggregate obligations to purchase and sell a currency other than the U.S. dollar do not offset each other in amount, or offset each other over different time periods.

Foreign Currency Risk Measurement
Northern Trust measures daily the risk of loss associated with all non-U.S. currency positions using a VaR model and applying the historical simulation methodology. This statistical model provides estimates, based on a variety of high confidence levels, of the potential loss in value that might be incurred if an adverse shift in non-U.S. currency exchange rates were to occur over a small number of days. The model incorporates foreign currency and interest rate volatilities and correlations in price movements among the currencies. VaR is computed for each trading desk and for the global portfolio.

VaR measures are computed in a vended software application which reads foreign exchange positions from Northern Trust’s trading systems each day. Data vendors provide foreign exchange rates and interest rates for all currencies. The Risk Management function monitors on a daily basis VaR model inputs and outputs for reasonableness.

Foreign Currency Risk Monitoring, Reporting and Analysis
Northern Trust monitors several variations of the foreign exchange VaR measures to meet specific regulatory and internal management needs. Variations include different methodologies (historical, variance-covariance and Monte Carlo), equally weighted and exponentially weighted volatilities, horizons of one day and ten days, confidence levels ranging from 95% to 99.95% and look back periods of one year and four years. Those alternative measures provide management an array of corroborating metrics and alternative perspectives on Northern Trust’s market risks.

Automated daily reports are produced and distributed to business managers and risk managers. The Risk Management function also reviews and reports several variations of the VaR measures in historical time series format to provide management with a historical perspective on risk.

The table below presents the levels of total regulatory VaR and its subcomponents for global foreign currency in the years indicated below, based on the historical simulation methodology, a 99% confidence level, a one-day horizon and equally weighted volatility. The total VaR for foreign currency is typically less than the sum of its two components due to diversification benefits derived from the two subcomponents.

TABLE 44: FOREIGN CURRENCY VALUE-AT-RISK

($ In Millions)	TOTAL VaR (SPOT AND FORWARD)		FOREIGN EXCHANGE SPOT VaR		FOREIGN EXCHANGE FORWARD VaR	
As of December 31	2017	2016	2017	2016	2017	2016
High	**$ 1.0**	$ 0.9	**$ 0.4**	$ 0.3	**$ 1.0**	$ 0.9
Low	**0.1**	0.2	**—**	—	**0.1**	0.2
Average	**0.5**	0.5	**0.1**	0.1	**0.5**	0.4
Year-End	**0.3**	0.3	**—**	0.2	**0.3**	0.3

During 2017 and 2016 , Northern Trust did not incur an actual trading loss in excess of the daily value at risk estimate.

Other Nonmaterial Trading Activities
Market risk associated with other trading activities is negligible. Northern Trust's broker-dealer, Northern Trust Securities, Inc., maintains a small portfolio of trading securities held for customer accommodation purposes which averaged $0.8 million for the year ended December 31, 2017 .

Northern Trust is also party to interest rate derivative contracts consisting mostly of interest rate swaps entered into to meet clients' interest rate management needs, but also including a small number of caps, floors, and swaptions (an option to enter into an interest rate swap). All interest rate derivative transactions are executed by the Treasury department. When Northern Trust enters into client transactions, its practice is to mitigate the resulting market risk with offsetting interbank derivative transactions with matching terms and maturities.

Strategic Risk
Strategic risk is the vulnerability of the organization to internal or external developments that render corporate strategy ineffective or unachievable. The consequences of strategic risk can be diminished long-term earnings and capital, as well as reputational damage to the firm. Strategic risk includes the following three subcategories:

- Macroeconomic and geopolitical risk, which centers on events or themes that would have a significant, detrimental impact on financial markets, and by extension, financial services firms. Episodes of this kind would tend to have general, as opposed to idiosyncratic, consequences.
- Business risk, which arises from change in the following areas:
    - Internal: situations within Northern Trust that threaten business continuity, profitability, or the achievement of strategic objectives
    - Secular: behavioral or technological change that affects clients and renders a Northern Trust process or service obsolete
    - Competitive: new products or shifts in the industry landscape that challenge Northern Trust's performance
    - Regulatory: changes to prudential or fiscal policy that have an adverse impact on Northern Trust or its clients
- Reputation risk, which is a residual risk which arises from negative perception on the part of clients, counterparties, stockholders, investors, debt holders, market analysts, regulators, staff, or other relevant parties that adversely affects Northern Trust's ability to conduct its businesses or to access sources of funding.

Strategic Risk Framework and Governance
Northern Trust maintains a framework that consists of risk management policies, frameworks and practices designed to identify, analyze, and limit, where possible, the sources and negative consequences of strategic risk. The Strategic Risk Management function is responsible for defining the strategic risk framework and providing independent oversight of the framework across Northern Trust. In furtherance of this effort, Northern Trust has established governance and strategic planning processes for review and effective challenge, where appropriate, of business strategy and new products.

In addition, Northern Trust maintains a Global Stress Testing Framework which governs stress testing exercises conducted by Northern Trust's businesses and enterprise tabletop exercises that examine the consequences of macroeconomic or geopolitical shocks. Northern Trust also maintains the Global Emergency Response Plan, which guides its reaction to adverse external events if they arise.

Both GERC and the Business Risk Committee are responsible for reviewing the general methods, guidelines and policies by which Northern Trust monitors and controls strategic risk.

FORWARD-LOOKING STATEMENTS

This report may include statements which constitute "forward-looking statements" within the meaning of the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are identified typically by words or phrases such as "believe," "expect," "anticipate," "intend," "estimate," "project," "likely," "plan," "goal," "target," "strategy," and similar expressions or future or conditional verbs such as "may," "will," "should," "would," and "could." Forward-looking statements include statements, other than those related to historical facts, that relate to Northern Trust's financial results and outlook; capital adequacy; dividend policy and share repurchase program; accounting estimates and assumptions; credit quality including allowance levels; future pension plan contributions; effective tax rate; anticipated expense levels, including related to technology and regulatory initiatives; contingent liabilities; acquisitions; strategies; industry trends; and expectations regarding the impact of recent legislation and accounting pronouncements. These statements are based on Northern Trust's current beliefs and expectations of future events or future results, and involve risks and uncertainties that are difficult to predict and subject to change. These statements are also based on assumptions about many important factors, including:

- financial market disruptions or economic recession, whether in the United States, Europe, the Middle East, Asia or other regions;
- volatility or changes in financial markets, including debt and equity markets, that impact the value, liquidity, or credit ratings of financial assets in general, or financial assets held in particular investment funds or client portfolios, including those funds, portfolios, and other financial assets with respect to which Northern Trust has taken, or may in the future take, actions to provide asset value stability or additional liquidity;
- the impact of equity markets on fee revenue;
- the downgrade of U.S. government-issued and other securities;
- changes in foreign exchange trading client volumes and volatility in foreign currency exchange rates, changes in the valuation of the U.S. dollar relative to other currencies in which Northern Trust records revenue or accrues expenses, and Northern Trust's success in assessing and mitigating the risks arising from all such changes and volatility;
- a decline in the value of securities held in Northern Trust's investment portfolio, particularly asset-backed securities, the liquidity and pricing of which may be negatively impacted by periods of economic turmoil and financial market disruptions;
- Northern Trust's ability to address operating risks, including cyber-security or data security breach risks, human errors or omissions, pricing or valuation of securities, fraud, systems performance or defects, systems interruptions, and breakdowns in processes or internal controls;
- Northern Trust's success in responding to and investing in changes and advancements in technology;
- a significant downgrade of any of Northern Trust's debt ratings;
- the health and soundness of the financial institutions and other counterparties with which Northern Trust conducts business;
- uncertainties inherent in the complex and subjective judgments required to assess credit risk and establish appropriate allowances therefor;
- the pace and extent of continued globalization of investment activity and growth in worldwide financial assets;
- changes in interest rates or in the monetary or other policies of various regulatory authorities or central banks;
- changes in the legal, regulatory and enforcement framework and oversight applicable to financial institutions, including changes that may affect leverage limits and risk-based capital and liquidity requirements, require financial institutions to pay higher assessments, expose financial institutions to certain liabilities of their subsidiary depository institutions, or restrict or increase the regulation of certain activities carried on by financial institutions, including Northern Trust;
- increased costs of compliance and other risks associated with changes in regulation, the current regulatory environment, and areas of increased regulatory emphasis and oversight in the United States and other countries, such as anti-money laundering, anti-bribery, and client privacy;
- failure to address in the Corporation's resolution plan submitted in December 2017 the "shortcomings" jointly identified by the Federal Reserve Board and FDIC in the resolution plan submitted by the Corporation in December 2015;
- failure to satisfy regulatory standards or to obtain regulatory approvals when required, including for the use and distribution of capital;
- changes in tax laws, accounting requirements or interpretations and other legislation in the United States or other countries that could affect Northern Trust or its clients including the Tax Cuts and Jobs Act;
- geopolitical risks and the risks of extraordinary events such as natural disasters, terrorist events and war, and the responses of the United States and other countries to those events;
- the pending departure of the United Kingdom from the European Union, commonly referred to as "Brexit," and any negative effects thereof on global economic conditions, global financial markets, and our business and results of operations;
- changes in the nature and activities of Northern Trust's competition;
- Northern Trust's success in maintaining existing business and continuing to generate new business in existing and targeted markets and its ability to deploy deposits in a profitable manner consistent with its liquidity requirements;
- Northern Trust's ability to address the complex needs of a global client base and manage compliance with legal, tax, regulatory and other requirements;
- Northern Trust's ability to maintain a product mix that achieves acceptable margins;
- Northern Trust's ability to continue to generate investment results that satisfy clients and to develop an array of investment products;

- Northern Trust's success in recruiting and retaining the necessary personnel to support business growth and expansion and maintain sufficient expertise to support increasingly complex products and services;
- Northern Trust's success in implementing its expense management initiatives, including its "Value for Spend" initiative;
- uncertainties inherent in Northern Trust's assumptions concerning its pension plan, including discount rates and expected contributions, returns and payouts;
- Northern Trust's success in continuing to enhance its risk management practices and controls and managing risks inherent in its businesses, including credit risk, operational risk, market and liquidity risk, fiduciary risk, compliance risk and strategic risk;
- risks and uncertainties inherent in the litigation and regulatory process, including the possibility that losses may be in excess of Northern Trust's recorded liability and estimated range of possible loss for litigation exposures;
- risks associated with being a holding company, including Northern Trust's dependence on dividends from its principal subsidiary;
- the risk of damage to Northern Trust's reputation which may undermine the confidence of clients, counterparties, rating agencies, and stockholders; and
- other factors identified elsewhere in this Annual Report on Form 10-K, including those factors described in Item 1A, "Risk Factors," and other filings with the SEC, all of which are available on Northern Trust's website.

Actual results may differ materially from those expressed or implied by forward-looking statements. The information contained herein is current only as of the date of that information. All forward-looking statements included in this document are based upon information presently available, and Northern Trust assumes no obligation to update its forward-looking statements.

RECONCILIATION TO FULLY TAXABLE EQUIVALENT

The following table presents a reconciliation of interest income, net interest income, net interest margin, and total revenue prepared in accordance with GAAP to such measures on an FTE basis, which are non-GAAP financial measures. Management believes this presentation provides a clearer indication of these financial measures for comparative purposes. When adjusted to an FTE basis, yields on taxable, nontaxable and partially taxable assets are comparable; however, the adjustment to an FTE basis has no impact on net income.

TABLE 45: RECONCILIATION TO FULLY TAXABLE EQUIVALENT

	FOR THE YEAR ENDED DECEMBER 31,								
	2017			2016			2015		
($ In Millions)	**REPORTED**	**FTE ADJ.**	**FTE**	REPORTED	FTE ADJ.	FTE	REPORTED	FTE ADJ.	FTE
Interest Income	**$ 1,769.4**	**$ 45.8**	**$ 1,815.2**	$ 1,416.9	$ 25.1	$ 1,442.0	$ 1,224.0	$ 25.3	$ 1,249.3
Interest Expense	**340.2**	**—**	**340.2**	182.0	—	182.0	153.9	—	153.9
Net Interest Income	**$ 1,429.2**	**$ 45.8**	**$ 1,475.0**	$ 1,234.9	$ 25.1	$ 1,260.0	$ 1,070.1	$ 25.3	$ 1,095.4
Net Interest Margin	**1.29%**		**1.33%**	1.15%		1.18%	1.05%		1.07%
Total Revenue	**$ 5,375.3**	**$ 45.8**	**$ 5,421.1**	$ 4,961.8	$ 25.1	$ 4,986.9	$ 4,702.6	$ 25.3	$ 4,727.9

	FOR THE YEAR ENDED DECEMBER 31,					
	2014			2013		
($ In Millions)	REPORTED	FTE ADJ.	FTE	REPORTED	FTE ADJ.	FTE
Interest Income	$ 1,186.9	$ 29.4	$ 1,216.3	$ 1,155.5	$ 32.5	$ 1,188.0
Interest Expense	181.4	—	181.4	222.4	—	222.4
Net Interest Income	$ 1,005.5	$ 29.4	$ 1,034.9	$ 933.1	$ 32.5	$ 965.6
Net Interest Margin	1.05%		1.08%	1.09%		1.13%
Total Revenue	$ 4,331.2	$ 29.4	$ 4,360.6	$ 4,089.3	$ 32.5	$ 4,121.8

ITEM 7A – QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

The information called for by this item is incorporated herein by reference to the "Risk Management" section of Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," of this Annual Report on Form 10-K.

ITEM 8 – FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

In addition to the Report of Independent Registered Public Accounting Firm and the consolidated financial statements and accompanying notes provided below, the table titled “Quarterly Financial Data (Unaudited)” under “Supplemental Item – Selected Statistical and Supplemental Financial Data” is incorporated herein by reference.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

TO THE STOCKHOLDERS AND BOARD OF DIRECTORS OF NORTHERN TRUST CORPORATION:

Opinion on the Consolidated Financial Statements
We have audited the accompanying consolidated balance sheets of Northern Trust Corporation and subsidiaries (the Corporation) as of December 31, 2017 and 2016 , the related consolidated statements of income, comprehensive income, changes in stockholders’ equity, and cash flows for each of the years in the three-year period ended December 31, 2017 , and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Corporation as of December 31, 2017 and 2016 , and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2017 , in conformity with U.S. generally accepted accounting principles.

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

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

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

KPMG LLP

We have served as the Corporation’s auditor since 2002.

CHICAGO , ILLINOIS
FEBRUARY 27, 2018

CONSOLIDATED BALANCE SHEETS

(In Millions Except Share Information)	DECEMBER 31, 2017	2016
ASSETS		
Cash and Due from Banks	**$ 4,518.1**	$ 5,332.0
Federal Reserve and Other Central Bank Deposits	**40,479.1**	26,674.2
Interest-Bearing Deposits with Banks	**5,611.9**	4,800.6
Federal Funds Sold and Securities Purchased under Agreements to Resell	**1,324.3**	1,974.3
Securities		
Available for Sale	**33,742.1**	35,579.8
Held to Maturity (Fair value of $13,010.9 and $8,905.1)	**13,049.0**	8,921.1
Trading Account	**0.5**	0.3
Total Securities	**46,791.6**	44,501.2
Loans and Leases		
Commercial	**14,558.0**	15,666.7
Personal	**18,034.2**	18,155.4
Total Loans and Leases (Net of unearned income of $35.5 and $41.2)	**32,592.2**	33,822.1
Allowance for Credit Losses Assigned to Loans and Leases	**(131.2)**	(161.0)
Buildings and Equipment	**464.6**	466.6
Client Security Settlement Receivables	**1,647.0**	1,043.7
Goodwill	**605.6**	519.4
Other Assets	**4,687.3**	4,953.8
Total Assets	**$ 138,590.5**	$ 123,926.9
LIABILITIES		
Deposits		
Demand and Other Noninterest-Bearing	**$ 18,712.2**	$ 22,190.4
Savings and Money Market	**16,975.3**	16,509.0
Savings Certificates and Other Time	**1,152.3**	1,331.7
Non U.S. Offices – Noninterest-Bearing	**9,878.8**	7,972.5
– Interest-Bearing	**65,672.2**	53,648.1
Total Deposits	**112,390.8**	101,651.7
Federal Funds Purchased	**2,286.1**	204.8
Securities Sold Under Agreements to Repurchase	**834.0**	473.7
Other Borrowings	**6,051.1**	5,109.5
Senior Notes	**1,497.3**	1,496.6
Long-Term Debt	**1,449.5**	1,330.9
Floating Rate Capital Debt	**277.5**	277.4
Other Liabilities	**3,588.0**	3,611.9
Total Liabilities	**128,374.3**	114,156.5
STOCKHOLDERS’ EQUITY		
Preferred Stock, No Par Value; Authorized 10,000,000 shares:		
Series C, outstanding shares of 16,000	**388.5**	388.5
Series D, outstanding shares of 5,000	**493.5**	493.5
Common Stock, $1.66 2/3 Par Value; Authorized 560,000,000 shares; Outstanding shares of 226,126,674 and 228,605,485	**408.6**	408.6
Additional Paid-In Capital	**1,047.2**	1,035.8
Retained Earnings	**9,685.1**	8,908.4
Accumulated Other Comprehensive Loss	**(414.3)**	(370.0)
Treasury Stock (19,044,850 and 16,566,039 shares, at cost)	**(1,392.4)**	(1,094.4)
Total Stockholders' Equity	**10,216.2**	9,770.4
Total Liabilities and Stockholders' Equity	**$ 138,590.5**	$ 123,926.9

See accompanying notes to consolidated financial statements on pages 93-161.

CONSOLIDATED STATEMENTS OF INCOME

(In Millions Except Share Information)	FOR THE YEAR ENDED DECEMBER 31, 2017	2016	2015
Noninterest Income			
Trust, Investment and Other Servicing Fees	**$ 3,434.3**	$ 3,108.1	$ 2,980.5
Foreign Exchange Trading Income	**209.9**	236.6	261.8
Treasury Management Fees	**56.4**	62.8	64.7
Security Commissions and Trading Income	**89.6**	81.4	78.7
Other Operating Income	**157.5**	241.2	247.1
Investment Security Losses, net (Note)	**(1.6)**	(3.2)	(0.3)
Total Noninterest Income	**3,946.1**	3,726.9	3,632.5
Net Interest Income			
Interest Income	**1,769.4**	1,416.9	1,224.0
Interest Expense	**340.2**	182.0	153.9
Net Interest Income	**1,429.2**	1,234.9	1,070.1
Provision for Credit Losses	**(28.0)**	(26.0)	(43.0)
Net Interest Income after Provision for Credit Losses	**1,457.2**	1,260.9	1,113.1
Noninterest Expense			
Compensation	**1,733.7**	1,541.1	1,443.3
Employee Benefits	**319.9**	293.3	285.3
Outside Services	**668.4**	627.1	595.7
Equipment and Software	**524.0**	467.4	454.8
Occupancy	**191.8**	177.4	173.5
Other Operating Expense	**331.6**	364.4	328.0
Total Noninterest Expense	**3,769.4**	3,470.7	3,280.6
Income before Income Taxes	**1,633.9**	1,517.1	1,465.0
Provision for Income Taxes	**434.9**	484.6	491.2
NET INCOME	**$ 1,199.0**	$ 1,032.5	$ 973.8
Preferred Stock Dividends	**49.8**	23.4	23.4
Net Income Applicable to Common Stock	**$ 1,149.2**	$ 1,009.1	$ 950.4
PER COMMON SHARE			
Net Income – Basic	**$ 4.95**	$ 4.35	$ 4.03
– Diluted	**4.92**	4.32	3.99
Average Number of Common Shares Outstanding – Basic	**228,257,664**	227,580,584	232,279,849
– Diluted	**229,654,401**	229,151,406	234,221,729
Note: Changes in Other-Than-Temporary-Impairment (OTTI) Losses	**$ (0.2)**	$ (3.7)	$ —
Other Security Gains/(Losses), net	**(1.4)**	0.5	(0.3)
Investment Security Losses, net	**$ (1.6)**	$ (3.2)	$ (0.3)

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(In Millions)	FOR THE YEAR ENDED DECEMBER 31, 2017	2016	2015
Net Income	**$ 1,199.0**	$ 1,032.5	$ 973.8
Other Comprehensive Income (Loss) (Net of Tax and Reclassifications)			
Net Unrealized (Losses) Gains on Securities Available for Sale	**(42.4)**	(1.4)	(58.6)
Net Unrealized Gains (Losses) on Cash Flow Hedges	**(1.6)**	9.1	1.7
Foreign Currency Translation Adjustments	**16.7**	(0.9)	(15.9)
Pension and Other Postretirement Benefit Adjustments	**(17.0)**	(4.1)	19.8
Other Comprehensive Income (Loss)	**(44.3)**	2.7	(53.0)
Comprehensive Income	**$ 1,154.7**	$ 1,035.2	$ 920.8

See accompanying notes to consolidated financial statements on pages 93-161.

CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY

	FOR THE YEAR ENDED DECEMBER 31,		
(In Millions)	**2017**	2016	2015
PREFERRED STOCK			
Balance at January 1	**$ 882.0**	$ 388.5	$ 388.5
Issuance of Preferred Stock, Series D	**—**	493.5	—
Balance at December 31	**882.0**	882.0	388.5
COMMON STOCK			
Balance at January 1 and December 31	**408.6**	408.6	408.6
ADDITIONAL PAID-IN CAPITAL			
Balance at January 1	**1,035.8**	1,072.3	1,050.9
Treasury Stock Transactions – Stock Options and Awards	**(117.1)**	(116.6)	(74.0)
Stock Options and Awards – Amortization	**128.5**	87.7	77.7
Stock Options and Awards – Tax Benefits	**—**	(7.6)	17.7
Balance at December 31	**1,047.2**	1,035.8	1,072.3
RETAINED EARNINGS			
Balance at January 1	**8,908.4**	8,242.8	7,625.4
Net Income	**1,199.0**	1,032.5	973.8
Dividends Declared – Common Stock	**(372.5)**	(343.5)	(333.0)
Dividends Declared – Preferred Stock	**(49.8)**	(23.4)	(23.4)
Balance at December 31	**9,685.1**	8,908.4	8,242.8
ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)			
Balance at January 1	**(370.0)**	(372.7)	(319.7)
Net Unrealized (Losses) Gains on Securities Available for Sale	**(42.4)**	(1.4)	(58.6)
Net Unrealized Gains (Losses) on Cash Flow Hedges	**(1.6)**	9.1	1.7
Foreign Currency Translation Adjustments	**16.7**	(0.9)	(15.9)
Pension and Other Postretirement Benefit Adjustments	**(17.0)**	(4.1)	19.8
Balance at December 31	**(414.3)**	(370.0)	(372.7)
TREASURY STOCK			
Balance at January 1	**(1,094.4)**	(1,033.6)	(704.8)
Stock Options and Awards	**225.1**	350.3	168.1
Stock Purchased	**(523.1)**	(411.1)	(496.9)
Balance at December 31	**(1,392.4)**	(1,094.4)	(1,033.6)
Total Stockholders' Equity at December 31	**$ 10,216.2**	$ 9,770.4	$ 8,705.9

See accompanying notes to consolidated financial statements on pages 93-161.

CONSOLIDATED STATEMENTS OF CASH FLOWS

(In Millions)	FOR THE YEAR ENDED DECEMBER 31, 2017	2016	2015
CASH FLOWS FROM OPERATING ACTIVITIES			
Net Income	**$ 1,199.0**	$ 1,032.5	$ 973.8
Adjustments to Reconcile Net Income to Net Cash Provided by Operating Activities			
Investment Security Losses, net	**1.6**	3.2	0.3
Amortization and Accretion of Securities and Unearned Income, net	**105.0**	100.9	53.3
Provision for Credit Losses	**(28.0)**	(26.0)	(43.0)
Depreciation on Buildings and Equipment	**101.2**	89.2	90.4
Amortization of Computer Software	**309.1**	275.3	250.3
Amortization of Intangibles	**11.4**	8.8	10.9
Change in Accrued Income Taxes	**36.2**	(129.0)	206.8
Pension Plan Contributions	**(14.5)**	(12.8)	(21.1)
Deferred Income Tax Provision	**(76.1)**	(175.8)	(146.2)
Change in Receivables	**(119.3)**	(129.2)	(16.2)
Change in Interest Payable	**10.7**	(0.1)	(8.2)
Change in Collateral With Derivative Counterparties, net	**486.2**	(180.4)	801.4
Other Operating Activities, net	**(302.1)**	653.4	(318.1)
Net Cash Provided by Operating Activities	**1,720.4**	1,510.0	1,834.4
CASH FLOWS FROM INVESTING ACTIVITIES			
Net Change in Federal Funds Sold and Securities Purchased under Agreements to Resell	**678.9**	(372.9)	(549.8)
Change in Interest-Bearing Deposits with Banks	**(467.7)**	1,906.1	284.9
Net Change in Federal Reserve and Other Central Bank Deposits	**(12,748.7)**	(4,124.2)	558.6
Purchases of Securities – Held to Maturity	**(11,955.2)**	(8,573.2)	(8,075.5)
Proceeds from Maturity and Redemption of Securities – Held to Maturity	**9,924.8**	4,026.5	6,628.3
Purchases of Securities – Available for Sale	**(9,780.0)**	(14,741.9)	(11,490.3)
Proceeds from Sale, Maturity and Redemption of Securities – Available for Sale	**10,103.4**	11,317.3	8,576.1
Change in Loans and Leases	**1,451.0**	(471.0)	(1,581.0)
Purchases of Buildings and Equipment	**(91.6)**	(111.3)	(98.5)
Purchases and Development of Computer Software	**(381.2)**	(362.1)	(335.0)
Change in Client Security Settlement Receivables	**(592.6)**	1,105.0	(605.0)
Acquisition of a Subsidiary, Net of Cash Received	**(188.5)**	(16.9)	—
Other Investing Activities, net	**25.8**	226.5	(212.9)
Net Cash Used in Investing Activities	**(14,021.6)**	(10,192.1)	(6,900.1)
CASH FLOWS FROM FINANCING ACTIVITIES			
Change in Deposits	**8,523.6**	6,737.4	8,105.7
Change in Federal Funds Purchased	**2,081.2**	(146.7)	(581.4)
Change in Securities Sold under Agreements to Repurchase	**360.5**	(72.9)	(338.5)
Change in Short-Term Other Borrowings	**967.7**	1,073.5	2,312.8
Proceeds from Senior Notes and Long-Term Debt	**350.0**	—	—
Repayments of Senior Notes and Long-Term Debt	**(208.7)**	(6.7)	(231.0)
Proceeds from Issuance of Preferred Stock - Series D	**—**	493.5	—
Treasury Stock Purchased	**(523.1)**	(411.1)	(496.9)
Net Proceeds from Stock Options	**108.0**	233.8	94.0
Cash Dividends Paid on Common Stock	**(356.8)**	(333.0)	(321.4)
Cash Dividends Paid on Preferred Stock	**(49.8)**	(23.4)	(27.0)
Other Financing Activities, net	**0.1**	(7.5)	17.8
Net Cash Provided by Financing Activities	**11,252.7**	7,536.9	8,534.1
Effect of Foreign Currency Exchange Rates on Cash	**234.6**	58.7	(70.9)
(Decrease) Increase in Cash and Due from Banks	**(813.9)**	(1,086.5)	3,397.5
Cash and Due from Banks at Beginning of Year	**5,332.0**	6,418.5	3,021.0
Cash and Due from Banks at End of Year	**$ 4,518.1**	$ 5,332.0	$ 6,418.5
SUPPLEMENTAL DISCLOSURES OF CASH FLOW INFORMATION			
Interest Paid	**$ 328.8**	$ 181.6	$ 161.6
Income Taxes Paid	**441.2**	754.2	390.0
Transfers from Loans to OREO	**8.2**	14.2	13.0

See accompanying notes to consolidated financial statements on pages 93-161.

Note 1 – Summary of Significant Accounting Policies

The consolidated financial statements have been prepared in conformity with U.S. generally accepted accounting principles (GAAP) and reporting practices prescribed for the banking industry. A description of the more significant accounting policies follows.

A. Basis of Presentation. The consolidated financial statements include the accounts of Northern Trust Corporation (Corporation) and its wholly-owned subsidiary, The Northern Trust Company (Bank), and various other wholly-owned subsidiaries of the Corporation and Bank. Throughout the notes, the term “Northern Trust” refers to the Corporation and its subsidiaries. Intercompany balances and transactions have been eliminated in consolidation. The consolidated statements of income include results of acquired subsidiaries from the dates of acquisition. Certain prior-year balances have been reclassified consistent with the current-year’s presentation.

B. Nature of Operations. The Corporation is a bank holding company that has elected to be a financial holding company under the Bank Holding Company Act of 1956, as amended. The Bank is an Illinois banking corporation headquartered in Chicago and the Corporation’s principal subsidiary. The Corporation conducts business in the United States (U.S.) and internationally through various U.S. and non-U.S. subsidiaries, including the Bank.

Northern Trust generates the majority of its revenue from its two client-focused reporting segments: Corporate & Institutional Services (C&IS) and Wealth Management. Asset management and related services are provided to C&IS and Wealth Management clients primarily by the Asset Management business.

C&IS is a leading global provider of asset servicing and related services to corporate and public retirement funds, foundations, endowments, fund managers, insurance companies, sovereign wealth funds, and other institutional investors around the globe. Asset servicing and related services encompass a full range of capabilities including but not limited to: global custody; fund administration; investment operations outsourcing; investment management; investment risk and analytical services; employee benefit services; securities lending; foreign exchange; treasury management; brokerage services; transition management services; banking and cash management. Client relationships are managed through the Bank and the Bank’s and the Corporation’s other subsidiaries, including support from locations in North America, Europe, the Middle East, and the Asia-Pacific region.

Wealth Management focuses on high-net-worth individuals and families, business owners, executives, professionals, retirees, and established privately-held businesses in its target markets. The business also includes the Global Family Office, which provides customized services to meet the complex financial needs of individuals and family offices in the U.S. and throughout the world with assets typically exceeding $200 million . In supporting these targeted segments, Wealth Management provides trust, investment management, custody, and philanthropic services; financial consulting; guardianship and estate administration; family business consulting; family financial education; brokerage services; and private and business banking. Wealth Management services are delivered by multidisciplinary teams through a network of offices in 18 U.S. states and Washington, D.C., as well as offices in London, Guernsey, and Abu Dhabi.

C. Use of Estimates in the Preparation of Financial Statements. The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenue and expense during the reporting period. Actual results could differ from those estimates.

D. Foreign Currency Remeasurement and Translation. Asset and liability accounts denominated in nonfunctional currencies are remeasured into functional currencies at period-end rates of exchange, except for certain balance sheet items including buildings and equipment, goodwill and other intangible assets, which are remeasured at historical exchange rates. Results from remeasurement of asset and liability accounts are reported in other operating income as currency translation gains (losses), net. Income and expense accounts are remeasured at period-average rates of exchange.

Asset and liability accounts of entities with functional currencies that are not the U.S. dollar are translated at period-end rates of exchange. Income and expense accounts are translated at period-average rates of exchange. Translation adjustments, net of applicable taxes, are reported directly to accumulated other comprehensive income (AOCI), a component of stockholders’ equity.

E. Securities. ***Securities Available for Sale*** are reported at fair value, with unrealized gains and losses credited or charged, net of the tax effect, to AOCI. Realized gains and losses on securities available for sale are determined on a specific identification basis and are reported within other security gains (losses), net, in the consolidated statements of income. Interest income is recorded on the accrual basis, adjusted for the amortization of premium and accretion of discount.

Securities Held to Maturity consist of debt securities that management intends to, and Northern Trust has the ability to, hold until maturity. Such securities are reported at cost, adjusted for amortization of premium and accretion of discount. Interest income is recorded on the accrual basis adjusted for the amortization of premium and accretion of discount.

Securities Held for Trading are stated at fair value. Realized and unrealized gains and losses on securities held for trading are reported in the consolidated statements of income within security commissions and trading income.

Nonmarketable Securities primarily consist of Federal Reserve Bank of Chicago and Federal Home Loan Bank stock and community development investments, each of which are recorded in other assets on the consolidated balance sheets. Federal Reserve and Federal Home Loan Bank stock are reported at cost, which represents redemption value. Community development investments are typically reported at amortized cost. Those community development investments that are designed to generate a return primarily through realization of tax credits and other tax benefits, which are discussed in further detail in Note 28, “Variable Interest Entities,” are reported at amortized cost using the effective yield method or proportional amortization method and amortized over the lives of the related tax credits and other tax benefits.

Other-Than-Temporary Impairment (OTTI). A security is considered to be other-than-temporarily impaired if the present value of cash flows expected to be collected are less than the security’s amortized cost basis (the difference being defined as the credit loss) or if the fair value of the security is less than the security’s amortized cost basis and the investor intends, or more-likely-than-not will be required, to sell the security before recovery of the security’s amortized cost basis. If OTTI exists, the charge to earnings is limited to the amount of credit loss if the investor does not intend to sell the security, and it is more-likely-than-not that it will not be required to sell the security, before recovery of the security’s amortized cost basis. Any remaining difference between fair value and amortized cost is recognized in AOCI, net of applicable taxes. Otherwise, the entire difference between fair value and amortized cost is charged to earnings.

F. Securities Purchased Under Agreements to Resell and Securities Sold Under Agreements to Repurchase. Securities purchased under agreements to resell and securities sold under agreements to repurchase are accounted for as collateralized financings and recorded at the amounts at which the securities were acquired or sold plus accrued interest. To minimize any potential credit risk associated with these transactions, the fair value of the securities purchased or sold is monitored, limits are set on exposure with counterparties, and the financial condition of counterparties is regularly assessed. It is Northern Trust’s policy to take possession, either directly or via third-party custodians, of securities purchased under agreements to resell. Securities sold under agreements to repurchase are held by the counterparty until the repurchase.

G. Derivative Financial Instruments. Northern Trust is a party to various derivative instruments that are used in the normal course of business to meet the needs of its clients; as part of its trading activity for its own account; and as part of its risk management activities. These instruments include foreign exchange contracts, interest rate contracts, total return swap contracts and credit default swap contracts. Derivative financial instruments are recorded on the consolidated balance sheets at fair value within other assets and other liabilities. Derivative asset and liability positions with the same counterparty are reflected on a net basis on the consolidated balance sheets in cases where legally enforceable master netting arrangements or similar agreements exist. Derivative assets and liabilities are further reduced by cash collateral received from, and deposited with, derivative counterparties. The accounting for changes in the fair value of a derivative in the consolidated statements of income depends on whether or not the contract has been designated as a hedge and qualifies for hedge accounting under GAAP. Derivative financial instruments are recorded on the consolidated statements of cash flows within the line item, “other operating activities, net,” except for net investment hedges which are recorded within “other investing activities, net”.

Changes in the fair value of client-related and trading derivative instruments, which are not designated hedges under GAAP, are recognized currently in either foreign exchange trading income or security commissions and trading income. Changes in the fair value of derivative instruments entered into for risk management purposes but not designated as hedges are recognized currently in other operating income. Certain derivative instruments used by Northern Trust to manage risk are formally designated and qualify for hedge accounting as fair value, cash flow, or net investment hedges.

Derivatives designated as fair value hedges are used to limit Northern Trust’s exposure to changes in the fair value of assets and liabilities due to movements in interest rates. Changes in the fair value of the derivative instrument and changes in the fair value of the hedged asset or liability attributable to the hedged risk are recognized currently in income. For substantially all fair value hedges, Northern Trust applies the “shortcut” method of accounting, available under GAAP, which assumes there is no ineffectiveness in a hedge. As a result, changes recorded in the fair value of the hedged item are equal to the offsetting gain or loss on the derivative and are reflected in the same line item. For fair value hedges that do not qualify for the “shortcut” method of accounting, Northern Trust utilizes regression analysis, a “long-haul” method of accounting, in assessing whether these hedging relationships are highly effective at inception and quarterly thereafter. Ineffectiveness resulting from fair value hedges is recorded in either interest income or interest expense.

Derivatives designated as cash flow hedges are used to minimize the variability in cash flows of earning assets or forecasted transactions caused by movements in interest or foreign exchange rates. The effective portion of changes in the fair value of such derivatives is recognized in AOCI, a component of stockholders' equity, and there is no change to the accounting for the hedged item. Balances in AOCI are reclassified to earnings when the hedged forecasted transaction impacts earnings. Northern Trust applies the "shortcut" method of accounting for cash flow hedges of certain available for sale investment securities. For cash flow hedges of certain other available for sale investment securities, foreign currency denominated investment securities, and forecasted foreign currency denominated revenue and expenditure transactions, Northern Trust closely matches all terms of the hedged item and hedging derivative at inception and on an ongoing basis which limits hedge ineffectiveness. For cash flow hedges of available for sale investment securities, to the extent all terms are not perfectly matched, effectiveness is assessed using regression analysis and any ineffectiveness is measured using the hypothetical derivative method. For cash flow hedges of forecasted foreign currency denominated revenue and expenditure transactions and investment securities, to the extent all terms are not perfectly matched, effectiveness is assessed using the dollar-offset method and any ineffectiveness is measured using the hypothetical derivative method. Any ineffectiveness is recognized currently in earnings.

Foreign exchange contracts and qualifying non-derivative instruments designated as net investment hedges are used to minimize Northern Trust's exposure to variability in the foreign currency translation of net investments in non-U.S. branches and subsidiaries. The effective portion of changes in the fair value of the hedging instrument is recognized in AOCI consistent with the related translation gains and losses of the hedged net investment. For net investment hedges, all critical terms of the hedged item and the hedging instrument are matched at inception and on an ongoing basis to minimize the risk of hedge ineffectiveness. To the extent all terms are not perfectly matched, any ineffectiveness is measured using the hypothetical derivative method. Ineffectiveness resulting from net investment hedges is recorded in other operating income. Amounts recorded in AOCI are reclassified to earnings only upon the sale or liquidation of an investment in a non-U.S. branch or subsidiary.

Fair value, cash flow, and net investment hedges are designated and formally documented as such contemporaneous with the transaction. The formal documentation describes the hedge relationship and identifies the hedging instruments and hedged items. Included in the documentation is a discussion of the risk management objectives and strategies for undertaking such hedges, the nature of the risk being hedged, a description of the method for assessing hedge effectiveness at inception and on an ongoing basis, as well as the method that will be used to measure hedge ineffectiveness. For hedges that do not qualify for the "shortcut" or the critical terms match methods of accounting, a formal assessment is performed on a calendar quarter basis to verify that derivatives used in hedging transactions continue to be highly effective in offsetting the changes in fair value or cash flows of the hedged item. Hedge accounting is discontinued if a derivative ceases to be highly effective, matures, is terminated or sold, if a hedged forecasted transaction is no longer expected to occur, or if Northern Trust removes the derivative's hedge designation. Subsequent gains and losses on these derivatives are included in foreign exchange trading income or security commissions and trading income. For discontinued cash flow hedges, the accumulated gain or loss on the derivative remains in AOCI and is reclassified to earnings in the period in which the previously hedged forecasted transaction impacts earnings or is no longer probable of occurring. For discontinued fair value hedges, the previously hedged asset or liability ceases to be adjusted for changes in its fair value. Previous adjustments to the hedged item are amortized over the remaining life of the hedged item.

H. Loans and Leases. Loans and leases are recognized assets that represent a contractual right to receive money either on demand or on fixed or determinable dates. Loans and leases are disaggregated for disclosure purposes by portfolio segment (segment) and by class. Northern Trust has defined its segments as commercial and personal. A class of loans and leases is a subset of a segment, the components of which has similar risk characteristics, measurement attributes, or risk monitoring methods. The classes within the commercial segment have been defined as commercial and institutional, commercial real estate, lease financing, net, non-U.S. and other. The classes within the personal segment have been defined as residential real estate, private client and other.

Loan Classification. Loans that are held for investment are reported at the principal amount outstanding, net of unearned income. Loans classified as held for sale are reported at the lower of aggregate cost or fair value. Undrawn commitments relating to loans that are not held for sale are recorded in other liabilities and are carried at the amount of unamortized fees with an allowance for credit loss liability recognized for any estimated probable losses.

Recognition of Income. Interest income on loans is recorded on an accrual basis unless, in the opinion of management, there is a question as to the ability of the debtor to meet the terms of the loan agreement, or interest or principal is more than 90 days contractually past due and the loan is not well-secured and in the process of collection. Loans meeting such criteria are classified as nonperforming and interest income is recorded on a cash basis. Past due status is based on how long since the contractual due date a principal or interest payment has been past due. For disclosure purposes, loans that are 29 days past due or less are reported as current. At the time a loan is determined to be nonperforming, interest accrued but not collected is reversed against interest income in the current period. Interest collected on nonperforming loans is applied to principal unless, in the opinion of management, collectability of principal is not in doubt. Management’s assessment of indicators of loan and lease collectability, and its policies relative to the recognition of interest income, including the suspension and subsequent resumption of income recognition, do not meaningfully vary between loan and lease classes. Nonperforming loans are returned to performing status when factors indicating doubtful collectability no longer exist. Factors considered in returning a loan to performing status are consistent across all classes of loans and leases and, in accordance with regulatory guidance, relate primarily to expected payment performance. A loan is eligible to be returned to performing status when: (i) no principal or interest that is due is unpaid and repayment of the remaining contractual principal and interest is expected or (ii) the loan has otherwise become well-secured (possessing realizable value sufficient to discharge the debt, including accrued interest, in full) and is in the process of collection (through action reasonably expected to result in debt repayment or restoration to a current status in the near future). A loan that has not been brought fully current may be restored to performing status provided there has been a sustained period of repayment performance (generally a minimum of six payment periods) by the borrower in accordance with the contractual terms, and Northern Trust is reasonably assured of repayment within a reasonable period of time. Additionally, a loan that has been formally restructured so as to be reasonably assured of repayment and performance according to its modified terms may be returned to accrual status, provided there was a well-documented credit evaluation of the borrower’s financial condition and prospects of repayment under the revised terms, and there has been a sustained period of repayment performance (generally a minimum of six payment periods) under the revised terms.

Impaired Loans. A loan is considered to be impaired when, based on current information and events, management determines that it is probable that Northern Trust will be unable to collect all amounts due according to the contractual terms of the loan agreement. Impaired loans are identified through ongoing credit management and risk rating processes, including the formal review of past due and watch list credits. Payment performance and delinquency status are critical factors in identifying impairment for all loans and leases, particularly those within the residential real estate, private client and personal-other classes. Other key factors considered in identifying impairment of loans and leases within the commercial and institutional, lease financing, net, non-U.S., and commercial-other classes relate to the borrower’s ability to perform under the terms of the obligation as measured through the assessment of future cash flows, including consideration of collateral value, market value, and other factors. A loan is also considered to be impaired if its terms have been modified as a concession by Northern Trust or a bankruptcy court resulting from the debtor’s financial difficulties, referred to as a troubled debt restructuring (TDR). All TDRs are reported as impaired loans in the calendar year of their restructuring. In subsequent years, a TDR may cease being reported as impaired if the loan was modified at a market rate and has performed according to the modified terms for at least six payment periods. A loan that has been modified at a below market rate will return to performing status if it satisfies the six payment periods performance requirement; however, it will remain reported as impaired. Impairment is measured based upon the present value of expected future cash flows, discounted at the loan's original effective interest rate, the fair value of the collateral if the loan is collateral dependent, or the loan's observable market value. If the loan valuation is less than the recorded value of the loan, based on the certainty of loss, either a specific allowance is established, or a charge-off is recorded, for the difference. Smaller balance (individually less than $1,000,000) homogeneous loans are collectively evaluated for impairment and excluded from impaired loan disclosures as allowed under applicable accounting standards. Northern Trust’s accounting policies for material impaired loans is consistent across all classes of loans and leases.

Premium, Discounts, Origination Costs and Fees. Premiums and discounts on loans are recognized as an adjustment of yield using the interest method based on the contractual terms of the loan. Certain direct origination costs and fees are netted, deferred and amortized over the life of the related loan as an adjustment to the loan’s yield.

Direct Financing and Leveraged Leases. Unearned lease income from direct financing and leveraged leases is recognized using the interest method. This method provides a constant rate of return on the unrecovered investment over the life of the lease. The rate of return and the allocation of income over the lease term are recalculated from the inception of the lease if during the lease term assumptions regarding the amount or timing of estimated cash flows change. Lease residual values are established at the inception of the lease based on in-house valuations and market analyses provided by outside parties. Lease residual values are reviewed at least annually for OTTI. A decline in the estimated residual value of a leased asset determined to be other-than-temporary would be recorded in the period in which the decline is identified as a reduction of interest income.

I. Allowance for Credit Losses. The allowance for credit losses represents management’s estimate of probable losses which have occurred as of the date of the consolidated financial statements. The loan and lease portfolio and other lending-related credit exposures are regularly reviewed to evaluate the level of the allowance for credit losses. In determining an appropriate allowance level, Northern Trust evaluates the allowance necessary for impaired loans and lending-related commitments and also estimates losses inherent in other lending-related credit exposures. The allowance for credit losses consists of the following components:

Specific Allowance. The specific allowance is determined through an individual evaluation of loans and lending-related commitments considered impaired that is based on expected future cash flows, the value of collateral, and other factors that may impact the borrower's ability to pay. For impaired loans where the amount of specific allowance, if any, is determined based on the value of the underlying real estate collateral, third-party appraisals are typically obtained and utilized by management. These appraisals are generally less than twelve months old and are subject to adjustments to reflect management's judgment as to the realizable value of the collateral.

Inherent Allowance. The inherent allowance estimation methodology is based on internally developed loss data specific to the Northern Trust loan and lease portfolio. The estimation methodology and the related qualitative adjustment framework segregate the loan and lease portfolio into homogeneous segments. For each segment, the probability of default and the loss given default are applied to the total exposure at default to determine a quantitative inherent allowance. The quantitative inherent allowance is then reviewed within the qualitative adjustment framework, where management applies judgment by assessing internal risk factors, potential limitations in the quantitative methodology and environmental factors that are not fully contemplated in the quantitative methodology to compute an adjustment to the quantitative inherent allowance for each segment of the loan portfolio.

The results of the inherent allowance estimation methodology are reviewed quarterly by Northern Trust's Loan Loss Reserve Committee, which includes representatives from Credit Risk Management, reporting segment management, and Corporate Finance.

Loans, leases, and other extensions of credit deemed uncollectible are charged to the allowance for credit losses. Subsequent recoveries, if any, are credited to the allowance. Northern Trust's policies relative to the charging-off of uncollectible loans and leases are consistent across both loan and lease segments. Determinations as to whether loan balances for which the collectability is in question are charged-off or a specific reserve is established are based on management's assessment as to the level of certainty regarding the amount of loss. The provision for credit losses, which is charged to income, is the amount necessary to adjust the allowance for credit losses to the level determined to be appropriate through the above processes. Actual losses may vary from current estimates and the amount of the provision for credit losses may be either greater or less than actual net charge-offs.

Northern Trust analyzes its exposure to credit losses from both on-balance-sheet and off-balance-sheet activity using a consistent methodology.

For purposes of estimating the allowance for credit losses for undrawn loan commitments and standby letters of credit, the exposure at default includes an estimated drawdown of unused credit based on a credit conversion factor. The proportionate amount of the quantitative methodology calculation after any required adjustment in the qualitative framework results in the required allowance for undrawn loan commitments and standby letters of credit as of the reporting date.

The portion of the allowance assigned to loans and leases is reported as a contra asset, directly following loans and leases in the consolidated balance sheets. The portion of the allowance assigned to undrawn loan commitments and standby letters of credit is reported in other liabilities in the consolidated balance sheets.

J. Standby Letters of Credit. Fees on standby letters of credit are recognized in other operating income using the straight-line method over the lives of the underlying agreements. Northern Trust's recorded other liability for standby letters of credit, reflecting the obligation it has undertaken, is measured as the amount of unamortized fees on these instruments.

K. Buildings and Equipment. Buildings and equipment owned are carried at original cost less accumulated depreciation. The charge for depreciation is computed using the straight-line method based on the following range of lives: buildings – up to 30 years ; equipment – 3 to 10 years ; and leasehold improvements–the shorter of the lease term or 15 years . Leased properties meeting certain criteria are capitalized and amortized using the straight-line method over the lease period.

L. Other Real Estate Owned (OREO). OREO is comprised of commercial and residential real estate properties acquired in partial or total satisfaction of loans. OREO assets are carried at the lower of cost or fair value less estimated costs to sell and are recorded in other assets on the consolidated balance sheets. Fair value is typically based on third-party appraisals. Appraisals of OREO properties are updated on an annual basis and are subject to adjustments to reflect management's judgment as to the realizable value of the properties. Losses identified during the 90 -day period after the acquisition of such properties are charged against the allowance for credit losses assigned to loans and leases. Subsequent write-downs that may be required to the carrying value of these assets and gains or losses realized from asset sales are recorded within other operating expense.

M. Goodwill and Other Intangible Assets. Goodwill is not subject to amortization. Separately identifiable acquired intangible assets with finite lives are amortized over their estimated useful lives, primarily on a straight-line basis. Purchased software, software licenses, and allowable internal costs, including compensation relating to software developed for internal use, are capitalized. Software is amortized using the straight-line method over the estimated useful lives of the assets, generally ranging from 3 to 10 years . Fees paid for the use of software licenses that are not hosted by Northern Trust are expensed as incurred.

Goodwill and other intangible assets are reviewed for impairment on an annual basis or more frequently if events or changes in circumstances indicate the carrying amounts may not be recoverable.

N. Trust, Investment and Other Servicing Fees. Trust, investment and other servicing fees are recorded on an accrual basis, over the period in which the service is provided. Fees are a function of the market value of assets custodied, managed and serviced, the volume of transactions, securities lending volume and spreads, and fees for other services rendered, as set forth in the underlying client agreement. This revenue recognition involves the use of estimates and assumptions, including components that are calculated based on estimated asset valuations and transaction volumes.

O. Client Security Settlement Receivables. These receivables result from custody client withdrawals from short-term investment funds that settle on the following business day as well as custody client security sales executed under contractual settlement date accounting that have not yet settled. Northern Trust advances cash to the client on the date of either client withdrawal or trade execution and awaits collection from either the short-term investment funds or via the settled trade.

P. Income Taxes. Northern Trust follows an asset and liability approach to account for income taxes. The objective is to recognize the amount of taxes payable or refundable for the current year, and to recognize deferred tax assets and liabilities resulting from temporary differences between the amounts reported in the financial statements and the tax bases of assets and liabilities. The measurement of tax assets and liabilities is based on enacted tax laws and applicable tax rates.

Tax positions taken or expected to be taken on a tax return are evaluated based on their likelihood of being sustained upon examination by tax authorities. Only tax positions that are considered more-likely-than-not to be sustained are recorded in the consolidated financial statements. Northern Trust recognizes any interest and penalties related to unrecognized tax benefits in the provision for income taxes.

Q. Cash Flow Statements. Cash and cash equivalents have been defined as “Cash and Due from Banks”.

R. Pension and Other Postretirement Benefits. Northern Trust records the funded status of its defined benefit pension and other postretirement plans on the consolidated balance sheets. Funded pension and postretirement benefits are reported in other assets and unfunded pension and postretirement benefits are reported in other liabilities. Plan assets and benefit obligations are measured annually at December 31. Plan assets are determined based on fair value generally representing observable market prices. The projected benefit obligations are determined based on the present value of projected benefit distributions at an assumed discount rate. Pension costs are recognized ratably over the estimated working lifetime of eligible participants.

S. Share-Based Compensation Plans. Northern Trust recognizes as compensation expense the grant-date fair value of stock and stock unit awards and other share-based compensation granted to employees within the consolidated statements of income. The fair values of stock and stock unit awards, including performance stock unit awards and director awards, are based on the closing price of the Corporation’s stock on the date of grant. The fair value of stock options is estimated on the date of grant using the Black-Scholes option pricing model. The model utilizes weighted-average assumptions regarding the period of time that options granted are expected to be outstanding (expected term) based primarily on the historical exercise behavior attributable to previous option grants, the estimated yield from dividends paid on the Corporation’s stock over the expected term of the options, the historical volatility of Northern Trust’s stock price and the implied volatility of traded options on Northern Trust stock, and a risk free interest rate based on the U.S. Treasury yield curve at the time of grant for a period equal to the expected term of the options granted.

Compensation expense for share-based award grants with terms that provide for a graded vesting schedule, whereby portions of the award vest in increments over the requisite service period, are recognized on a straight-line basis over the requisite service period for the entire award. Compensation expense for performance stock unit awards are recognized on a straight-line basis over the requisite service period of the award based on expected achievement of the performance condition.

Northern Trust does not include an estimate of future forfeitures in its recognition of share-based compensation expense. Share-based compensation expense is adjusted based on forfeitures as they occur. Dividend equivalents are paid on performance stock unit awards granted prior to February 16, 2016 and restricted stock units granted prior to February 21, 2017 that are not yet vested. Dividend equivalents are accrued on performance stock unit awards granted on or after February 16, 2016, restricted stock units granted on or after February 21, 2017 and director awards not yet vested, and are paid upon vesting. Cash flows resulting from the realization of excess tax benefits are classified as operating cash flows.

T. Net Income Per Common Share. Basic net income per common share is computed by dividing net income/loss applicable to common stock by the weighted average number of common shares outstanding during each period. Diluted net income per common share is computed by dividing net income applicable to common stock and potential common shares by the aggregate of the weighted average number of common shares outstanding during the period and common share equivalents calculated for stock options outstanding using the treasury stock method. In a period of a net loss, diluted net income per common share is calculated in the same manner as basic net income per common share.

Northern Trust has issued certain restricted stock unit awards, which are unvested share-based payment awards that contain nonforfeitable rights to dividends or dividend equivalents. These units are considered participating securities. Accordingly, Northern Trust calculates net income applicable to common stock using the two-class method, whereby net income is allocated between common stock and participating securities.

Note 2 – Recent Accounting Pronouncements

On January 1, 2017, the Corporation adopted ASU 2016-05, “Derivatives and Hedging (Topic 815): Effects of Derivative Contract Novations on Existing Hedge Accounting Relationships (a consensus of the Emerging Issues Task Force)” (ASU 2016-05). ASU 2016-05 clarifies that a change in the counterparty to a derivative instrument that has been designated as the hedging instrument under Topic 815, does not, in and of itself, require dedesignation of that hedging relationship provided all other hedge accounting criteria continue to be met. Upon adoption of ASU 2016-05, the Corporation did not dedesignate any hedging relationships due to change in counterparty and therefore there was no impact to its consolidated financial condition or results of operations.

On January 1, 2017, the Corporation adopted ASU 2016-06, “Derivatives and Hedging (Topic 815): Contingent Put and Call Options in Debt Instruments (a consensus of the Emerging Issues Task Force)” (ASU 2016-06). The amendments in ASU 2016-06 clarify what steps are required when assessing whether the economic characteristics and risks of call (put) options are clearly and closely related to the economic characteristics and risks of their debt hosts, which is one of the criteria for bifurcating an embedded derivative. The Corporation had already applied the approach for analyzing potential embedded derivative instruments in debt instruments detailed in ASU 2016-06 and therefore upon adoption there was no impact to its consolidated financial condition or results of operations.

On January 1, 2017, the Corporation adopted ASU 2016-07, “Investments - Equity Method and Joint Ventures (Topic 323), Simplifying the Transition to the Equity Method of Accounting” (ASU 2016-07), which requires that when an investment qualifies for use of the equity method as a result of an increase in the level of ownership interest or degree of influence, the equity method investor add the cost of acquiring the additional interest in the investee to the current basis of the investor’s previously held interest and adopt the equity method of accounting as of the date the investment becomes qualified for equity method accounting. Upon adoption of ASU 2016-07, the Corporation did not hold an interest in an investee that subsequently qualified for the use of the equity method and therefore there was no impact to its consolidated financial condition or results of operations.

On January 1, 2017, the Corporation adopted ASU 2016-17, “Consolidation (Topic 810): Interests Held through Related Parties That Are under Common Control” (ASU 2016-17). Under ASU 2016-17, a single decision maker evaluating whether it is the primary beneficiary of a variable interest entity will consider its indirect interests held by related parties that are under common control on a proportionate basis. Upon adoption of ASU 2016-17, there was no impact to the Corporation’s consolidated financial condition or results of operations.

Note 3 – Fair Value Measurements

Fair value under GAAP is defined as the price that would be received to sell an asset or paid to transfer a liability (an exit price) in an orderly transaction between market participants on the measurement date.

Fair Value Hierarchy. The following describes the hierarchy of valuation inputs (Levels 1, 2, and 3) used to measure fair value and the primary valuation methodologies used by Northern Trust for financial instruments measured at fair value on a recurring basis. Observable inputs reflect market data obtained from sources independent of the reporting entity; unobservable inputs reflect the entity's own assumptions about how market participants would value an asset or liability based on the best information available. GAAP requires an entity measuring fair value to maximize the use of observable inputs and minimize the use of unobservable inputs and establishes a fair value hierarchy of inputs. Financial instruments are categorized within the hierarchy based on the lowest level input that is significant to their valuation. Northern Trust's policy is to recognize transfers into and transfers out of fair value levels as of the end of the reporting period in which the transfer occurred. No transfers between fair value levels occurred during the years ended December 31, 2017 , or 2016 .

Level 1 – Quoted, active market prices for identical assets or liabilities. Northern Trust's Level 1 assets are comprised of available for sale investments in U.S. treasury securities.

Level 2 – Observable inputs other than Level 1 prices, such as quoted active market prices for similar assets or liabilities, quoted prices for identical or similar assets in inactive markets, and model-derived valuations in which all significant inputs are observable in active markets. Northern Trust's Level 2 assets include available for sale and trading account securities, the fair values of which are determined predominantly by external pricing vendors. Prices received from vendors are compared to other vendor and third-party prices. If a security price obtained from a pricing vendor is determined to exceed pre-determined tolerance levels that are assigned based on an asset type's characteristics, the exception is researched and, if the price is not able to be validated, an alternate pricing vendor is utilized, consistent with Northern Trust's pricing source hierarchy. As of December 31, 2017 , Northern Trust's available for sale securities portfolio included 1,436 Level 2 securities with an aggregate market value of $28.0 billion . All 1,436 securities were valued by external pricing vendors. As of December 31, 2016 , Northern Trust's available for sale securities portfolio included 1,409 Level 2 securities with an aggregate market value of $28.1 billion . All 1,409 securities were valued by external pricing vendors. Trading account securities, which totaled $0.5 million and $0.3 million as of December 31, 2017 , and December 31, 2016 , respectively, were all valued using external pricing vendors.

Northern Trust has established processes and procedures to assess the suitability of valuation methodologies used by external pricing vendors, including reviews of valuation techniques and assumptions used for selected securities. On a daily basis, periodic quality control reviews of prices received from vendors are conducted which include comparisons to prices on similar security types received from multiple pricing vendors and to the previous day's reported prices for each security. Predetermined tolerance level exceptions are researched and may result in additional validation through available market information or the use of an alternate pricing vendor. Quarterly, Northern Trust reviews documentation from third-party pricing vendors regarding the valuation processes and assumptions used in their valuations and assesses whether the fair value levels assigned by Northern Trust to each security classification are appropriate. Annually, valuation inputs used within third-party pricing vendor valuations are reviewed for propriety on a sample basis through a comparison of inputs used to comparable market data, including security classifications that are less actively traded and security classifications comprising significant portions of the portfolio.

Level 2 assets and liabilities also include derivative contracts which are valued internally using widely accepted income-based models that incorporate inputs readily observable in actively quoted markets and reflect the contractual terms of the contracts. Observable inputs include foreign exchange rates and interest rates for foreign exchange contracts; credit spreads, default probabilities, and recovery rates for credit default swap contracts; interest rates for interest rate swap contracts and forward contracts; and interest rates and volatility inputs for interest rate option contracts. Northern Trust evaluates the impact of counterparty credit risk and its own credit risk on the valuation of its derivative instruments. Factors considered include the likelihood of default by Northern Trust and its counterparties, the remaining maturities of the instruments, net exposures after giving effect to master netting arrangements or similar agreements, available collateral, and other credit enhancements in determining the appropriate fair value of derivative instruments. The resulting valuation adjustments have not been considered material.

Level 3 – Valuation techniques in which one or more significant inputs are unobservable in the marketplace. Northern Trust's Level 3 assets consist of auction rate securities purchased in 2008 from Northern Trust clients. To estimate the fair value of auction rate securities, Northern Trust uses external pricing vendors that incorporate transaction details and market-based inputs such as past auction results, trades and bids. The significant unobservable inputs used in the fair value measurement are the prices of the securities supported by little market activity and for which trading is limited.

Northern Trust's Level 3 liabilities consist of swaps that Northern Trust entered into with the purchaser of 1.1 million and 1.0 million shares of Visa Inc. Class B common stock (Visa Class B common shares) previously held by Northern Trust and sold in June 2016 and 2015, respectively. Pursuant to the swaps, Northern Trust retains the risks associated with the ultimate conversion of the Visa Class B common shares into shares of Visa Inc. Class A common stock (Visa Class A common shares), such that the counterparty will be compensated for any dilutive adjustments to the conversion ratio and Northern Trust will be compensated for any anti-dilutive adjustments to the ratio. The swap also requires periodic payments from Northern Trust to the counterparty calculated by reference to the market price of Visa Class A common shares and a fixed rate of interest. The fair value of the swap is determined using a discounted cash flow methodology. The significant unobservable inputs used in the fair value measurement are Northern Trust's own assumptions about estimated changes in the conversion rate of the Visa Class B common shares into Visa Class A common shares, the date on which such conversion is expected to occur and the estimated growth rate of the Visa Class A common share price. See "Visa Class B Common Shares" under Note 24 — "Contingent Liabilities," for further information.

Northern Trust believes its valuation methods for its assets and liabilities carried at fair value are appropriate; however, the use of different methodologies or assumptions, particularly as applied to Level 3 assets and liabilities, could have a material effect on the computation of their estimated fair values.

Management of various businesses and departments of Northern Trust (including Corporate Market Risk, Credit Risk Management, Corporate Finance, C&IS and Wealth Management) reviews valuation methods and models for Level 3 assets and liabilities. Fair value measurements are performed upon acquisitions of an asset or liability. Management of the appropriate business or department reviews assumed inputs, especially when unobservable in the marketplace, in order to substantiate their use in each fair value measurement. When appropriate, management reviews forecasts used in the valuation process in light of other relevant financial projections to understand any variances between current and previous fair value measurements. In certain circumstances, third party information is used to support the fair value measurements. If certain third party information seems inconsistent with consensus views, a review of the information is performed by management of the respective business or department to determine the appropriate fair value of the asset or liability.

The following presents the fair values of, and the valuation techniques, significant unobservable inputs, and quantitative information used to develop significant unobservable inputs for, Northern Trust's Level 3 assets and liabilities as of December 31, 2017 and 2016 .

TABLE 46: LEVEL 3 SIGNIFICANT UNOBSERVABLE INPUTS

	DECEMBER 31, 2017			
FINANCIAL INSTRUMENT	FAIR VALUE	VALUATION TECHNIQUE	UNOBSERVABLE INPUT	RANGE OF INPUTS
Auction Rate Securities	**$ 4.3 million**	**Comparables**	**Price**	**$92 – $100**
Swaps Related to Sale of Certain Visa Class B Common Shares	**$ 29.7 million**	**Discounted Cash Flow**	**Visa Class A Appreciation**	**7.0% – 11.0%**
			Conversion Rate	**1.63x – 1.65x**
			Expected Duration	**1.5 – 4.0 years**

	DECEMBER 31, 2016			
FINANCIAL INSTRUMENT	FAIR VALUE	VALUATION TECHNIQUE	UNOBSERVABLE INPUT	RANGE OF INPUTS
Auction Rate Securities	$ 4.7 million	Comparables	Price	$84 – $99
Swap Related to Sale of Certain Visa Class B Common Shares	$ 25.2 million	Discounted Cash Flow	Visa Class A Appreciation	7.0% – 11.0%
			Conversion Rate	1.63x – 1.65x
			Expected Duration	1.5 – 4.5 years

The following presents assets and liabilities measured at fair value on a recurring basis as of December 31, 2017 and 2016 , segregated by fair value hierarchy level.

TABLE 47: RECURRING BASIS HIERARCHY LEVELING

	DECEMBER 31, 2017				
(In Millions)	LEVEL 1	LEVEL 2	LEVEL 3	NETTING	ASSETS/ LIABILITIES AT FAIR VALUE
Securities					
Available for Sale					
U.S. Government	$ 5,700.3	$ —	$ —	$ —	$ 5,700.3
Obligations of States and Political Subdivisions	—	746.4	—	—	746.4
Government Sponsored Agency	—	18,676.6	—	—	18,676.6
Non-U.S. Government	—	177.2	—	—	177.2
Corporate Debt	—	2,993.0	—	—	2,993.0
Covered Bonds	—	875.6	—	—	875.6
Sub-Sovereign, Supranational and Non-U.S. Agency Bonds	—	1,820.0	—	—	1,820.0
Other Asset-Backed	—	2,291.3	—	—	2,291.3
Auction Rate	—	—	4.3	—	4.3
Commercial Mortgage-Backed	—	435.1	—	—	435.1
Other	—	22.3	—	—	22.3
Total Available for Sale	5,700.3	28,037.5	4.3	—	33,742.1
Trading Account	—	0.5	—	—	0.5
Total Available for Sale and Trading Securities	5,700.3	28,038.0	4.3	—	33,742.6
Other Assets					
Derivative Assets					
Foreign Exchange Contracts	—	2,557.1	—	—	2,557.1
Interest Rate Contracts	—	97.0	—	—	97.0
Total Derivative Assets	—	2,654.1	—	(1,860.0)	794.1
Other Liabilities					
Derivative Liabilities					
Foreign Exchange Contracts	—	2,715.1	—	—	2,715.1
Interest Rate Contracts	—	83.5	—	—	83.5
Other Financial Derivatives [1]	—	0.7	29.7	—	30.4
Total Derivative Liabilities	$ —	$ 2,799.3	$ 29.7	$ (1,621.4)	$ 1,207.6

Note: Northern Trust has elected to net derivative assets and liabilities when legally enforceable master netting arrangements or similar agreements exist between Northern Trust and the counterparty. As of December 31, 2017 , derivative assets and liabilities shown above also include reductions of $427.6 million and $189.0 million , respectively, as a result of cash collateral received from and deposited with derivative counterparties.
(1) This line consists of swaps related to the sale of certain Visa Class B common shares and total return swaps.

(In Millions)	DECEMBER 31, 2016 LEVEL 1	LEVEL 2	LEVEL 3	NETTING	ASSETS/ LIABILITIES AT FAIR VALUE
Securities					
Available for Sale					
U.S. Government	$ 7,522.6	$ —	$ —	$ —	$ 7,522.6
Obligations of States and Political Subdivisions	—	885.2	—	—	885.2
Government Sponsored Agency	—	17,892.8	—	—	17,892.8
Non-U.S. Government	—	417.9	—	—	417.9
Corporate Debt	—	3,765.2	—	—	3,765.2
Covered Bonds	—	1,143.9	—	—	1,143.9
Sub-Sovereign, Supranational and Non-U.S. Agency Bonds	—	1,340.7	—	—	1,340.7
Residential Mortgage-Backed	—	—	—	—	—
Other Asset-Backed	—	2,085.1	—	—	2,085.1
Auction Rate	—	—	4.7	—	4.7
Commercial Mortgage Backed	—	471.6	—	—	471.6
Other	—	50.1	—	—	50.1
Total Available for Sale	7,522.6	28,052.5	4.7	—	35,579.8
Trading Account	—	0.3	—	—	0.3
Total Available for Sale and Trading Securities	7,522.6	28,052.8	4.7	—	35,580.1
Other Assets					
Derivative Assets					
Foreign Exchange Contracts	—	3,609.6	—	—	3,609.6
Interest Rate Contracts	—	247.2	—	—	247.2
Other Financial Derivative	—	—	—	—	—
Total Derivatives Assets	—	3,856.8	—	(2,170.4)	1,686.4
Other Liabilities					
Derivative Liabilities					
Foreign Exchange Contracts	—	3,242.9	—	—	3,242.9
Interest Rate Contracts	—	108.0	—	—	108.0
Other Financial Derivative (1)	—	—	25.2	—	25.2
Total Derivative Liabilities	$ —	$ 3,350.9	$ 25.2	$ (2,431.2)	$ 944.9

Note: Northern Trust has elected to net derivative assets and liabilities when legally enforceable master netting arrangements or similar agreements exist between Northern Trust and the counterparty. As of December 31, 2016 , derivative assets and liabilities shown above also include reductions of $461.3 million and $722.1 million , respectively, as a result of cash collateral received from and deposited with derivative counterparties.

(1) This line consists of a swap related to the sale of certain Visa Class B common shares.

The following tables present the changes in Level 3 assets and liabilities for the years ended December 31, 2017 and 2016 .

TABLE 48: CHANGES IN LEVEL 3 ASSETS AND LIABILITIES

LEVEL 3 ASSETS	AUCTION RATE SECURITIES	
(In Millions)	**2017**	2016
Fair Value at January 1	**$ 4.7**	$ 17.1
Total Gains (Losses):		
Included in Other Comprehensive Income (1)	**0.2**	(0.7)
Purchases, Issues, Sales, and Settlements		
Sales	**—**	(10.1)
Settlements	**(0.6)**	(1.6)
Fair Value at December 31	**$ 4.3**	$ 4.7

(1) Unrealized gains (losses) are included in net unrealized gains (losses) on securities available for sale, within the consolidated statements of comprehensive income.

LEVEL 3 LIABILITIES	SWAPS RELATED TO SALE OF CERTAIN VISA CLASS B COMMON SHARES	
(In Millions)	**2017**	2016
Fair Value at January 1	**$ 25.2**	$ 10.8
Total (Gains) Losses:		
Included in Earnings (1)	**12.7**	4.4
Purchases, Issues, Sales, and Settlements		
Issuance	**—**	14.9
Settlements	**(8.2)**	(4.9)
Fair Value at December 31	**$ 29.7**	$ 25.2
Unrealized (Gains) Losses Included in Earnings Related to Financial Instruments Held at December 31 (1)	**$ 11.4**	$ 4.4

(1) Gains (losses) are recorded in other operating income (expense) within the consolidated statements of income.

For the years ended December 31, 2017 and 2016 there were no assets or liabilities transferred into or out of Level 3.

Carrying values of assets and liabilities that are not measured at fair value on a recurring basis may be adjusted to fair value in periods subsequent to their initial recognition, for example, to record an impairment of an asset. GAAP requires entities to separately disclose these subsequent fair value measurements and to classify them under the fair value hierarchy.

Assets measured at fair value on a nonrecurring basis at December 31, 2017 and 2016 , all of which were categorized as Level 3 under the fair value hierarchy, were comprised of impaired loans whose values were based on real-estate and other available collateral, and of OREO properties. Fair values of real-estate loan collateral were estimated using a market approach typically supported by third-party valuations and property-specific fees and taxes, and were subject to adjustments to reflect management's judgment as to realizable value. Other loan collateral, which typically consists of accounts receivable, inventory and equipment, is valued using a market approach adjusted for asset specific characteristics and in limited instances third-party valuations are used.

Collateral-based impaired loans and OREO assets that have been adjusted to fair value totaled $12.2 million and $0.3 million , respectively, at December 31, 2017 , and $6.7 million and $0.7 million , respectively, at December 31, 2016 . Assets measured at fair value on a nonrecurring basis reflect management's judgment as to realizable value.

The following table provides the fair value of, and the valuation technique, significant unobservable inputs, and quantitative information used to develop the significant unobservable inputs for, Northern Trust's Level 3 assets that were measured at fair value on a nonrecurring basis as of December 31, 2017 .

TABLE 49: LEVEL 3 NONRECURRING BASIS SIGNIFICANT UNOBSERVABLE INPUTS

FINANCIAL INSTRUMENT	FAIR VALUE	VALUATION TECHNIQUE	UNOBSERVABLE INPUT	RANGE OF DISCOUNTS APPLIED
Loans	$12.2 million	Market Approach	Discount to reflect realizable value	15.0% – 25.0%
OREO	$0.3 million	Market Approach	Discount to reflect realizable value	15.0% – 20.0%

Fair Value of Financial Instruments. GAAP requires disclosure of the estimated fair value of certain financial instruments and the methods and significant assumptions used to estimate fair value. It excludes from this requirement nonfinancial assets and liabilities, as well as a wide range of franchise, relationship, and intangible values that add value to Northern Trust. Accordingly, the required fair value disclosures provide only a partial estimate of the fair value of Northern Trust. Financial instruments recorded at fair value on Northern Trust's consolidated balance sheets are discussed above. The following methods and assumptions were used in estimating the fair values of financial instruments that are not carried at fair value.

Held to Maturity Securities. The fair values of held to maturity securities, excluding U.S. Treasury securities, were obtained from external pricing vendors, or in limited cases internally, using widely accepted methods which are based on an income approach that incorporates current market yield curves. The fair values of U.S. Treasury securities were determined using quoted, active market prices for identical securities.

Loans (excluding lease receivables). The fair value of the loan portfolio was estimated using an income approach (discounted cash flow) that incorporates current market rates offered by Northern Trust as of the date of the consolidated financial statements. The fair values of all loans were adjusted to reflect current assessments of loan collectability. Loans held for sale are recorded at the lower of cost or fair value.

Federal Reserve and Federal Home Loan Bank Stock. The fair values of Federal Reserve and Federal Home Loan Bank stock are equal to their carrying values which represent redemption value.

Community Development Investments. The fair values of these instruments were estimated using an income approach (discounted cash flow) that incorporates current market rates.

Employee Benefit and Deferred Compensation. These assets include U.S. treasury securities and investments in mutual and collective trust funds held to fund certain supplemental employee benefit obligations and deferred compensation plans. Fair values of U.S. treasury securities were determined using quoted, active market prices for identical securities. The fair values of investments in mutual and collective trust funds were valued at the funds' net asset values based on a market approach.

Savings Certificates and Other Time Deposits. The fair values of these instruments were estimated using an income approach (discounted cash flow) that incorporates market interest rates currently offered by Northern Trust for deposits with similar maturities.

Senior Notes, Subordinated Debt, and Floating Rate Capital Debt. Fair values were determined using a market approach based on quoted market prices, when available. If quoted market prices were not available, fair values were based on quoted market prices for comparable instruments.

Federal Home Loan Bank Borrowings. The fair values of these instruments were estimated using an income approach (discounted cash flow) that incorporates market interest rates available to Northern Trust.

Loan Commitments. The fair values of loan commitments represent the estimated costs to terminate or otherwise settle the obligations with a third party adjusted for any related allowance for credit losses.

Standby Letters of Credit. The fair values of standby letters of credit are measured as the amount of unamortized fees on these instruments, inclusive of the related allowance for credit losses. Fees are determined by applying basis points to the principal amounts of the letters of credit.

Financial Instruments Valued at Carrying Value. Due to their short maturity, the carrying values of certain financial instruments approximated their fair values. These financial instruments include cash and due from banks; federal funds sold and securities purchased under agreements to resell, interest-bearing deposits with banks, Federal Reserve deposits and other interest-bearing assets; client security settlement receivables; non-U.S. offices interest-bearing deposits; federal funds purchased; securities sold under agreements to repurchase; and other borrowings (includes term federal funds purchased, and other short-term borrowings). The fair values of demand, noninterest-bearing, savings, and money market deposits represent the amounts payable on demand as of the reporting date.

The following tables summarize the fair values of all financial instruments.

TABLE 50: FAIR VALUE OF FINANCIAL INSTRUMENTS

	DECEMBER 31, 2017				
			FAIR VALUE		
(In Millions)	BOOK VALUE	TOTAL FAIR VALUE	LEVEL 1	LEVEL 2	LEVEL 3
ASSETS					
Cash and Due from Banks	$ 4,518.1	$ 4,518.1	$ 4,518.1	$ —	$ —
Federal Reserve and Other Central Bank Deposits	40,479.1	40,479.1	—	40,479.1	—
Interest-Bearing Deposits with Banks	5,611.9	5,611.9	—	5,611.9	—
Federal Funds Sold and Resell Agreements	1,324.3	1,324.3	—	1,324.3	—
Securities					
Available for Sale (*Note*)	33,742.1	33,742.1	5,700.3	28,037.5	4.3
Held to Maturity	13,049.0	13,010.9	35.0	12,975.9	—
Trading Account	0.5	0.5	—	0.5	—
Loans (excluding Leases)					
Held for Investment	32,211.1	32,375.8	—	—	32,375.8
Held for Sale	20.9	20.9	—	—	20.9
Client Security Settlement Receivables	1,647.0	1,647.0	—	1,647.0	—
Other Assets					
Federal Reserve and Federal Home Loan Bank Stock	223.1	223.1	—	223.1	—
Community Development Investments	415.3	415.3	—	415.3	—
Employee Benefit and Deferred Compensation	183.4	181.5	115.5	66.0	—
LIABILITIES					
Deposits					
Demand, Noninterest-Bearing, Savings and Money Market	$ 45,566.3	$ 45,566.3	$ 45,566.3	$ —	$ —
Savings Certificates and Other Time	1,152.3	1,153.6	—	1,153.6	—
Non U.S. Offices Interest-Bearing	65,672.2	65,672.2	—	65,672.2	—
Federal Funds Purchased	2,286.1	2,286.1	—	2,286.1	—
Securities Sold under Agreements to Repurchase	834.0	834.0	—	834.0	—
Other Borrowings	6,051.1	6,052.9	—	6,052.9	—
Senior Notes	1,497.3	1,528.4	—	1,528.4	—
Long Term Debt (excluding Leases)					
Subordinated Debt	1,435.1	1,449.8	—	1,449.8	—
Federal Home Loan Bank Borrowings	—	—	—	—	—
Floating Rate Capital Debt	227.5	260.0	—	260.0	—
Other Liabilities					
Standby Letters of Credit	30.3	30.3	—	—	30.3
Loan Commitments	33.1	33.1	—	—	33.1
DERIVATIVE INSTRUMENTS					
Asset/Liability Management					
Foreign Exchange Contracts					
Assets	$ 30.1	$ 30.1	$ —	$ 30.1	$ —
Liabilities	192.6	192.6	—	192.6	—
Interest Rate Contracts					
Assets	31.9	31.9	—	31.9	—
Liabilities	19.4	19.4	—	19.4	—
Other Financial Derivatives					
Assets	—	—	—	—	—
Liabilities (1)	30.4	30.4	—	0.7	29.7
Client-Related and Trading					
Foreign Exchange Contracts					
Assets	2,527.0	2,527.0	—	2,527.0	—
Liabilities	2,522.5	2,522.5	—	2,522.5	—
Interest Rate Contracts					
Assets	65.1	65.1	—	65.1	—
Liabilities	64.1	64.1	—	64.1	—

Note: Refer to the table located on pag e 102 for the disaggregation of available for sale securities.
(1) This line consists of a swap related to the sale of certain Visa Class B common shares and total return swaps.

	DECEMBER 31, 2016				
			FAIR VALUE		
(In Millions)	BOOK VALUE	TOTAL FAIR VALUE	LEVEL 1	LEVEL 2	LEVEL 3
ASSETS					
Cash and Due from Banks	$ 5,332.0	$ 5,332.0	$ 5,332.0	$ —	$ —
Federal Reserve and Other Central Bank Deposits	26,674.2	26,674.2	—	26,674.2	—
Interest-Bearing Deposits with Banks	4,800.6	4,800.6	—	4,800.6	—
Federal Funds Sold and Resell Agreements	1,974.3	1,974.3	—	1,974.3	—
Securities					
Available for Sale (*Note*)	35,579.8	35,579.8	7,522.6	28,052.5	4.7
Held to Maturity	8,921.1	8,905.1	15.0	8,890.1	—
Trading Account	0.3	0.3	—	0.3	—
Loans (excluding Leases)					
Held for Investment	33,354.1	33,471.3	—	—	33,471.3
Held for Sale	13.4	13.4	—	—	13.4
Client Security Settlement Receivables	1,043.7	1,043.7	—	1,043.7	—
Other Assets					
Federal Reserve and Federal Home Loan Bank Stock	203.1	203.1	—	203.1	—
Community Development Investments	218.9	215.5	—	215.5	—
Employee Benefit and Deferred Compensation	166.2	162.5	107.2	55.3	—
LIABILITES					
Deposits					
Demand, Noninterest-Bearing, Savings and Money Market	$ 46,671.9	$ 46,671.9	$ 46,671.9	$ —	$ —
Savings Certificates and Other Time	1,331.7	1,337.5	—	1,337.5	—
Non U.S. Offices Interest-Bearing	53,648.1	53,648.1	—	53,648.1	—
Federal Funds Purchased	204.8	204.8	—	204.8	—
Securities Sold under Agreements to Repurchase	473.7	473.7	—	473.7	—
Other Borrowings	5,109.5	5,113.4	—	5,113.4	—
Senior Notes	1,496.6	1,535.5	—	1,535.5	—
Long Term Debt (excluding Leases)					
Subordinated Debt	1,307.9	1,316.0	—	1,316.0	—
Floating Rate Capital Debt	277.4	251.0	—	251.0	—
Other Liabilities					
Standby Letters of Credit	37.2	37.2	—	—	37.2
Loan Commitments	41.2	41.2	—	—	41.2
DERIVATIVE INSTRUMENTS					
Asset/Liability Management					
Foreign Exchange Contracts					
Assets	$ 335.4	$ 335.4	$ —	$ 335.4	$ —
Liabilities	21.2	21.2	—	21.2	—
Interest Rate Contracts					
Assets	160.2	160.2	—	160.2	—
Liabilities	22.8	22.8	—	22.8	—
Other Financial Derivatives					
Assets	—	—	—	—	—
Liabilities (1)	25.2	25.2	—	—	25.2
Client-Related and Trading					
Foreign Exchange Contracts					
Assets	3,274.2	3,274.2	—	3,274.2	—
Liabilities	3,221.7	3,221.7	—	3,221.7	—
Interest Rate Contracts					
Assets	87.0	87.0	—	87.0	—
Liabilities	85.2	85.2	—	85.2	—

Note: Refer to the table located on page 103 for the disaggregation of available for sale securities.
(1) This line consists of a swap related to the sale of certain Visa Class B common shares.

Note 4 – Securities

Securities Available for Sale. The following tables provide the amortized cost, fair values, and remaining maturities of securities available for sale.

TABLE 51: RECONCILIATION OF AMORTIZED COST TO FAIR VALUE OF SECURITIES AVAILABLE FOR SALE

	DECEMBER 31, 2017			
(In Millions)	AMORTIZED COST	GROSS UNREALIZED GAINS	GROSS UNREALIZED LOSSES	FAIR VALUE
U.S. Government	**$ 5,714.4**	**$ 18.0**	**$ 32.1**	**$ 5,700.3**
Obligations of States and Political Subdivisions	**749.9**	**—**	**3.5**	**746.4**
Government Sponsored Agency	**18,745.3**	**39.9**	**108.6**	**18,676.6**
Non-U.S. Government	**179.1**	**—**	**1.9**	**177.2**
Corporate Debt	**3,013.7**	**2.2**	**22.9**	**2,993.0**
Covered Bonds	**879.0**	**1.0**	**4.4**	**875.6**
Sub-Sovereign, Supranational and Non-U.S. Agency Bonds	**1,819.8**	**4.0**	**3.8**	**1,820.0**
Other Asset-Backed	**2,297.7**	**1.5**	**7.9**	**2,291.3**
Auction Rate	**4.4**	**—**	**0.1**	**4.3**
Commercial Mortgage-Backed	**439.2**	**—**	**4.1**	**435.1**
Other	**22.3**	**—**	**—**	**22.3**
Total	**$ 33,864.8**	**$ 66.6**	**$ 189.3**	**$ 33,742.1**

	DECEMBER 31, 2016			
(In Millions)	AMORTIZED COST	GROSS UNREALIZED GAINS	GROSS UNREALIZED LOSSES	FAIR VALUE
U.S. Government	$ 7,514.5	$ 22.4	$ 14.3	$ 7,522.6
Obligations of States and Political Subdivisions	890.8	—	5.6	885.2
Government Sponsored Agency	17,914.1	49.3	70.6	17,892.8
Non-U.S. Government	420.0	—	2.1	417.9
Corporate Debt	3,787.4	2.6	24.8	3,765.2
Covered Bonds	1,148.6	0.8	5.5	1,143.9
Sub-Sovereign, Supranational and Non-U.S. Agency Bonds	1,343.6	0.9	3.8	1,340.7
Other Asset-Backed	2,083.7	2.7	1.3	2,085.1
Auction Rate	5.0	—	0.3	4.7
Commercial Mortgage-Backed	474.1	—	2.5	471.6
Other	50.1	—	—	50.1
Total	$ 35,631.9	$ 78.7	$ 130.8	$ 35,579.8

TABLE 52: REMAINING MATURITY OF SECURITIES AVAILABLE FOR SALE

	DECEMBER 31, 2017		DECEMBER 31, 2016	
(In Millions)	AMORTIZED COST	FAIR VALUE	AMORTIZED COST	FAIR VALUE
Due in One Year or Less	**$ 6,249.5**	**$ 6,227.0**	$ 7,880.8	$ 7,876.6
Due After One Year Through Five Years	**20,017.2**	**19,937.8**	21,094.8	21,058.7
Due After Five Years Through Ten Years	**6,545.3**	**6,535.1**	5,759.1	5,753.6
Due After Ten Years	**1,052.8**	**1,042.2**	897.2	890.9
Total	**$ 33,864.8**	**$ 33,742.1**	$ 35,631.9	$ 35,579.8

Note: Mortgage-backed and asset-backed securities are included in the above table taking into account anticipated future prepayments.

Securities Held to Maturity. The following tables provide the amortized cost, fair values and remaining maturities of securities held to maturity.

TABLE 53: RECONCILIATION OF AMORTIZED COST TO FAIR VALUES OF SECURITIES HELD TO MATURITY

(In Millions)	DECEMBER 31, 2017 AMORTIZED COST	GROSS UNREALIZED GAINS	GROSS UNREALIZED LOSSES	FAIR VALUE
U.S. Government	$ 35.0	$ —	$ —	$ 35.0
Obligations of States and Political Subdivisions	34.6	1.4	0.1	35.9
Government Sponsored Agency	5.8	0.4	—	6.2
Corporate Debt	431.5	1.0	0.4	432.1
Covered Bonds	2,821.5	11.9	3.7	2,829.7
Non-U.S. Government	5,536.2	1.3	6.0	5,531.5
Certificates of Deposit	43.8	—	0.1	43.7
Sub-Sovereign, Supranational and Non-U.S. Agency Bonds	2,788.9	5.4	4.1	2,790.2
Other Asset-Backed	1,175.8	0.6	0.5	1,175.9
Other	175.9	—	45.2	130.7
Total	$ 13,049.0	$ 22.0	$ 60.1	$ 13,010.9

(In Millions)	DECEMBER 31, 2016 AMORTIZED COST	GROSS UNREALIZED GAINS	GROSS UNREALIZED LOSSES	FAIR VALUE
U.S. Government	$ 15.0	$ —	$ —	$ 15.0
Obligations of States and Political Subdivisions	63.6	2.7	—	66.3
Government Sponsored Agency	7.4	0.5	—	7.9
Corporate Debt	231.2	0.2	0.4	231.0
Covered Bonds	2,051.6	10.1	3.7	2,058.0
Non-U.S. Government	3,517.5	4.9	2.3	3,520.1
Certificates of Deposit	606.0	0.2	0.1	606.1
Sub-Sovereign, Supranational and Non-U.S. Agency Bonds	2,154.7	10.5	2.8	2,162.4
Other Asset-Backed	143.4	0.1	—	143.5
Other	130.7	—	35.9	94.8
Total	$ 8,921.1	$ 29.2	$ 45.2	$ 8,905.1

TABLE 54: REMAINING MATURITY OF SECURITIES HELD TO MATURITY

(In Millions)	DECEMBER 31, 2017 AMORTIZED COST	DECEMBER 31, 2017 FAIR VALUE	DECEMBER 31, 2016 AMORTIZED COST	DECEMBER 31, 2016 FAIR VALUE
Due in One Year or Less	$ 5,691.9	$ 5,695.8	$ 3,631.6	$ 3,635.9
Due After One Year Through Five Years	6,667.8	6,663.9	5,072.7	5,081.6
Due After Five Years Through Ten Years	612.2	606.3	158.7	156.1
Due After Ten Years	77.1	44.9	58.1	31.5
Total	$ 13,049.0	$ 13,010.9	$ 8,921.1	$ 8,905.1

Note: Mortgage-backed and asset-backed securities are included in the above table taking into account anticipated future prepayments.

Securities held to maturity consist of debt securities that management intends to, and Northern Trust has the ability to, hold until maturity. During the twelve months ended December 31, 2017 , approximately $1.4 billion of securities reflected in Other Asset-Backed, Covered Bonds, Sub-Sovereign, Supranational and Non-U.S. Agency Bonds, and Corporate Debt were transferred from available for sale to held to maturity.

Investment Security Gains and Losses. Net investment security losses of $1.6 million were recognized in 2017 , and include $0.2 million of charges related to the other-than-temporary impairment (OTTI) of certain Community Reinvestment Act (CRA) eligible held to maturity securities. Net investment security losses of $3.2 million , and $0.3 million were recognized in 2016 , and 2015 , respectively. There were $3.7 million OTTI losses in 2016 and no OTTI losses in 2015. Proceeds of $2.2 billion from the sale of securities in 2017 resulted in gross realized gains and losses of $0.2 million and $1.6 million , respectively. Proceeds of $828.9 million from the sale of securities in 2016 resulted in gross realized gains and losses of $0.7 million and $0.2 million , respectively. Proceeds of $262.1 million from the sale of securities in 2015 resulted in gross realized gains and losses of $0.2 million and $0.5 million , respectively.

Securities with Unrealized Losses. The following tables provide information regarding securities that had been in a continuous unrealized loss position for less than 12 months and for 12 months or longer as of December 31, 2017 and 2016 .

TABLE 55: SECURITIES WITH UNREALIZED LOSSES

AS OF DECEMBER 31, 2017	LESS THAN 12 MONTHS		12 MONTHS OR LONGER		TOTAL	
(In Millions)	FAIR VALUE	UNREALIZED LOSSES	FAIR VALUE	UNREALIZED LOSSES	FAIR VALUE	UNREALIZED LOSSES
U.S. Government	$ 3,595.0	$ 32.1	$ —	$ —	$ 3,595.0	$ 32.1
Obligations of States and Political Subdivisions	687.8	3.3	52.0	0.3	739.8	3.6
Government Sponsored Agency	6,495.6	81.3	2,998.9	27.3	9,494.5	108.6
Non-U.S. Government	5,181.8	7.9	—	—	5,181.8	7.9
Corporate Debt	1,547.3	9.3	922.3	14.0	2,469.6	23.3
Covered Bonds	967.5	7.2	89.1	0.9	1,056.6	8.1
Sub-Sovereign, Supranational and Non-U.S. Agency Bonds	1,692.4	7.5	235.8	0.4	1,928.2	7.9
Other Asset-Backed	2,453.7	8.3	29.9	0.1	2,483.6	8.4
Certificates of Deposit	43.7	0.1	—	—	43.7	0.1
Auction Rate	—	—	3.1	0.1	3.1	0.1
Commercial Mortgage-Backed	233.5	2.6	201.6	1.5	435.1	4.1
Other	82.9	27.3	48.1	17.9	131.0	45.2
Total	$ 22,981.2	$ 186.9	$ 4,580.8	$ 62.5	$ 27,562.0	$ 249.4

AS OF DECEMBER 31, 2016	LESS THAN 12 MONTHS		12 MONTHS OR LONGER		TOTAL	
(In Millions)	FAIR VALUE	UNREALIZED LOSSES	FAIR VALUE	UNREALIZED LOSSES	FAIR VALUE	UNREALIZED LOSSES
U.S. Government	$ 1,603.0	$ 14.3	$ —	$ —	$ 1,603.0	$ 14.3
Obligations of States and Political Subdivisions	865.3	5.6	—	—	865.3	5.6
Government Sponsored Agency	8,252.5	58.5	2,121.0	12.1	10,373.5	70.6
Non-U.S. Government	2,957.1	4.4	—	—	2,957.1	4.4
Corporate Debt	1,601.7	11.2	1,054.4	14.0	2,656.1	25.2
Covered Bonds	809.0	8.6	138.9	0.6	947.9	9.2
Sub-Sovereign, Supranational and Non-U.S. Agency Bonds	1,136.1	5.7	249.1	0.9	1,385.2	6.6
Other Asset-Backed	584.3	1.3	—	—	584.3	1.3
Certificates of Deposit	81.4	0.1	—	—	81.4	0.1
Auction Rate	0.4	0.1	4.3	0.2	4.7	0.3
Commercial Mortgage-Backed	471.5	2.5	—	—	471.5	2.5
Other	50.5	17.9	59.7	18.0	110.2	35.9
Total	$ 18,412.8	$ 130.2	$ 3,627.4	$ 45.8	$ 22,040.2	$ 176.0

As of December 31, 2017 , 1,285 securities with a combined fair value of $27.6 billion were in an unrealized loss position, with their unrealized losses totaling $249.4 million . Unrealized losses of $108.6 million and $32.1 million related to government sponsored agency and U.S. government securities, respectively, are primarily attributable to changes in market rates since their purchase. Unrealized losses of $23.3 million within corporate debt securities primarily reflect widened credit spreads and higher market rates since purchase; 36% of the corporate debt portfolio is backed by guarantees provided by U.S. and non-U.S. governmental entities.

The majority of the $45.2 million of unrealized losses in securities classified as “other” at December 31, 2017 , relate to securities primarily purchased at a premium or par by Northern Trust to fulfill its obligations under the CRA. Unrealized losses on these CRA related other securities are attributable to yields that are below market rates for the purpose of supporting institutions and programs that benefit low to moderate income communities within Northern Trust’s market area. The remaining unrealized losses on Northern Trust's securities portfolio as of December 31, 2017 , are attributable to changes in overall market interest rates, increased credit spreads, or reduced market liquidity. As of December 31, 2017 , Northern Trust does not intend to sell any investment in an unrealized loss position and it is not more likely than not that Northern Trust will be required to sell any such investment before the recovery of its amortized cost basis, which may be maturity.

Security impairment reviews are conducted quarterly to identify and evaluate securities that have indications of possible OTTI. A determination as to whether a security's decline in market value is other-than-temporary takes into consideration numerous factors and the relative significance of any single factor can vary by security. Factors Northern Trust considers in determining whether impairment is other-than-temporary include, but are not limited to, the length of time the security has been impaired; the severity of the impairment; the cause of the impairment and the financial condition and near-term prospects of the issuer; activity in the market of the issuer which may indicate adverse credit conditions; Northern Trust's intent regarding the sale of the security as of the balance sheet date; and the likelihood that it will not be required to sell the security for a period of time sufficient to allow for the recovery of the security's amortized cost basis. For each security meeting the requirements of Northern Trust's internal screening process, an extensive review is conducted to determine if OTTI has occurred.

While all securities are considered, the process for identifying credit impairment within CRA eligible mortgage-backed securities, the security type for which Northern Trust has recognized all of the OTTI in 2017 and 2016 , incorporates an expected loss approach using discounted cash flows on the underlying collateral pools. To evaluate whether an unrealized loss on CRA mortgage-backed securities is other-than-temporary, a calculation of the security's present value is made using current pool data, the current delinquency pipeline, default rates and loan loss severities based on the historical performance of the pool or similar pools, and Northern Trust's outlook for the housing market and the overall economy. If the present value of the collateral pools was found to be less than the current amortized cost of the security, a credit-related OTTI loss would be recorded in earnings equal to the difference between the two amounts.

Impairments of CRA mortgage-backed securities are influenced by a number of factors, including but not limited to, U.S. economic and housing market performance, pool credit enhancement level, year of origination, and estimated credit quality of the collateral. The factors used in estimating losses related to CRA mortgage-backed securities vary by vintage of loan origination and collateral quality.

There were $0.2 million and $3.7 million of OTTI losses recognized in 2017 and 2016 respectively. There were no OTTI losses recognized during the year ended December 31, 2015 .

Credit Losses on Debt Securities. The table below provides information regarding total other-than-temporarily impaired securities, including noncredit-related amounts recognized in other comprehensive income and net impairment losses recognized in earnings, for the years ended December 31, 2017 , 2016 , and 2015 .

TABLE 56: NET IMPAIRMENT LOSSES RECOGNIZED IN EARNINGS

	DECEMBER 31,		
(In Millions)	**2017**	2016	2015
Changes in Other-Than-Temporary Impairment Losses (1)	**$ (0.2)**	$ (3.7)	$ —
Noncredit-related Losses Recorded in / (Reclassified from) OCI (2)	**—**	—	—
Net Impairment Losses Recognized in Earnings	**$ (0.2)**	$ (3.7)	$ —

(1) For initial other-than-temporary impairments in the respective period, the balance includes the excess of the amortized cost over the fair value of the impaired securities. For subsequent impairments of the same security, the balance includes any additional changes in fair value of the security subsequent to its most recently recorded OTTI.
(2) For initial other-than-temporary impairments in the respective period, the balance includes the portion of the excess of amortized cost over the fair value of the impaired securities that was recorded in OCI. For subsequent impairments of the same security, the balance includes additional changes in OCI for that security subsequent to its most recently recorded OTTI.

Provided in the table below are the cumulative credit-related losses recognized in earnings on debt securities other-than-temporarily impaired.

TABLE 57: CUMULATIVE CREDIT-RELATED LOSSES ON SECURITIES HELD

	YEAR ENDED DECEMBER 31,	
(In Millions)	**2017**	2016
Cumulative Credit-Related Losses on Securities Held – Beginning of Year	**$ 3.4**	$ 5.2
Plus: Losses on Newly Identified Impairments	**0.1**	0.5
Additional Losses on Previously Identified Impairments	**0.1**	3.2
Less: Current and Prior Period Losses on Securities Sold or Matured During the Year	**—**	(5.5)
Cumulative Credit-Related Losses on Securities Held – End of Year	**$ 3.6**	$ 3.4

Note 5 – Securities Purchased Under Agreements to Resell and Securities Sold Under Agreements to Repurchase

Securities purchased under agreements to resell and securities sold under agreements to repurchase are accounted for as collateralized financings and recorded at the amounts at which the securities were acquired or sold plus accrued interest. To minimize any potential credit risk associated with these transactions, the fair value of the securities purchased or sold is monitored, limits are set on exposure with counterparties, and the financial condition of counterparties is regularly assessed. It is Northern Trust's policy to take possession, either directly or via third-party custodians, of securities purchased under agreements to resell. Securities sold under agreements to repurchase are held by the counterparty until the repurchase.

The following tables summarize information related to securities purchased under agreements to resell and securities sold under agreements to repurchase.

TABLE 58: SECURITIES PURCHASED UNDER AGREEMENTS TO RESELL

($ In Millions)	**2017**	2016
Balance at December 31	**$ 1,303.3**	$ 1,967.5
Average Balance During the Year	**1,832.0**	1,764.1
Average Interest Rate Earned During the Year	**1.48%**	1.04%
Maximum Month-End Balance During the Year	**2,064.1**	2,050.9

TABLE 59: SECURITIES SOLD UNDER AGREEMENTS TO REPURCHASE

($ In Millions)	**2017**	2016
Balance at December 31	**$ 834.0**	$ 473.7
Average Balance During the Year	**738.9**	847.1
Average Interest Rate Paid During the Year	**0.81%**	0.27%
Maximum Month-End Balance During the Year	**834.0**	565.5

Note 6 – Loans and Leases

During 2017, the Corporation implemented a change in the classification of certain loans and leases to enhance the consistency of its reporting across various regulatory regimes. As a result, certain prior-period loan and lease balances below have been adjusted to conform with current-period presentation. The adjustments generally reflected reclassification of loans and leases from the commercial and institutional class to the residential real estate class. There was no impact on total loans and leases previously reported. The previously reported allowance for credit losses remains unadjusted, as the impact of the reclassification on the allowance was immaterial.

Amounts outstanding for loans and leases, by segment and class, are shown below.

TABLE 60: LOANS AND LEASES

	DECEMBER 31,	
(In Millions)	**2017**	2016
Commercial		
Commercial and Institutional	**$ 9,042.2**	$ 9,287.4
Commercial Real Estate	**3,482.7**	4,002.5
Non-U.S.	**1,538.5**	1,877.8
Lease Financing, net	**229.2**	293.9
Other	**265.4**	205.1
Total Commercial	**14,558.0**	15,666.7
Personal		
Private Client	**10,753.1**	10,052.0
Residential Real Estate	**7,247.6**	8,077.5
Other	**33.5**	25.9
Total Personal	**18,034.2**	18,155.4
Total Loans and Leases	**$ 32,592.2**	$ 33,822.1
Allowance for Credit Losses Assigned to Loans and Leases	**(131.2)**	(161.0)
Net Loans and Leases	**$ 32,461.0**	$ 33,661.1

Residential real estate loans consist of traditional first lien mortgages and equity credit lines that generally require a loan to collateral value ratio of no more than 65% to 80% at inception. Northern Trust's equity credit line products generally have draw periods of up to 10 years and a balloon payment of any outstanding balance is due at maturity. Payments are interest only with variable interest rates. Northern Trust does not offer equity credit lines that include an option to convert the outstanding balance to an amortizing payment loan. As of December 31, 2017 and 2016 , equity credit lines totaled $908.6 million and $1.2 billion , respectively, and equity credit lines for which first liens were held by Northern Trust represented 93% and 91% , respectively, of the total equity credit lines as of those dates.

Included within the non-U.S., commercial-other, and personal-other classes are short duration advances, primarily related to the processing of custodied client investments, that totaled $906.4 million and $1.4 billion at December 31, 2017 and 2016 , respectively. Demand deposit overdrafts reclassified as loan balances totaled $127.6 million and $88.1 million at December 31, 2017 and 2016 , respectively. Loans classified as held for sale totaled $20.9 million and $13.4 million at December 31, 2017 and December 31, 2016 , respectively. Leases classified as held for sale totaled $33.1 million and $43.0 million at December 31, 2017 and December 31, 2016 , respectively, related to the decision to exit a non-strategic loan and lease portfolio.

The components of the net investment in direct finance and leveraged leases are as follows:

TABLE 61: DIRECT FINANCE AND LEVERAGED LEASES

(In Millions)	DECEMBER 31, 2017	2016
Direct Finance Leases		
Lease Receivable	**$ 26.6**	$ 37.6
Residual Value	**72.4**	75.3
Initial Direct Costs	**0.7**	1.0
Unearned Income	**(1.5)**	(3.5)
Investment in Direct Finance Leases	**98.2**	110.4
Leveraged Leases		
Net Rental Receivable	**76.1**	110.1
Residual Value	**85.6**	106.2
Unearned Income	**(30.7)**	(32.8)
Investment in Leveraged Leases	**131.0**	183.5
Lease Financing, net	**$ 229.2**	$ 293.9

The following schedule reflects the future minimum lease payments to be received over the next five years under direct finance leases.

TABLE 62: FUTURE MINIMUM LEASE PAYMENTS

(In Millions)	FUTURE MINIMUM LEASE PAYMENTS
2018	**$ 11.2**
2019	**9.0**
2020	**3.9**
2021	**2.1**
2022	**—**

Credit Quality Indicators. Credit quality indicators are statistics, measurements or other metrics that provide information regarding the relative credit risk of loans and leases. Northern Trust utilizes a variety of credit quality indicators to assess the credit risk of loans and leases at the segment, class, and individual credit exposure levels.

As part of its credit process, Northern Trust utilizes an internal borrower risk rating system to support identification, approval, and monitoring of credit risk. Borrower risk ratings are used in credit underwriting and management reporting.

Risk ratings are used for ranking the credit risk of borrowers and the probability of their default. Each borrower is rated using one of a number of ratings models, which consider both quantitative and qualitative factors. The ratings models vary among classes of loans and leases in order to capture the unique risk characteristics inherent within each particular type of credit exposure. Provided below are the more significant performance indicator attributes considered within Northern Trust's borrower rating models, by loan and lease class.

- Commercial and Institutional: leverage, profit margin, liquidity, asset size and capital levels;
- Commercial Real Estate: debt service coverage, loan-to-value ratio, leasing status and guarantor support;
- Lease Financing and Commercial-Other: leverage, profit margin, liquidity, asset size and capital levels;
- Non-U.S.: leverage, profit margin, liquidity, return on assets and capital levels;
- Residential Real Estate: payment history, credit bureau scores and loan-to-value ratio;
- Private Client: cash flow-to-debt and net worth ratios, leverage and liquidity; and
- Personal-Other: cash flow-to-debt and net worth ratios.

While the criteria vary by model, the objective is for the borrower ratings to be consistent in both the measurement and ranking of risk. Each model is calibrated to a master rating scale to support this consistency. Ratings for borrowers not in default range from "1" for the strongest credits to "7" for the weakest non-defaulted credits. Ratings of "8" or "9" are used for defaulted borrowers. Borrower risk ratings are monitored and are revised when events or circumstances indicate a change is required. Risk ratings are generally validated at least annually.

Loan and lease segment and class balances at December 31, 2017 and 2016 are provided below, segregated by borrower ratings into "1 to 3", "4 to 5", and "6 to 9" (watch list), categories.

TABLE 63: BORROWER RATINGS

(In Millions)	DECEMBER 31, 2017 1 TO 3 CATEGORY	4 TO 5 CATEGORY	6 TO 9 CATEGORY (WATCH LIST)	TOTAL	DECEMBER 31, 2016 1 TO 3 CATEGORY	4 TO 5 CATEGORY	6 TO 9 CATEGORY (WATCH LIST)	TOTAL
Commercial								
Commercial and Institutional	$ **5,832.9**	$ **3,133.4**	$ **75.9**	$ **9,042.2**	$ 6,187.2	$ 3,013.9	$ 86.3	$ 9,287.4
Commercial Real Estate	**1,280.7**	**2,187.5**	**14.5**	**3,482.7**	1,825.7	2,134.8	42.0	4,002.5
Non-U.S.	**606.6**	**930.5**	**1.4**	**1,538.5**	602.8	1,273.5	1.5	1,877.8
Lease Financing, net	**191.4**	**37.8**	**—**	**229.2**	214.3	79.6	—	293.9
Other	**155.5**	**109.9**	**—**	**265.4**	135.5	67.9	1.7	205.1
Total Commercial	**8,067.1**	**6,399.1**	**91.8**	**14,558.0**	8,965.5	6,569.7	131.5	15,666.7
Personal								
Private Client	**6,716.0**	**4,027.8**	**9.3**	**10,753.1**	6,373.2	3,668.4	10.4	10,052.0
Residential Real Estate	**2,960.5**	**3,978.8**	**308.3**	**7,247.6**	2,723.8	5,008.5	345.2	8,077.5
Other	**19.6**	**13.9**	**—**	**33.5**	17.1	8.5	0.3	25.9
Total Personal	**9,696.1**	**8,020.5**	**317.6**	**18,034.2**	9,114.1	8,685.4	355.9	18,155.4
Total Loans and Leases	$ **17,763.2**	$ **14,419.6**	$ **409.4**	$ **32,592.2**	$ 18,079.6	$ 15,255.1	$ 487.4	$ 33,822.1

Loans and leases in the "1 to 3" category are expected to exhibit minimal to modest probabilities of default and are characterized by borrowers having the strongest financial qualities, including above average financial flexibility, cash flows and capital levels. Borrowers assigned these ratings are anticipated to experience very little to moderate financial pressure in adverse down cycle scenarios. As a result of these characteristics, borrowers within this category exhibit a minimal to modest likelihood of loss.

Loans and leases in the "4 to 5" category are expected to exhibit moderate to acceptable probabilities of default and are characterized by borrowers with less financial flexibility than those in the "1 to 3" category. Cash flows and capital levels are generally sufficient to allow for borrowers to meet current requirements, but have reduced cushion in adverse down cycle scenarios. As a result of these characteristics, borrowers within this category exhibit a moderate likelihood of loss.

Loans and leases in the watch list category have elevated credit risk profiles that are monitored through internal watch lists, and consist of credits with borrower ratings of "6 to 9". These credits, which include all nonperforming credits, are expected to exhibit minimally acceptable probabilities of default, elevated risk of default, or are currently in default. Borrowers associated with these risk profiles that are not currently in default have limited financial flexibility. Cash flows and capital levels range from acceptable to potentially insufficient to meet current requirements, particularly in adverse down cycle scenarios. As a result of these characteristics, borrowers in this category exhibit an elevated to probable likelihood of loss.

The following table provides balances and delinquency status of performing and nonperforming loans and leases by segment and class, as well as the other real estate owned and total nonperforming asset balances, as of December 31, 2017 and 2016 .

TABLE 64: DELINQUENCY STATUS

(In Millions)	CURRENT	30 – 59 DAYS PAST DUE	60 – 89 DAYS PAST DUE	90 DAYS OR MORE PAST DUE	TOTAL PERFORMING	NONPERFORMING	TOTAL LOANS AND LEASES
December 31, 2017							
Commercial							
Commercial and Institutional	**$ 8,999.4**	**$ 13.3**	**$ 3.1**	**$ 0.4**	**$ 9,016.2**	**$ 26.0**	**$ 9,042.2**
Commercial Real Estate	**3,455.3**	**14.1**	**4.1**	**0.9**	**3,474.4**	**8.3**	**3,482.7**
Non-U.S.	**1,538.3**	**0.2**	**—**	**—**	**1,538.5**	**—**	**1,538.5**
Lease Financing, net	**229.2**	**—**	**—**	**—**	**229.2**	**—**	**229.2**
Other	**265.4**	**—**	**—**	**—**	**265.4**	**—**	**265.4**
Total Commercial	**14,487.6**	**27.6**	**7.2**	**1.3**	**14,523.7**	**34.3**	**14,558.0**
Personal							
Private Client	**10,687.5**	**55.3**	**9.7**	**0.6**	**10,753.1**	**—**	**10,753.1**
Residential Real Estate	**7,059.4**	**53.8**	**11.9**	**6.1**	**7,131.2**	**116.4**	**7,247.6**
Other	**33.5**	**—**	**—**	**—**	**33.5**	**—**	**33.5**
Total Personal	**17,780.4**	**109.1**	**21.6**	**6.7**	**17,917.8**	**116.4**	**18,034.2**
Total Loans and Leases	**$ 32,268.0**	**$ 136.7**	**$ 28.8**	**$ 8.0**	**$ 32,441.5**	**$ 150.7**	**$ 32,592.2**
					Other Real Estate Owned	**$ 4.6**	
					Total Nonperforming Assets	**$ 155.3**	

(In Millions)	CURRENT	30 – 59 DAYS PAST DUE	60 – 89 DAYS PAST DUE	90 DAYS OR MORE PAST DUE	TOTAL PERFORMING	NONPERFORMING	TOTAL LOANS AND LEASES
December 31, 2016							
Commercial							
Commercial and Institutional	$ 9,269.8	$ 5.3	$ 1.9	$ 1.2	$ 9,278.2	$ 9.2	$ 9,287.4
Commercial Real Estate	3,974.4	10.9	1.0	4.6	3,990.9	11.6	4,002.5
Non-U.S.	1,877.7	0.1	—	—	1,877.8	—	1,877.8
Lease Financing, net	293.9	—	—	—	293.9	—	293.9
Other	205.1	—	—	—	205.1	—	205.1
Total Commercial	15,620.9	16.3	2.9	5.8	15,645.9	20.8	15,666.7
Personal							
Private Client	9,988.7	40.8	8.5	13.7	10,051.7	0.3	10,052.0
Residential Real Estate	7,875.9	44.5	6.5	11.5	7,938.4	139.1	8,077.5
Other	25.9	—	—	—	25.9	—	25.9
Total Personal	17,890.5	85.3	15.0	25.2	18,016.0	139.4	18,155.4
Total Loans and Leases	$ 33,511.4	$ 101.6	$ 17.9	$ 31.0	$ 33,661.9	$ 160.2	$ 33,822.1
					Other Real Estate Owned	$ 5.2	
					Total Nonperforming Assets	$ 165.4	

The following table provides information related to impaired loans by segment and class.

TABLE 65: IMPAIRED LOANS

	AS OF DECEMBER 31, 2017			AS OF DECEMBER 31, 2016		
(In Millions)	RECORDED INVESTMENT	UNPAID PRINCIPAL BALANCE	SPECIFIC ALLOWANCE	RECORDED INVESTMENT	UNPAID PRINCIPAL BALANCE	SPECIFIC ALLOWANCE
With no related specific allowance						
Commercial and Institutional	$ 24.9	$ 30.3	$ —	$ 7.9	$ 8.7	$ —
Commercial Real Estate	5.7	7.6	—	14.7	18.6	—
Residential Real Estate	90.9	124.9	—	125.5	164.3	—
Private Client	0.7	0.7	—	0.3	0.3	—
With a related specific allowance						
Commercial and Institutional	0.5	5.4	0.5	—	—	—
Commercial Real Estate	2.8	2.8	0.6	—	—	—
Residential Real Estate	14.3	14.9	4.3	7.7	7.9	2.1
Total						
Commercial	33.9	46.1	1.1	22.6	27.3	—
Personal	105.9	140.5	4.3	133.5	172.5	2.1
Total	$ 139.8	$ 186.6	$ 5.4	$ 156.1	$ 199.8	$ 2.1

	YEAR ENDED DECEMBER 31, 2017		YEAR ENDED DECEMBER 31, 2016	
(In Millions)	AVERAGE RECORDED INVESTMENT	INTEREST INCOME RECOGNIZED	AVERAGE RECORDED INVESTMENT	INTEREST INCOME RECOGNIZED
With no related specific allowance				
Commercial and Institutional	$ 8.7	$ —	$ 8.6	$ —
Commercial Real Estate	9.2	0.1	17.0	0.3
Lease Financing, net	—	—	0.6	0.1
Residential Real Estate	105.0	1.5	121.4	1.9
Private Client	0.2	—	1.2	—
With a related specific allowance				
Commercial and Institutional	6.5	—	7.6	—
Commercial Real Estate	2.6	—	—	—
Lease Financing, net	—	—	1.2	—
Residential Real Estate	17.0	—	2.1	—
Total				
Commercial	27.0	0.1	35.0	0.4
Personal	122.2	1.5	124.7	1.9
Total	$ 149.2	$ 1.6	$ 159.7	$ 2.3

Note: Average recorded investments in impaired loans are calculated as the average of the month-end impaired loan balances for the period.

Interest income that would have been recorded on nonperforming loans in accordance with their original terms totaled approximately $9.1 million in 2017 , $8.5 million in 2016 , and $8.1 million in 2015 .

There were $9.4 million and $2.3 million of aggregate undrawn loan commitments and standby letters of credit at December 31, 2017 and 2016 , respectively, issued to borrowers whose loans were classified as nonperforming or impaired.

Troubled Debt Restructurings (TDRs). Included within impaired loans were $72.5 million and $85.2 million of nonperforming TDRs and $25.9 million and $42.4 million of performing TDRs as of December 31, 2017 and 2016 , respectively.

The following tables provide, by segment and class, the number of loans and leases modified in TDRs during the years ended December 31, 2017 , and 2016 , and the recorded investments and unpaid principal balances as of December 31, 2017 and 2016 .

TABLE 66: TROUBLED DEBT RESTRUCTURINGS

($ In Millions)	NUMBER OF LOANS AND LEASES	RECORDED INVESTMENT	UNPAID PRINCIPAL BALANCE
December 31, 2017			
Commercial			
Commercial and Institutional	**3**	**$ 0.4**	**$ 1.4**
Commercial Real Estate	**2**	**1.8**	**1.8**
Total Commercial	**5**	**2.2**	**3.2**
Personal			
Residential Real Estate	**66**	**22.1**	**22.8**
Private Client	**3**	**0.2**	**0.5**
Total Personal	**69**	**22.3**	**23.3**
Total Loans and Leases	**74**	**$ 24.5**	**$ 26.5**

Note: Period-end balances reflect all paydowns and charge-offs during the year.

($ In Millions)	NUMBER OF LOANS AND LEASES	RECORDED INVESTMENT	UNPAID PRINCIPAL BALANCE
December 31, 2016			
Commercial			
Commercial and Institutional	7	$ 4.3	$ 6.5
Commercial Real Estate	7	8.7	11.0
Total Commercial	14	13.0	17.5
Personal			
Residential Real Estate	73	22.2	23.5
Private Client	2	2.1	2.1
Total Personal	75	24.3	25.6
Total Loans and Leases	89	$ 37.3	$ 43.1

Note: Period-end balances reflect all paydowns and charge-offs during the year.

TDR modifications primarily involve extensions of term, deferrals of principal, interest rate concessions, and other modifications. Other modifications typically reflect other nonstandard terms which Northern Trust would not offer in non-troubled situations. During the year ended December 31, 2017 TDR modifications of loans within residential real estate were primarily extensions of term, deferrals of principal, interest rate concessions, and other modifications. During the year ended December 31, 2017 , the majority of TDR modifications of loans within commercial and institutional, commercial real estate, and private client classes were primarily extensions of term or deferrals of principal. During the year ended December 31, 2016 , TDR modifications of loans within residential real estate loans were primarily extensions of term, deferrals of principal, interest rate concessions and other modifications; modification within commercial and institutional, commercial real estate, and private client classes were primarily extensions of term and other modifications.

There were two loans or leases modified in TDRs during the previous twelve-month periods which subsequently became nonperforming during the year ended December 31, 2017 . There were five loans or leases modified in TDRs during the previous twelve-month periods which subsequently became nonperforming during the year ended
December 31, 2016 .

All loans and leases modified in troubled debt restructurings are evaluated for impairment. The nature and extent of impairment of TDRs, including those which have experienced a subsequent default, is considered in the determination of an appropriate level of allowance for credit losses.

Northern Trust may obtain physical possession of residential real estate collateralizing a consumer mortgage loan via foreclosure. As of December 31, 2017 and 2016 , Northern Trust held foreclosed residential real estate properties with a carrying value of $4.3 million and $4.6 million , respectively, as a result of obtaining physical possession. In addition, as of

December 31, 2017 and 2016 , Northern Trust had consumer loans with a carrying value of $14.1 million and $25.9 million , respectively, collateralized by residential real estate property for which formal foreclosure proceedings were in process.

Note 7 – Allowance for Credit Losses

The allowance for credit losses, which represents management's estimate of probable losses related to specific borrower relationships and inherent in the various loan and lease portfolios, undrawn commitments, and standby letters of credit, is determined by management through a disciplined credit review process. Northern Trust's accounting policies related to the estimation of the allowance for credit losses and the charging off of loans, leases and other extensions of credit deemed uncollectible are consistent across both loan and lease segments.

Loans, leases and other extensions of credit deemed uncollectible are charged to the allowance for credit losses. Subsequent recoveries, if any, are credited to the allowance. Determinations as to whether an uncollectible loan is charged off or a specific allowance is established are based on management's assessment as to the level of certainty regarding the amount of loss.

Changes in the allowance for credit losses by segment were as follows:

TABLE 67: CHANGES IN THE ALLOWANCE FOR CREDIT LOSSES

	2017			2016			2015		
(In Millions)	**COMMERCIAL**	**PERSONAL**	**TOTAL**	COMMERCIAL	PERSONAL	TOTAL	COMMERCIAL	PERSONAL	TOTAL
Balance at Beginning of Year	**$ 104.9**	**$ 87.1**	**$ 192.0**	$ 114.8	$ 118.5	$ 233.3	$ 169.7	$ 126.2	$ 295.9
Charge-Offs	**(11.4)**	**(10.1)**	**(21.5)**	(16.6)	(10.7)	(27.3)	(13.1)	(17.6)	(30.7)
Recoveries	**5.5**	**5.8**	**11.3**	4.8	7.3	12.1	5.5	5.7	11.2
Net (Charge-Offs) Recoveries	**(5.9)**	**(4.3)**	**(10.2)**	(11.8)	(3.4)	(15.2)	(7.6)	(11.9)	(19.5)
Provision for Credit Losses	**(18.2)**	**(9.8)**	**(28.0)**	2.0	(28.0)	(26.0)	(47.2)	4.2	(43.0)
Effects of Foreign Exchange Rates	**—**	**—**	**—**	(0.1)	—	(0.1)	(0.1)	—	(0.1)
Balance at End of Year	**$ 80.8**	**$ 73.0**	**$ 153.8**	$ 104.9	$ 87.1	$ 192.0	$ 114.8	$ 118.5	$ 233.3
Allowance for Credit Losses Assigned to:									
Loans and Leases	**$ 63.5**	**$ 67.7**	**$ 131.2**	$ 83.7	$ 77.3	$ 161.0	$ 86.3	$ 107.5	$ 193.8
Undrawn Commitments and Standby Letters of Credit	**17.3**	**5.3**	**22.6**	21.2	9.8	31.0	28.5	11.0	39.5
Total Allowance for Credit Losses	**$ 80.8**	**$ 73.0**	**$ 153.8**	$ 104.9	$ 87.1	$ 192.0	$ 114.8	$ 118.5	$ 233.3

The following table provides information regarding the recorded investments in loans and leases and the allowance for credit losses by segment as of December 31, 2017 and 2016 .

TABLE 68: RECORDED INVESTMENTS IN LOANS AND LEASES

(In Millions)	COMMERCIAL	PERSONAL	TOTAL
December 31, 2017			
Loans and Leases			
Specifically Evaluated for Impairment	**$ 33.9**	**$ 105.9**	**$ 139.8**
Evaluated for Inherent Impairment	**14,524.1**	**17,928.3**	**32,452.4**
Total Loans and Leases	**14,558.0**	**18,034.2**	**32,592.2**
Allowance for Credit Losses on Credit Exposures			
Specifically Evaluated for Impairment	**1.1**	**4.3**	**5.4**
Evaluated for Inherent Impairment	**62.4**	**63.4**	**125.8**
Allowance Assigned to Loans and Leases	**63.5**	**67.7**	**131.2**
Allowance for Undrawn Exposures			
Commitments and Standby Letters of Credit	**17.3**	**5.3**	**22.6**
Total Allowance for Credit Losses	**$ 80.8**	**$ 73.0**	**$ 153.8**

(In Millions)	COMMERCIAL	PERSONAL	TOTAL
December 31, 2016			
Loans and Leases			
Specifically Evaluated for Impairment	$ 46.9	$ 109.2	$ 156.1
Evaluated for Inherent Impairment	15,619.8	18,046.2	33,666.0
Total Loans and Leases	15,666.7	18,155.4	33,822.1
Allowance for Credit Losses on Credit Exposures			
Specifically Evaluated for Impairment	—	2.1	2.1
Evaluated for Inherent Impairment	83.7	75.2	158.9
Allowance Assigned to Loans and Leases	83.7	77.3	161.0
Allowance for Undrawn Exposures			
Commitments and Standby Letters of Credit	21.2	9.8	31.0
Total Allowance for Credit Losses	$ 104.9	$ 87.1	$ 192.0

Note 8 – Concentrations of Credit Risk

Concentrations of credit risk exist if a number of borrowers or other counterparties are engaged in similar activities and have similar economic characteristics that would cause their ability to meet contractual obligations to be similarly affected by changes in economic or other conditions. The fact that a credit exposure falls into one of these groups does not necessarily indicate that the credit has a higher than normal degree of credit risk. These groups are: banks and bank holding companies, residential real estate, and commercial real estate.

Banks and Bank Holding Companies. On-balance-sheet credit risk to banks and bank holding companies, both U.S. and non-U.S., consists primarily of interest-bearing deposits with banks and federal funds sold and securities purchased under agreements to resell, which totaled $6.9 billion and $6.8 billion at December 31, 2017 and 2016 , respectively, and noninterest-bearing demand balances maintained at correspondent banks, which totaled $2.1 billion and $1.9 billion at December 31, 2017 and 2016 , respectively. Credit risk associated with U.S. and non-U.S. banks and bank holding companies deemed to be counterparties by Credit Risk Management is managed by the Capital Markets Credit Committee. Credit limits are established through a review process that includes an internally-prepared financial analysis, use of an internal risk rating system and consideration of external ratings from rating agencies. Northern Trust places deposits with banks that have strong internal and external credit ratings and the average life to maturity of deposits with banks is maintained on a short-term basis in order to respond quickly to changing credit conditions.

Residential Real Estate. At December 31, 2017 , residential real estate loans totaled $7.2 billion , or 23% of total U.S. loans at December 31, 2017 , compared with $8.1 billion , or 25% of total U.S. loans at December 31, 2016 . Residential real estate loans consist of traditional first lien mortgages and equity credit lines, which generally require a loan-to-collateral value ratio of no more than 65% to 80% at inception. Revaluations of supporting collateral are obtained upon refinancing or default or when otherwise considered warranted. Collateral revaluations for mortgages are performed by independent third parties. Of the total $7.2 billion in residential real estate loans, $1.9 billion were in Florida, $1.4 billion were in the greater Chicago area, and $1.4 billion were in California, with the remainder distributed throughout the other geographic regions within the U.S. served by Northern Trust. Legally binding undrawn commitments to extend residential real estate credit, which are primarily equity credit lines totaled $1.0 billion and $1.2 billion at December 31, 2017 and 2016 , respectively.

Commercial Real Estate. The commercial real estate portfolio consists of commercial mortgages and construction, acquisition and development loans extended to experienced investors well known to Northern Trust. Underwriting standards generally reflect conservative loan-to-value ratios and debt service coverage requirements. Recourse to borrowers through guarantees is also commonly required. Commercial mortgage financing is provided for the acquisition or refinancing of income-producing properties. Cash flows from the properties generally are sufficient to amortize the loan. These loans are primarily located in the Illinois , California , Florida , Texas , and Arizona markets. Construction, acquisition and development loans provide financing for commercial real estate prior to rental income stabilization. The intent is generally that the borrower will sell the project or refinance the loan through a commercial mortgage with Northern Trust or another financial institution upon completion.

The table below provides additional detail regarding commercial real estate loan types.

TABLE 69: COMMERCIAL REAL ESTATE LOANS

	DECEMBER 31,	
(In Millions)	**2017**	2016
Commercial Mortgages		
Office	**$ 825.2**	$ 866.1
Apartment/ Multi-family	**623.3**	784.8
Retail	**631.1**	698.1
Industrial/ Warehouse	**311.1**	359.7
Other	**445.6**	457.6
Total Commercial Mortgages	**2,836.3**	3,166.3
Construction, Acquisition and Development Loans	**350.8**	445.0
Single Family Investment	**164.8**	179.6
Other Commercial Real Estate Related	**130.8**	211.6
Total Commercial Real Estate Loans	**$ 3,482.7**	$ 4,002.5

Note 9 – Buildings and Equipment

A summary of buildings and equipment is presented below.

TABLE 70: BUILDINGS AND EQUIPMENT

	DECEMBER 31, 2017		
(In Millions)	**ORIGINAL COST**	**ACCUMULATED DEPRECIATION**	**NET BOOK VALUE**
Land and Improvements	**$ 15.3**	**$ 1.0**	**$ 14.3**
Buildings	**260.4**	**144.1**	**116.3**
Equipment	**590.5**	**405.1**	**185.4**
Leasehold Improvements	**389.4**	**263.2**	**126.2**
Buildings Leased under Capital Leases	**80.0**	**57.6**	**22.4**
Total Buildings and Equipment	**$ 1,335.6**	**$ 871.0**	**$ 464.6**

The charge for depreciation, which includes depreciation of assets recorded under capital leases and is included within occupancy expense in the consolidated statements of income, amounted to $101.2 million in 2017 , $89.2 million in 2016 , and $90.4 million in 2015 .

Note 10 – Lease Commitments

At December 31, 2017 , Northern Trust was obligated under a number of non-cancelable operating leases for buildings and equipment. Certain leases contain rent escalation clauses based on market indices or increases in real estate taxes and other operating expenses and renewal option clauses calling for increased rentals. There are no restrictions imposed by any lease agreement regarding the payment of dividends, debt financing or Northern Trust entering into further lease agreements. Minimum annual lease commitments as of December 31, 2017 , for all non-cancelable operating leases with a term of one year or more are as follows:

TABLE 71: MINIMUM LEASE PAYMENTS

(In Millions)	FUTURE MINIMUM LEASE PAYMENTS
2018	**$ 95.9**
2019	**96.0**
2020	**92.2**
2021	**76.5**
2022	**66.7**
Later Years	**360.5**
Total Minimum Lease Payments	**787.8**
Less: Sublease Rentals	**(21.2)**
Net Minimum Lease Payments	**$ 766.6**

Operating lease rental expense, net of rental income, is recorded in occupancy expense and amounted to $76.7 million in 2017 , $76.1 million in 2016 , and $71.6 million in 2015 .

One of the buildings and related land utilized for Chicago operations has been leased under an agreement that qualifies as a capital lease. The original long-term financing for the property was provided by Northern Trust. In the event of sale or refinancing, Northern Trust would anticipate receiving full repayment of any outstanding loans plus 42% of any proceeds in excess of the original project costs. The following table reflects the future minimum lease payments required under capital leases, net of any payments received on the long-term financing, and the present value of net capital lease obligations at December 31, 2017 .

TABLE 72: PRESENT VALUE UNDER CAPITAL LEASE OBLIGATIONS

(In Millions)	FUTURE MINIMUM LEASE PAYMENTS, NET
2018	**$ 8.4**
2019	**8.7**
2020	**(1.7)**
2021	—
2022	—
Later Years	—
Total Minimum Lease Payments, net	**15.4**
Less: Amount Representing Interest	**(1.0)**
Net Present Value under Capital Lease Obligations	**$ 14.4**

Note 11 – Goodwill and Other Intangibles

Goodwill. Changes by reporting segment in the carrying amount of goodwill for the years ended December 31, 2017 and 2016 , including the effect of foreign exchange rates on non-U.S.-dollar-denominated balances, were as follows:

TABLE 73: GOODWILL

(In Millions)	CORPORATE & INSTITUTIONAL SERVICES	WEALTH MANAGEMENT	TOTAL
Balance at December 31, 2015	$ 455.1	$ 71.3	$ 526.4
Goodwill Acquired	11.8	—	11.8
Foreign Exchange Rates	(18.5)	(0.3)	(18.8)
Balance at December 31, 2016	$ 448.4	$ 71.0	$ 519.4
Goodwill Acquired	**78.3**	—	**78.3**
Measurement Period Adjustments	**(1.3)**	—	**(1.3)**
Foreign Exchange Rates	**9.1**	**0.1**	**9.2**
Balance at December 31, 2017	**$ 534.5**	**$ 71.1**	**$ 605.6**

Other Intangible Assets Subject to Amortization. The gross carrying amount and accumulated amortization of other intangible assets subject to amortization as of December 31, 2017 and 2016 were as follows:

TABLE 74: OTHER INTANGIBLE ASSETS

	DECEMBER 31,	
(In Millions)	**2017**	2016
Gross Carrying Amount	**$ 222.7**	$ 89.0
Less: Accumulated Amortization	**61.3**	47.2
Net Book Value	**$ 161.4**	$ 41.8

Other intangible assets consist primarily of the value of acquired client relationships and are included within other assets in the consolidated balance sheets. Amortization expense related to other intangible assets was $11.4 million , $8.8 million , and $10.9 million for the years ended December 31, 2017 , 2016 , and 2015 , respectively. Amortization for the years 2018 , 2019 , 2020 , 2021 , and 2022 is estimated to be $17.5 million , $17.4 million , $17.3 million , $14.8 million , and $10.1 million respectively.

On October 1, 2017, Northern Trust completed its acquisition of UBS Asset Management’s fund administration servicing business in Luxembourg and Switzerland. The purchase price recorded in connection with the closing of the acquisition, which remains subject to adjustment through May 2018, totaled $190.8 million and was comprised of $188.5 million of cash and $2.3 million of contingent consideration. Goodwill and other intangible assets associated with the acquisition totaled $78.3 million and $126.0 million , respectively.

In May 2016, Northern Trust completed its acquisition of Aviate Global LLP (Aviate), an institutional equity brokerage firm offering market research and execution services, with offices in the U.S., Europe, and the Asia-Pacific region. The purchase price, which is subject to certain performance-related adjustments over a three -year period after the acquisition date, totaled $18.8 million inclusive of contingent consideration. Goodwill and other intangible assets associated with the acquisition totaled $10.5 million and $5.8 million , respectively.

Note 12 – Senior Notes and Long-Term Debt

Senior Notes. A summary of senior notes outstanding at December 31, 2017 and 2016 is presented below.

TABLE 75: SENIOR NOTES

($ In Millions)	RATE	DECEMBER 31, 2017	2016
Corporation-Senior Notes (1)(5)			
Fixed Rate Due Nov. 2020 (6)	3.45%	**$ 499.6**	$ 499.4
Fixed Rate Due Aug. 2021 (7)	3.38	**498.8**	498.5
Fixed Rate Due Aug. 2022 (8)	2.38	**498.9**	498.7
Total Senior Notes		**$ 1,497.3**	$ 1,496.6

Long-Term Debt. A summary of long-term debt outstanding at December 31, 2017 and 2016 is presented below.

TABLE 76: LONG-TERM DEBT

($ In Millions)	DECEMBER 31, 2017	2016
Bank-Subordinated Debt (1)(3)(5)(11)		
5.85% Notes due Nov. 2017	**$ —**	$ 207.6
6.50% Notes due Aug. 2018 (9)	**305.5**	315.3
Total Bank-Subordinated Debt	**305.5**	522.9
Corporation-Subordinated Debt (5)		
3.95% Notes due Oct. 2025 (1)(10)(11)	**780.4**	785.0
3.375% Fixed-to-Floating Rate Notes due May 2032 (2)	**349.2**	—
Total Corporation Subordinated Debt	**1,129.6**	785.0
Capital Lease Obligations (4)	**14.4**	23.0
Total Long-Term Debt	**$ 1,449.5**	$ 1,330.9
Long-Term Debt Qualifying as Risk-Based Capital	**$ 1,099.4**	$ 809.3

(1) Not redeemable prior to maturity.
(2) The subordinated notes will bear interest from the date they were issued to, but excluding, May 8, 2027, at an annual rate of 3.375% , payable semi-annually in arrears. From, and including, May 8, 2027, the subordinated notes will bear interest at an annual rate equal to three-month LIBOR plus 1.131% , payable quarterly in arrears. The subordinated notes are unsecured and may be redeemed, in whole but not in part, on, and only on, May 8, 2027, at a redemption price equal to 100% of the principal amount of the subordinated notes to be redeemed, plus accrued and unpaid interest, if any, up to but excluding the redemption date.
(3) Under the terms of its current Offering Circular dated November 6, 2013, the Bank has the ability to offer from time to time its senior bank notes in an aggregate principal amount of up to $4.5 billion at any one time outstanding and up to an additional $1.0 billion of subordinated notes. Each senior note will mature from 30 days to fifteen years , and each subordinated note will mature from five years to fifteen years , following its date of original issuance. Each note will mature on such date as selected by the initial purchaser and agreed to by the Bank.
(4) Refer to Note 10, "Lease Commitments."
(5) As of December 31, 2017 , debt issue costs of $0.9 million and $1.7 million are included as a direct deduction from the carrying amount of Senior Notes and Long-Term Debt, respectively. Debt issue costs are amortized on a straight-line basis over the life of the Note.
(6) Notes issued at a discount of 0.117%
(7) Notes issued at a discount of 0.437%
(8) Notes issued at a discount of 0.283%
(9) Notes issued at a discount of 0.02%
(10) Notes issued at a discount of 0.114%
(11) Interest rate swap contracts were entered into to modify the interest expense on these subordinated notes from fixed rates to floating rates. The swaps are recorded as fair value hedges and at December 31, 2017 , increases in the carrying values of subordinated notes outstanding of $37.4 million were recorded. As of December 31, 2016 , net adjustments in the carrying values of subordinated notes outstanding of $59.6 million were recorded.

Note 13 – Floating Rate Capital Debt

In January 1997, the Corporation issued $150 million of Floating Rate Capital Securities, Series A, through a statutory business trust wholly owned by the Corporation (NTC Capital I). In April 1997, the Corporation also issued, through a separate wholly owned statutory business trust (NTC Capital II), $120 million of Floating Rate Capital Securities, Series B. The sole assets of the trusts are subordinated debentures of Northern Trust Corporation that have the same interest rates and maturity dates as the corresponding distribution rates and redemption dates of the Floating Rate Capital Securities. The Series A Securities were issued at a discount to yield 60.5 basis points above the three-month London Interbank Offered Rate (LIBOR) and are due January 15, 2027 . The Series B Securities were issued at a discount to yield 67.9 basis points above the three-month LIBOR and are due April 15, 2027 .

Under the provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act, the regulatory capital treatment of these securities is required to be phased out over a period that began on January 1, 2013. In 2017 , 50% of these securities are eligible for Tier 2 capital treatment, declining at an incremental 10% a year until they are fully phased out in 2022.

The Corporation has fully, irrevocably and unconditionally guaranteed all payments due on the Series A and B securities. The holders of the Series A and B securities are entitled to receive preferential cumulative cash distributions quarterly in arrears (based on the liquidation amount of $1,000 per security) at an interest rate equal to the rate on the corresponding subordinated debentures. The interest rate on the Series A and Series B securities is equal to three-month LIBOR plus 0.52% and 0.59% , respectively. Subject to certain exceptions, the Corporation has the right to defer payment of interest on the subordinated debentures at any time or from time to time for a period not exceeding 20 consecutive quarterly periods provided that no extension period may extend beyond the stated maturity date. If interest is deferred on the subordinated debentures, distributions on the Series A and B securities will also be deferred and the Corporation will not be permitted, subject to certain exceptions, to pay or declare any cash distributions with respect to the Corporation's capital stock or debt securities that rank the same as or junior to the subordinated debentures, until all past due distributions are paid. The subordinated debentures are unsecured and subordinated to substantially all of the Corporation's existing indebtedness.

The Corporation has the right to redeem the Series A and Series B subordinated debentures, in whole or in part, at a price equal to the principal amount plus accrued and unpaid interest. The following table summarizes the book values of the outstanding subordinated debentures as of December 31, 2017 and 2016 .

TABLE 77: SUBORDINATED DEBENTURES

	DECEMBER 31,	
(In Millions)	**2017**	2016
NTC Capital I Subordinated Debentures due January 15, 2027	**$ 154.2**	$ 154.1
NTC Capital II Subordinated Debentures due April 15, 2027	**123.3**	123.3
Total Subordinated Debentures	**$ 277.5**	$ 277.4

Note 14 – Stockholders' Equity

Preferred Stock. The Corporation is authorized to issue 10 million shares of preferred stock without par value. The Board of Directors is authorized to fix the particular designations, preferences and relative, participating, optional and other special rights and qualifications, limitations or restrictions for each series of preferred stock issued.

As of December 31, 2017 , the Corporation had issued and outstanding 500,000 depositary shares (the "Depositary Shares"), each representing a 1/100th ownership interest in a share of Series D Non-Cumulative Perpetual Preferred Stock (the "Series D Preferred Stock") issued in August 2016. Equity related to Series D Preferred Stock as of December 31, 2017 and 2016 was $493.5 million . Shares of the Series D Preferred Stock have no par value and a liquidation preference of $100,000 (equivalent to $1,000 per depositary share).

Dividends on the Series D Preferred Stock, which are not mandatory, accrue and are payable on the liquidation preference amount, on a non-cumulative basis, at a rate per annum equal to (i) 4.60% from the original issue date of the Series D Preferred Stock to but excluding October 1, 2026 ; and (ii) a floating rate equal to Three-Month LIBOR plus 3.202% from and including October 1, 2026 . Fixed rate dividends are payable in arrears on the 1st day of April and October of each year, through and including October 1, 2026 , and floating rate dividends will be payable in arrears on the 1st day of January, April, July and October of each year, commencing on January 1, 2027 .

The Series D Preferred Stock has no maturity date and is redeemable at the Corporation's option, in whole or in part, on any dividend payment date on or after October 1, 2026 . The Series D Preferred Stock is redeemable at the Corporation's option in whole, but not in part, including prior to October 1, 2026 , within 90 days of a regulatory capital treatment event, as described in the Series D Preferred Stock Certificate of Designation.

As of December 31, 2017 , the Corporation also had issued and outstanding 16 million depositary shares, each representing 1/1000th ownership interest in a share of Series C Non-Cumulative Perpetual Preferred Stock ("Series C

Preferred Stock”), issued in August 2014. Equity related to Series C Preferred Stock as of December 31, 2017 and 2016 totaled $388.5 million . Series C Preferred Stock has no par value and has a liquidation preference of $25,000 (equivalent to $25 per depositary share).

Dividends on the Series C Preferred Stock, which are not mandatory, accrue and are payable on the liquidation preference amount, on a non-cumulative basis, quarterly in arrears on the first day of January, April, July and October of each year, at a rate per annum equal to 5.85% .

The Series C Preferred Stock has no maturity date and is redeemable at the Corporation’s option, in whole or in part, on any dividend payment date on or after October 1, 2019 . The Series C Preferred stock is redeemable at the Corporation’s option, in whole, but not in part, prior to October 1, 2019, within 90 days of a regulatory capital treatment event, as described in the Series C Preferred Stock Certificate of Designation.

Shares of the Series C Preferred Stock and Series D Preferred Stock rank senior to the Corporation’s common stock, and will rank at least equally with any other series of preferred stock it may issue (except for any senior series that may be issued with the requisite consent of the holders of the Series C Preferred Stock and Series D Preferred Stock, respectively) and all other parity stock, with respect to the payment of dividends and distributions upon liquidation, dissolution or winding up.

Common Stock. Stock repurchases through July 18, 2017 were made pursuant to the repurchase program announced by the Corporation on April 21, 2015, under which the Corporation’s Board of Directors authorized the Corporation to repurchase up to 15.0 million shares of the Corporation’s common stock. This program was terminated and replaced with a new repurchase program, announced on July 18, 2017, under which the Corporation’s Board of Directors authorized the Corporation to repurchase up to 9.5 million shares of the Corporation’s Common Stock. Repurchases after July 18, 2017 were made pursuant to the new repurchase program, which has no expiration date. Shares repurchased by the Corporation are used for general purposes, including management of the Corporation’s capital levels and the issuance of shares under stock option and other incentive plans of the Corporation.

Under the Corporation’s 2017 Capital Plan, which was reviewed without objection by the Federal Reserve, the Corporation may repurchase up to $454.6 million of common stock after December 31, 2017 through June 2018.

The average price paid per share for common stock repurchased in 2017 , 2016 , and 2015 was $90.25 , $67.91 , and $72.52 , respectively.

An analysis of changes in the number of shares of common stock outstanding follows:

TABLE 78: SHARES OF COMMON STOCK

	2017	2016	2015
Balance at January 1	**228,605,485**	229,293,783	233,390,705
Incentive Plan and Awards	**1,320,129**	1,209,124	1,033,664
Stock Options Exercised	**1,997,362**	4,156,728	1,721,282
Treasury Stock Purchased	**(5,796,302)**	(6,054,150)	(6,851,868)
Balance at December 31	**226,126,674**	228,605,485	229,293,783

Note 15 – Accumulated Other Comprehensive Income (Loss)

The following tables summarize the components of AOCI at December 31, 2017 , 2016 , and 2015 , and changes during the years then ended.

TABLE 79: SUMMARY OF CHANGES IN ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)

(In Millions)	**BALANCE AT DECEMBER 31, 2017**	**NET CHANGE**	BALANCE AT DECEMBER 31, 2016	NET CHANGE	BALANCE AT DECEMBER 31, 2015	NET CHANGE	BALANCE AT DECEMBER 31, 2014
Net Unrealized (Losses) Gains on Securities Available for Sale*	**$ (74.8)**	**$ (42.4)**	$ (32.4)	$ (1.4)	$ (31.0)	$ (58.6)	$ 27.6
Net Unrealized Gains (Losses) on Cash Flow Hedges	**4.5**	**(1.6)**	6.1	9.1	(3.0)	1.7	(4.7)
Net Foreign Currency Adjustments	**(1.8)**	**16.7**	(18.5)	(0.9)	(17.6)	(15.9)	(1.7)
Net Pension and Other Postretirement Benefit Adjustments	**(342.2)**	**(17.0)**	(325.2)	(4.1)	(321.1)	19.8	(340.9)
Total	**$ (414.3)**	**$ (44.3)**	$ (370.0)	$ 2.7	$ (372.7)	$ (53.0)	$ (319.7)

* Includes net unrealized gains on securities transferred from available for sale to held to maturity during the year ended December 31, 2017.

TABLE 80: DETAILS OF CHANGES IN ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)

	FOR THE YEAR ENDED DECEMBER 31,								
	2017			2016			2015		
(In Millions)	BEFORE TAX	TAX EFFECT	AFTER TAX	BEFORE TAX	TAX EFFECT	AFTER TAX	BEFORE TAX	TAX EFFECT	AFTER TAX
Unrealized Gains (Losses) on Securities Available for Sale									
Unrealized (Losses) Gains on Securities Available for Sale	$ (70.2)	$ 26.9	$ (43.3)	$ (1.8)	$ 0.7	$ (1.1)	$ (94.3)	$ 35.5	$ (58.8)
Reclassification Adjustment for (Gains) Losses Included in Net Income	1.4	(0.5)	0.9	(0.5)	0.2	(0.3)	0.3	(0.1)	0.2
Net Change	$ (68.8)	$ 26.4	$ (42.4)	$ (2.3)	$ 0.9	$ (1.4)	$ (94.0)	$ 35.4	$ (58.6)
Unrealized (Losses) Gains on Cash Flow Hedges									
Unrealized (Losses) Gains on Cash Flow Hedges	$ 33.8	$ (20.3)	$ 13.5	$ 4.4	$ 5.9	$ 10.3	$ (1.2)	$ 0.2	$ (1.0)
Reclassification Adjustment for (Gains) Losses Included in Net Income	(24.5)	9.4	(15.1)	(1.9)	0.7	(1.2)	4.7	(2.0)	2.7
Net Change	$ 9.3	$ (10.9)	$ (1.6)	$ 2.5	$ 6.6	$ 9.1	$ 3.5	$ (1.8)	$ 1.7
Foreign Currency Adjustments									
Foreign Currency Translation Adjustments	$ 156.5	$ (3.1)	$ 153.4	$ (126.5)	$ (3.1)	$ (129.6)	$ (101.5)	$ 4.9	$ (96.6)
Long-Term Intra-Entity Foreign Currency Transaction Losses	2.0	(0.7)	1.3	(5.3)	2.0	(3.3)	(18.7)	7.1	(11.6)
Net Investment Hedge Gains (Losses)	(223.2)	85.2	(138.0)	212.4	(80.4)	132.0	148.6	(56.3)	92.3
Net Change	$ (64.7)	$ 81.4	$ 16.7	$ 80.6	$ (81.5)	$ (0.9)	$ 28.4	$ (44.3)	$ (15.9)
Pension and Other Postretirement Benefit Adjustments									
Net Actuarial Gains (Losses)	$ (58.4)	$ 25.4	$ (33.0)	$ (31.1)	$ 11.2	$ (19.9)	$ (12.2)	$ 8.2	$ (4.0)
Reclassification Adjustment for Losses Included in Net Income	25.9	(9.9)	16.0	25.4	(9.6)	15.8	38.3	(14.5)	23.8
Net Change	$ (32.5)	$ 15.5	$ (17.0)	$ (5.7)	$ 1.6	$ (4.1)	$ 26.1	$ (6.3)	$ 19.8

The following table provides the location and before-tax amounts of reclassifications out of AOCI during the years ended December 31, 2017 , 2016 and 2015 .

TABLE 81: RECLASSIFICATION ADJUSTMENT OUT OF ACCUMULATED OTHER COMPREHENSIVE INCOME

		AMOUNT OF RECLASSIFICATION ADJUSTMENTS RECOGNIZED IN INCOME YEAR ENDED DECEMBER 31,		
(In Millions)	LOCATION OF RECLASSIFICATION ADJUSTMENTS RECOGNIZED IN INCOME	2017	2016	2015
Securities Available for Sale				
Realized Losses on Securities Available for Sale	Investment Security Gains (Losses), net	$ 1.4	$ (0.5)	$ 0.3
Realized (Gains) Losses on Cash Flow Hedges				
Foreign Exchange Contracts	Other Operating Income/Expense	(24.5)	(1.9)	4.7
Pension and Other Postretirement Benefit Adjustments				
Amortization of Net Actuarial Losses	Employee Benefits	26.0	25.6	38.5
Amortization of Prior Service Cost	Employee Benefits	(0.1)	(0.2)	(0.2)
Gross Reclassification Adjustment		$ 25.9	$ 25.4	$ 38.3

Note 16 – Net Income per Common Share

The computations of net income per common share are presented below.

TABLE 82: NET INCOME PER COMMON SHARE

($ In Millions Except Per Common Share Information)	FOR THE YEAR ENDED DECEMBER 31, 2017	2016	2015
BASIC NET INCOME PER COMMON SHARE			
Average Number of Common Shares Outstanding	**228,257,664**	227,580,584	232,279,849
Net Income	**$ 1,199.0**	$ 1,032.5	$ 973.8
Less: Dividends on Preferred Stock	**49.8**	23.4	23.4
Net Income Applicable to Common Stock	**$ 1,149.2**	$ 1,009.1	$ 950.4
Less: Earnings Allocated to Participating Securities	**18.8**	18.7	15.4
Earnings Allocated to Common Shares Outstanding	**1,130.4**	990.4	935.0
Basic Net Income Per Common Share	**4.95**	4.35	4.03
DILUTED NET INCOME PER COMMON SHARE			
Average Number of Common Shares Outstanding	**228,257,664**	227,580,584	232,279,849
Plus Dilutive Effect of Share-based Compensation	**1,396,737**	1,570,822	1,941,880
Average Common and Potential Common Shares	**229,654,401**	229,151,406	234,221,729
Earnings Allocated to Common and Potential Common Shares	**$ 1,130.5**	$ 990.4	$ 935.0
Diluted Net Income Per Common Share	**4.92**	4.32	3.99

Note: Common stock equivalents totaling 115,491 , 1,108,067 , and 371,059 for the years ended December 31, 2017 , 2016 , and 2015 , respectively, were not included in the computation of diluted net income per common share because their inclusion would have been antidilutive.

Note 17 – Net Interest Income

The components of net interest income were as follows:

TABLE 83: NET INTEREST INCOME

(In Millions)	FOR THE YEAR ENDED DECEMBER 31, 2017	2016	2015
Interest Income			
Loans and Leases	**$ 919.1**	$ 806.5	$ 731.9
Securities – Taxable	**594.1**	428.8	332.2
– Non-Taxable	**9.8**	7.5	4.8
Interest-Bearing Due from and Deposits with Banks (1)	**63.8**	64.3	84.9
Federal Reserve and Other Central Bank Deposits and Other	**182.6**	109.8	70.2
Total Interest Income	**$ 1,769.4**	$ 1,416.9	$ 1,224.0
Interest Expense			
Deposits	**$ 182.1**	$ 83.5	$ 74.3
Federal Funds Purchased	**10.4**	1.5	0.7
Securities Sold under Agreements to Repurchase	**6.0**	2.3	0.3
Other Borrowings	**50.7**	18.0	5.0
Senior Notes	**46.9**	46.8	46.8
Long-Term Debt	**39.2**	26.4	24.4
Floating Rate Capital Debt	**4.9**	3.5	2.4
Total Interest Expense	**$ 340.2**	$ 182.0	$ 153.9
Net Interest Income	**$ 1,429.2**	$ 1,234.9	$ 1,070.1

(1) Interest-Bearing Due from and Deposits with Banks includes the interest-bearing component of Cash and Due from Banks and Interest-Bearing Deposits with Banks as presented on the consolidated balance sheets.

Note 18 – Other Operating Income

The components of other operating income were as follows:

TABLE 84: OTHER OPERATING INCOME

(In Millions)	FOR THE YEAR ENDED DECEMBER 31, 2017	2016	2015
Loan Service Fees	**$ 50.7**	$ 56.6	$ 59.1
Banking Service Fees	**48.6**	50.6	48.2
Other Income	**58.2**	134.0	139.8
Total Other Operating Income	**$ 157.5**	$ 241.2	$ 247.1

Other income in 2016 included a $123.1 million net gain on the sale of 1.1 million Visa Class B common shares. Other income in 2015 included a $99.9 million net gain on the sale of 1.0 million Visa Class B common shares.

Note 19 – Other Operating Expense

The components of other operating expense were as follows:

TABLE 85: OTHER OPERATING EXPENSE

	FOR THE YEAR ENDED DECEMBER 31,		
(In Millions)	**2017**	2016	2015
Business Promotion	**$ 95.4**	$ 83.6	$ 85.1
FDIC Insurance Premiums	**34.7**	31.7	25.2
Staff Related	**42.8**	43.0	40.5
Other Intangibles Amortization	**11.4**	8.8	10.9
Other Expenses	**147.3**	197.3	166.3
Total Other Operating Expense	**$ 331.6**	$ 364.4	$ 328.0

Other expenses in 2016 included charges in connection with an agreement to settle certain securities lending litigation of $50.0 million and charges related to contractual modifications associated with existing C&IS clients of $18.6 million . Other expenses in 2015 included a charge related to voluntary cash contributions to certain constant dollar NAV funds totaling $45.8 million to bring the NAVs of these funds to $1.00 .

Note 20 – Income Taxes

The following table reconciles the total provision for income taxes recorded in the consolidated statements of income with the amounts computed at the statutory federal tax rate of 35% .

TABLE 86: INCOME TAXES

	FOR THE YEAR ENDED DECEMBER 31,		
(In Millions)	**2017**	2016	2015
Tax at Statutory Rate	**$ 571.9**	$ 531.0	$ 512.7
Tax Exempt Income	**(9.6)**	(7.2)	(4.8)
Foreign Tax Rate Differential	**(50.0)**	(50.9)	(44.2)
Excess Tax Benefit Related to Share-Based Compensation	**(31.6)**	(12.3)	—
State Taxes, net	**41.0**	31.1	33.1
Impact of Tax Cuts and Jobs Act	**(53.1)**	—	—
Other	**(33.7)**	(7.1)	(5.6)
Provision for Income Taxes	**$ 434.9**	$ 484.6	$ 491.2

The tax provision for 2017 includes a net benefit attributable to the Tax Cuts and Jobs Act of $53.1 million as outlined below, an increased income tax benefit derived from the vesting of restricted stock units and stock option exercises, and Federal and State research tax credits of $20.9 million , $17.6 million of which were recognized related to the Corporation’s technology spend between 2013 and 2016, each resulting in a reduction of the effective tax rate.

The Tax Cuts and Jobs Act was enacted on December 22, 2017, and reduces the U.S. federal corporate tax rate from 35% to 21% . It also requires companies to pay a mandatory deemed repatriation tax on earnings of foreign subsidiaries that were previously tax deferred. At December 31, 2017 , Northern Trust has made a reasonable estimate as to the impact of the Tax Cuts and Jobs Act as follows:

TABLE 87: IMPACT OF TAX CUTS AND JOBS ACT

(In Millions)		2017
Federal Taxes on Mandatory Deemed Repatriation	**$**	**150.0**
Impact Related to Federal Deferred Taxes		**(210.0)**
Other Adjustments		**6.9**
Provision (Benefit) for Income Taxes	**$**	**(53.1)**

The amounts related to federal taxes on mandatory deemed repatriation and certain other adjustments are considered provisional as of December 31, 2017 , as Northern Trust did not have the necessary information available to complete its accounting for the change in tax law and as such has provided a reasonable estimate. Northern Trust will continue to refine the related calculations as additional analyses are completed. In addition, these provisional amounts may require adjustment based on an evolving understanding of the new tax law and the issuance of guidance by the IRS.

The Corporation files income tax returns in the U.S. federal, various state, and foreign jurisdictions. The Corporation is no longer subject to income tax examinations by U.S. federal authorities before 2013, U.S. state or local tax authorities for years before 2011, or non-U.S. tax authorities for years before 2010.

Included in other liabilities within the consolidated balance sheets at December 31, 2017 and 2016 were $27.7 million and $17.2 million of unrecognized tax benefits, respectively. If recognized, 2017 and 2016 net income would have increased by $21.7 million and $11.9 million , respectively, resulting in a decrease of those years' effective income tax rates. A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

TABLE 88: UNRECOGNIZED TAX BENEFITS

(In Millions)		2017		2016
Balance at January 1	**$**	**17.2**	$	12.3
Additions for Tax Positions Taken in the Current Year		**9.9**		—
Additions for Tax Positions Taken in Prior Years		**6.2**		6.6
Reductions for Tax Positions Taken in Prior Years		**(5.4)**		(1.2)
Reductions Resulting from Expiration of Statutes		**(0.2)**		(0.5)
Balance at December 31	**$**	**27.7**	$	17.2

Unrecognized tax benefits had net increases of $10.5 million , resulting in a remaining balance of $27.7 million at December 31, 2017 , compared to net increases of $4.9 million resulting in a remaining balance of $17.2 million at December 31, 2016 . It is possible that changes in the amount of unrecognized tax benefits could occur in the next 12 months due to changes in judgment related to recognition or measurement, settlements with taxing authorities, or expiration of statute of limitations. Management does not believe that future changes, if any, would have a material effect on the consolidated financial position or liquidity of Northern Trust, although they could have a material effect on operating results for a particular period.

A provision for interest and penalties of $0.1 million , net of tax, was included in the provision for income taxes for the year ended December 31, 2017 . This compares to a benefit of interest and penalties of $1.6 million , net of tax, for the year ended December 31, 2016 . As of December 31, 2017 and 2016 , the liability for the potential payment of interest and penalties totaled $10.3 million and $9.9 million , net of tax, respectively.

Pre-tax earnings of non-U.S. subsidiaries are subject to U.S. taxation when effectively repatriated. Northern Trust provides for income taxes on the undistributed earnings of non-U.S. subsidiaries, except to the extent that those earnings are indefinitely reinvested outside the U.S. Northern Trust elected to indefinitely reinvest $246.1 million , $237.1 million , and $257.4 million of 2017 , 2016 , and 2015 earnings, respectively, of certain non-U.S. subsidiaries and, therefore, no U.S. deferred income taxes were recorded on those earnings.

As of December 31, 2017 , the cumulative amount of the undistributed earnings in the Corporation's foreign subsidiaries was approximately $1.9 billion . As a result of the Tax Cuts and Jobs Act being enacted on December 22, 2017, these earnings and the earnings from prior years which have been reinvested indefinitely outside of the United States are deemed to have been repatriated to the U.S. and subject to a repatriation tax. The repatriation tax has been estimated to be $150.0 million and recorded as an income tax provision. The repatriation tax will be paid in installments over eight years as permitted under U.S. income tax laws.

The components of the consolidated provision for income taxes for each of the three years ended December 31 are as follows:

TABLE 89: PROVISION FOR INCOME TAXES

	FOR THE YEAR ENDED DECEMBER 31,		
(In Millions)	**2017**	2016	2015
Current Tax Provision:			
Federal	**$ 347.3**	$ 495.8	$ 489.8
State	**38.3**	65.3	64.5
Non-U.S.	**125.4**	99.3	83.1
Total	**511.0**	660.4	637.4
Deferred Tax Provision:			
Federal	**$ (96.4)**	$ (159.0)	$ (131.1)
State	**24.6**	(18.9)	(13.6)
Non-U.S.	**(4.3)**	2.1	(1.5)
Total	**(76.1)**	(175.8)	(146.2)
Provision for Income Taxes	**$ 434.9**	$ 484.6	$ 491.2

In addition to the amounts shown above, tax charges and benefits have been recorded directly to stockholders' equity for the following:

TABLE 90: TAX CHARGES AND BENEFITS RECORDED DIRECTLY TO STOCKHOLDERS' EQUITY

	FOR THE YEAR ENDED DECEMBER 31,		
(In Millions)	**2017**	2016	2015
Current Tax Benefit (Charge) for Employee Stock Options and Other Stock-Based Plans	**$ —**	$ (7.6)	$ 17.7
Tax Effect of Other Comprehensive Income	**(112.4)**	72.4	17.0

Deferred taxes result from temporary differences between the amounts reported in the consolidated financial statements and the tax bases of assets and liabilities. As a result of the Tax Cuts and Jobs Act being enacted on December 22, 2017, deferred tax assets and liabilities have been remeasured based on the federal tax rate at which they are expected to reverse in the future, which is 21% . Deferred tax assets and liabilities have been computed as follows:

TABLE 91: NET DEFERRED TAX LIABILITIES

	DECEMBER 31,		
(In Millions)	**2017**	2016	2015
Deferred Tax Liabilities:			
Lease Financing	**$ 85.8**	$ 148.7	$ 272.6
Software Development	**187.8**	352.0	339.9
Accumulated Depreciation	**41.0**	26.0	20.6
Compensation and Benefits	**—**	50.2	70.7
State Taxes, net	**59.4**	33.3	48.8
Other Liabilities	**145.7**	243.1	169.1
Gross Deferred Tax Liabilities	**519.7**	853.3	921.7
Deferred Tax Assets:			
Allowance for Credit Losses	**32.3**	67.2	81.7
Compensation and Benefits	**35.5**	—	—
Other Assets	**88.3**	233.8	185.0
Gross Deferred Tax Assets	**156.1**	301.0	266.7
Valuation Reserve	**(1.1)**	(0.9)	(1.6)
Deferred Tax Assets, net of Valuation Reserve	**155.0**	300.1	265.1
Net Deferred Tax Liabilities	**$ 364.7**	$ 553.2	$ 656.6

Northern Trust had various state net operating loss carryforwards as of December 31, 2017 , 2016 , and 2015 . The income tax benefits associated with these loss carryforwards were approximately $1.1 million as of December 31, 2017 , $0.9 million as of December 31, 2016 , and $1.6 million as of December 31, 2015 . A valuation allowance of $1.1 million was recorded at December 31, 2017 , $0.9 million as of December 31, 2016 , and $1.6 million as of December 31, 2015 , as management believes the net operating losses will not be fully realized. No valuation allowance related to the remaining deferred tax assets was recorded at December 31, 2017 , 2016 , and 2015 , as management believes it is more likely than not that the deferred tax assets will be fully realized.

Note 21 – Employee Benefits

The Corporation and certain of its subsidiaries provide various benefit programs, including defined benefit pension, postretirement health care, and defined contribution plans. A description of each major plan and related disclosures are provided below.

Pension. A noncontributory qualified defined benefit pension plan covers substantially all U.S. employees of Northern Trust. Employees of certain European subsidiaries retain benefits in local defined benefit plans, although those plans are closed to new participants and to future benefit accruals. Employees continue to accrue benefits under the Swiss pension plan, which is accounted for as a defined benefit plan under GAAP.

Northern Trust also maintains a noncontributory supplemental pension plan for participants whose retirement benefit payments under the U.S. plan are expected to exceed the limits imposed by federal tax law. Northern Trust has a nonqualified trust, referred to as a “Rabbi” Trust, used to hold assets designated for the funding of benefits in excess of those permitted in certain of its qualified retirement plans. This arrangement offers participants a degree of assurance for payment of benefits in excess of those permitted in the related qualified plans. As the “Rabbi” Trust assets remain subject to the claims of creditors and are not the property of the employees, they are accounted for as corporate assets and are included in other assets in the consolidated balance sheets. Total assets in the “Rabbi” Trust related to the nonqualified pension plan at December 31, 2017 and 2016 amounted to $116.7 million and $106.9 million , respectively. Contributions of $11.5 million and $8.5 million were made to the “Rabbi” Trust in 2017 and 2016 , respectively.

The following tables set forth the status, amounts included in AOCI, and net periodic pension expense of the U.S. plan, non-U.S. plans, and supplemental plan for 2017 , 2016 , and 2015 . Prior service costs are being amortized on a straight-line basis over 11 years for the U.S. plan and 9 years for the supplemental plan.

TABLE 92: EMPLOYEE BENEFIT PLAN STATUS

	U.S. PLAN		NON-U.S. PLANS		SUPPLEMENTAL PLAN	
($ In Millions)	**2017**	2016	**2017**	2016	**2017**	2016
Accumulated Benefit Obligation	**$ 1,088.4**	$ 953.2	**$ 192.2**	$ 158.3	**$ 129.0**	$ 108.9
Projected Benefit Obligation	**1,209.9**	1,062.7	**198.3**	155.9	**144.5**	121.1
Plan Assets at Fair Value	**1,506.4**	1,393.5	**178.7**	139.3	**—**	—
Funded Status at December 31	**$ 296.5**	$ 330.8	**$ (19.6)**	$ (16.6)	**$ (144.5)**	$ (121.1)
Weighted-Average Assumptions:						
Discount Rates	**3.79%**	4.46%	**2.08%**	2.39%	**3.79%**	4.46%
Rate of Increase in Compensation Level	**4.39**	4.39	**N/A**	N/A	**4.39**	4.39
Expected Long-Term Rate of Return on Assets	**6.00**	6.75	**2.61**	3.22	**N/A**	N/A

TABLE 93: AMOUNTS INCLUDED IN ACCUMULATED OTHER COMPREHENSIVE INCOME

	U.S. PLAN		NON-U.S. PLANS		SUPPLEMENTAL PLAN	
(In Millions)	**2017**	2016	**2017**	2016	**2017**	2016
Net Actuarial Loss	**$ 399.0**	$ 378.1	**$ 44.2**	$ 55.8	**$ 83.2**	$ 67.4
Prior Service Cost	**(1.8)**	(2.3)	**2.5**	—	**0.6**	0.8
Gross Amount in Accumulated Other Comprehensive Income	**397.2**	375.8	**46.7**	55.8	**83.8**	68.2
Income Tax Effect	**151.6**	142.3	**5.3**	6.7	**31.9**	25.8
Net Amount in Accumulated Other Comprehensive Income	**$ 245.6**	$ 233.5	**$ 41.4**	$ 49.1	**$ 51.9**	$ 42.4

TABLE 94: NET PERIODIC PENSION EXPENSE

	U.S. PLAN			NON-U.S. PLANS			SUPPLEMENTAL PLAN		
($ In Millions)	**2017**	2016	2015	**2017**	2016	2015	**2017**	2016	2015
Service Cost	**$ 38.3**	$ 37.4	$ 37.8	**$ 0.4**	$ —	$ —	**$ 3.7**	$ 3.5	$ 3.6
Interest Cost	**45.9**	45.8	44.7	**4.0**	4.7	5.7	**5.2**	5.1	5.0
Expected Return on Plan Assets	**(93.8)**	(94.4)	(96.5)	**(4.5)**	(4.6)	(5.9)	**—**	N/A	N/A
Settlement Expense	**—**	—	—	**1.1**	3.7	—	**—**	—	—
Amortization:									
Net Loss	**19.0**	18.8	29.7	**1.3**	1.0	1.5	**5.7**	5.8	7.3
Prior Service Cost	**(0.4)**	(0.4)	(0.4)	**0.1**	—	—	**0.2**	0.2	0.2
Net Periodic Pension Expense	**$ 9.0**	$ 7.2	$ 15.3	**$ 2.4**	$ 4.8	$ 1.3	**$ 14.8**	$ 14.6	$ 16.1
Weighted-Average Assumptions:									
Discount Rates	**4.46%**	4.71%	4.25%	**2.33%**	3.39%	3.20%	**4.46%**	4.71%	4.25%
Rate of Increase in Compensation Level	**4.39**	4.25	4.25	**1.75**	N/A	N/A	**4.39**	4.25	4.25
Expected Long-Term Rate of Return on Assets	**6.75**	7.00	7.25	**3.13**	3.73	4.00	**N/A**	N/A	N/A

The components of net periodic pension expense are included in the line item “Employee Benefits” expense in the consolidated statements of income. Pension expense for 2018 is expected to include approximately $36.5 million related to the amortization of net loss from AOCI.

TABLE 95: CHANGE IN PROJECTED BENEFIT OBLIGATION

	U.S. PLAN		NON-U.S. PLANS		SUPPLEMENTAL PLAN	
(In Millions)	**2017**	2016	**2017**	2016	**2017**	2016
Beginning Balance	**$ 1,062.7**	$ 1,006.5	**$ 155.9**	$ 156.5	**$ 121.1**	$ 113.9
Service Cost	**38.3**	37.4	**0.4**	—	**3.7**	3.5
Interest Cost	**45.9**	45.8	**4.0**	4.7	**5.2**	5.1
Employee Contributions	**—**	—	**0.1**	—	**—**	—
Plan Amendment	**—**	—	**2.5**	—	**—**	—
Actuarial (Gain) Loss	**142.6**	31.5	**0.4**	26.0	**21.5**	7.4
Settlement	**—**	—	**(6.8)**	(7.3)	**—**	—
Acquisitions/Divestitures	**—**	—	**27.0**	—	**—**	—
Benefits Paid	**(79.6)**	(58.5)	**(3.0)**	(2.4)	**(7.0)**	(8.8)
Foreign Exchange Rate Changes	**—**	—	**17.8**	(21.6)	**—**	—
Ending Balance	**$ 1,209.9**	$ 1,062.7	**$ 198.3**	$ 155.9	**$ 144.5**	$ 121.1

TABLE 96: ESTIMATED FUTURE BENEFIT PAYMENTS

(In Millions)	U.S. PLAN	NON-U.S. PLANS	SUPPLEMENTAL PLAN
2018	$ 77.2	$ 3.7	$ 8.0
2019	75.7	3.5	12.5
2020	78.0	3.9	12.7
2021	75.9	4.2	15.5
2022	74.8	4.0	14.9
2023-2027	375.1	24.9	66.8

TABLE 97: CHANGE IN PLAN ASSETS

	U.S. PLAN		NON-U.S. PLANS	
(In Millions)	**2017**	2016	**2017**	2016
Fair Value of Assets at Beginning of Period	**$ 1,393.5**	$ 1,342.0	**$ 139.3**	$ 144.3
Actual Return on Assets	**192.5**	110.0	**12.4**	21.9
Employer Contributions	**—**	—	**3.0**	4.3
Employee Contributions			**0.1**	
Settlement	**—**	—	**(6.8)**	(7.3)
Acquisitions/Divestitures	**—**	—	**18.5**	—
Benefits Paid	**(79.6)**	(58.5)	**(3.0)**	(2.4)
Foreign Exchange Rate Changes	**—**	—	**15.2**	(21.5)
Fair Value of Assets at End of Period	**$ 1,506.4**	$ 1,393.5	**$ 178.7**	$ 139.3

The minimum required and maximum remaining deductible contributions for the U.S. qualified plan in 2018 are estimated to be zero and $250.0 million , respectively.

During 2017, the investment strategy employed for Northern Trust's U.S. pension plan was changed to utilize a dynamic glide path based on a set of pre-approved asset allocations to return-seeking and liability-hedging assets that vary in accordance with the plan's projected benefit obligation funded ratio. In general, as the plan’s projected benefit obligation funded ratio increases beyond an established threshold, the plan’s allocation to liability-hedging assets will increase while the allocation to return-seeking assets will decrease. Conversely, a decrease in the plan’s projected benefit obligation funded ratio beyond an established threshold will result in a decrease in the plan’s allocation to liability-hedging assets and increase in the allocation to return-seeking assets. Liability-hedging assets include U.S. long credit bonds, U.S. long government bonds, and a custom completion strategy used to hedge more closely the liability duration of projected plan benefits with bond duration across all durations. Return-seeking assets include: U.S. equity, international developed equity, emerging markets equity, real estate, high yield bonds, global listed infrastructure, emerging market debt, private equity and hedge funds.

Northern Trust utilizes an asset/liability methodology to determine the investment policies that will best meet its short and long-term objectives. The process is performed by modeling current and alternative strategies for asset allocation, funding policy and actuarial methods and assumptions. The financial modeling uses projections of expected capital market returns and expected volatility of those returns to determine alternative asset mixes having the greatest probability of meeting the plan's investment objectives. Risk tolerance is established through careful consideration of plan liabilities, plan funded status, and corporate financial condition. The intent of this strategy is to minimize plan expenses by outperforming growth in plan liabilities over the long run.

The target allocation of plan assets since May 2017 is 45% U.S. long credit bonds, 10% U.S. long government bonds, 10% custom completion, 8% U.S. equities, 5% international developed equity, 3% emerging markets equity, 3% real estate, 4% high yield bonds, 3% global listed infrastructure, 4% emerging market debt, 2% private equity, and 3% hedge funds.

Equity investments include common stocks that are listed on an exchange and investments in commingled funds that invest primarily in publicly traded equities. Equity investments are diversified across U.S. and non-U.S. stocks and divided by investment style and market capitalization. Fixed income securities held include U.S. treasury securities and investments in commingled funds that invest in a diversified blend of longer duration fixed income securities; the custom completion strategy uses U.S. treasury securities and interest rate futures (or similar instruments) to align more closely with the target hedge ratio across maturities. Alternative investments, including private equity, hedge funds, real estate, and global infrastructure, are used judiciously to enhance long-term returns while improving portfolio diversification. Private equity assets consist primarily of investments in limited partnerships that invest in individual companies in the form of non-public equity or non-public debt positions. Direct or co-investment in non-public stock by the plan is prohibited. The plan's private equity investments are limited to 2% of the total limited partnership and the maximum allowable loss cannot exceed the commitment amount. The plan holds two investments in hedge funds of funds, which invest, either directly or indirectly, in diversified portfolios of funds or other pooled investment vehicles.

Investment in real estate is designed to provide stable income and added diversification.

Though not a primary strategy for meeting the plan's objectives, derivatives may be used from time to time, depending on the nature of the asset class to which they relate, to gain market exposure in an efficient and timely manner, to hedge foreign currency exposure or interest rate risk, or to alter the duration of a portfolio. There were five derivatives held by the plan at December 31, 2017 . There were no derivatives held by the plan at December 31, 2016 .

Investment risk is measured and monitored on an ongoing basis through monthly liability measurements, periodic asset/liability studies, and quarterly investment portfolio reviews. Standards used to evaluate the plan's investment manager performance include, but are not limited to, the achievement of objectives, operation within guidelines and policy, and comparison against a relative benchmark. In addition, each manager of the investment funds held by the plan is ranked against a universe of peers and compared to a relative benchmark. Total plan performance analysis includes an analysis of the market environment, asset allocation impact on performance, risk and return relative to other ERISA plans, and manager impacts upon plan performance.

The following describes the hierarchy of inputs used to measure fair value and the primary valuation methodologies used by Northern Trust for the U.S. qualified plan assets measured at fair value.

Level 1 – Quoted, active market prices for identical assets or liabilities. The Plan's Level 1 investments are comprised of a mutual fund and domestic common stocks. The Plan's Level 1 investments that are exchange traded are valued at the closing price reported by the respective exchanges on the day of valuation.

Level 2 – Observable inputs other than Level 1 prices, such as quoted active market prices for similar assets or liabilities, quoted prices for identical or similar assets in inactive markets, and model-derived valuations in which all significant inputs are observable in active markets. The Plan's Level 2 assets are comprised of U.S. government obligations and collective trust funds. The investments in collective trust funds fair values are calculated on a scheduled basis using the closing market prices and accruals of securities in the funds (total value of the funds) divided by the number of fund shares currently issued and outstanding. Redemptions of the collective trust funds occur by contract at the respective fund's redemption date NAV.

Level 3 – Valuation techniques in which one or more significant inputs are unobservable in the marketplace. The Plan's Level 3 assets are comprised of private equity and hedge funds which invest in underlying groups of investment funds or other pooled investment vehicles that are selected by the respective funds' investment managers. The investment funds and the underlying investments held by these investment funds are valued at fair value. In determining the fair value of the underlying investments of each fund, the fund's investment manager or general partner takes into account the estimated value reported by the underlying funds as well as any other considerations that may, in their judgment, increase or decrease such estimated value.

While Northern Trust believes its valuation methods for plan assets are appropriate and consistent with other market participants, the use of different methodologies or assumptions, particularly as applied to Level 3 assets, could have a material effect on the computation of the estimated fair values.

The following table presents the fair values of Northern Trust's U.S. pension plan assets, by major asset category, and their level within the fair value hierarchy defined by GAAP as of December 31, 2017 and 2016 .

TABLE 98: FAIR VALUE OF U.S. PENSION PLAN ASSETS

	December 31, 2017			
(In Millions)	**LEVEL 1**	**LEVEL 2**	**LEVEL 3**	**TOTAL**
Domestic Common Stock	**$ 38.6**	**$ —**	**$ —**	**$ 38.6**
Foreign Common Stock	**—**	**—**	**—**	**—**
U.S. Government Obligations	**—**	**1,072.0**	**—**	**1,072.0**
Northern Trust Mutual Fund	**44.5**	**—**	**—**	**44.5**
Northern Trust Collective Trust Funds	**—**	**268.6**	**—**	**268.6**
Northern Trust Private Equity Funds	**—**	**—**	**29.3**	**29.3**
Northern Trust Hedge Funds	**—**	**—**	**44.6**	**44.6**
Cash and Other	**8.7**	**—**	**—**	**8.7**
Total Assets at Fair Value	**$ 91.9**	**$ 1,340.6**	**$ 73.9**	**$ 1,506.4**

	December 31, 2016			
(In Millions)	LEVEL 1	LEVEL 2	LEVEL 3	TOTAL
Domestic Common Stock	$ 52.1	$ —	$ —	$ 52.1
Foreign Common Stock	0.1	—	—	0.1
U.S. Government Obligations	—	134.6	—	134.6
Northern Trust Mutual Fund	70.7	—	—	70.7
Northern Trust Collective Trust Funds	—	1,029.9	—	1,029.9
Northern Trust Private Equity Funds	—	—	35.7	35.7
Northern Trust Hedge Funds	—	—	64.8	64.8
Cash and Other	5.6	—	—	5.6
Total Assets at Fair Value	$ 128.5	$ 1,164.5	$ 100.5	$ 1,393.5

The following table presents the changes in Level 3 assets for the years ended December 31, 2017 and 2016 .

TABLE 99: CHANGE IN LEVEL 3 ASSETS

	PRIVATE EQUITY FUNDS		HEDGE FUNDS	
(In Millions)	**2017**	2016	**2017**	2016
Fair Value at January 1	**$ 35.7**	$ 47.5	**$ 64.8**	$ 63.4
Actual Return on Plan Assets	**(5.4)**	(5.6)	**(3.1)**	1.5
Realized Gain	**—**	—	**5.0**	—
Purchases	**0.8**	2.0	**—**	—
Sales	**(1.8)**	(8.2)	**(22.1)**	(0.1)
Fair Value at December 31	**$ 29.3**	$ 35.7	**$ 44.6**	$ 64.8

Note: The return on plan assets represents the change in the unrealized gain (loss) on assets still held at December 31.

A building block approach is employed for Northern Trust's U.S. pension plan in determining the long-term rate of return for plan assets. Historical markets and long-term historical relationships between equities, fixed income and other asset classes are studied using the widely accepted capital market principle that assets with higher volatility generate a greater return over the long-run. Current market factors such as inflation expectations and interest rates are evaluated before long-term capital market assumptions are determined. The long-term portfolio rate of return is established with consideration given to diversification and rebalancing. The rate is reviewed against peer data and historical returns to verify the return is reasonable and appropriate. Based on this approach and the plan's target asset allocation, the expected long-term rate of return on assets as of the plan's December 31, 2017 , measurement date was set at 6.00% .

Postretirement Health Care. Northern Trust maintains an unfunded postretirement health care plan under which those employees who retire at age 55 or older under the provisions of the U.S. defined benefit plan and had attained 15 years of service as of December 31, 2011 may be eligible for subsidized postretirement health care coverage. The provisions of this plan may be changed further at the discretion of Northern Trust, which also reserves the right to terminate these benefits at any time.

The following tables set forth the postretirement health care plan status and amounts included in AOCI at December 31, the net periodic postretirement benefit cost of the plan for 2017 and 2016 , and the change in the accumulated postretirement benefit obligation during 2017 and 2016 .

TABLE 100: POSTRETIREMENT HEALTH CARE PLAN STATUS

	DECEMBER 31,	
(In Millions)	**2017**	2016
Accumulated Postretirement Benefit Obligation at Measurement Date:		
Retirees and Dependents	**$ 27.7**	$ 26.4
Actives Eligible for Benefits	**6.7**	7.7
Net Postretirement Benefit Obligation	**$ 34.4**	$ 34.1

TABLE 101: AMOUNTS INCLUDED IN ACCUMULATED OTHER COMPREHENSIVE INCOME

	DECEMBER 31,	
(In Millions)	**2017**	2016
Net Actuarial Loss / (Gain)	**$ 3.9**	$ 0.3
Prior Service Cost	**—**	—
Gross Amount in Accumulated Other Comprehensive Income	**3.9**	0.3
Income Tax Effect	**1.5**	0.1
Net Amount in Accumulated Other Comprehensive Income	**$ 2.4**	$ 0.2

TABLE 102: NET PERIODIC POSTRETIREMENT (BENEFIT) EXPENSE

	FOR THE YEAR ENDED DECEMBER 31,		
(In Millions)	**2017**	2016	2015
Service Cost	**$ 0.1**	$ 0.1	$ 0.1
Interest Cost	**1.4**	1.5	1.4
Expected Return on Plan Assets	**—**	—	—
Amortization			
Net Gain	**—**	—	—
Prior Service Benefit	**—**	—	—
Net Periodic Postretirement Expense	**$ 1.5**	$ 1.6	$ 1.5

TABLE 103: CHANGE IN ACCUMULATED POSTRETIREMENT BENEFIT OBLIGATION

	FOR THE YEAR ENDED DECEMBER 31,	
(In Millions)	**2017**	2016
Beginning Balance	**$ 34.1**	$ 32.2
Service Cost	**0.1**	0.1
Interest Cost	**1.4**	1.5
Actuarial Loss / (Gain)	**(0.2)**	2.7
Net Claims Paid	**(1.0)**	(2.4)
Medicare Subsidy	**—**	—
Ending Balance	**$ 34.4**	$ 34.1

Northern Trust uses the aggregate RP-2014 mortality table with adjustment from 2014 to 2006. Northern Trust's pension obligations reflect proposed future improvement under scale MP-2017, released by the Society of Actuaries in October 2017. This assumption was updated at December 31, 2017 from improvement scale MP-2016.

TABLE 104: ESTIMATED FUTURE BENEFIT PAYMENTS

(In Millions)		TOTAL POSTRETIREMENT MEDICAL BENEFITS
2018	$	2.7
2019		2.7
2020		2.7
2021		2.6
2022		2.5
2023-2027		11.4

Net periodic postretirement (benefit) expense for 2018 is expected to include $0.1 million amortization from AOCI of the net actuarial loss. The weighted average discount rate used in determining the accumulated postretirement benefit obligation was 3.79% at December 31, 2017 , and 4.46% at December 31, 2016 . For measurement purposes, a 6.8% annual increase in the cost of pre-age 65 medical benefits and post-age 65 medical benefits were assumed for 2017 . For drug claims, an 8.75% annual increase in cost was assumed for 2017 . These rates are both assumed to gradually decrease until they reach 4.5% in 2026 and 2027, respectively. The health care cost trend rate assumption has an effect on the amounts reported. For example, increasing or decreasing the assumed health care trend rate by one percentage point in each year would have the following effect.

TABLE 105: HEALTH CARE COST TREND RATE ASSUMPTION

(In Millions)		1–PERCENTAGE POINT INCREASE		1–PERCENTAGE POINT DECREASE
Effect on Postretirement Benefit Obligation	**$**	**0.8**	**$**	**(0.7)**
Effect on Total Service and Interest Cost Components		—		—

Defined Contribution Plans. The Corporation and its subsidiaries maintain various defined contribution plans covering substantially all employees. The Corporation's contribution to the U.S. plan and to certain European-based plans includes a matching component. The expense associated with defined contribution plans is charged to employee benefits and totaled $53.4 million in 2017 , $50.0 million in 2016 , and $46.8 million in 2015 .

Note 22 – Share-Based Compensation Plans

Northern Trust recognizes expense for the grant-date fair value of share-based compensation granted to employees and non-employee directors.

Total compensation expense for share-based payment arrangements to employees and the associated tax impacts were as follows for the periods presented.

TABLE 106: TOTAL COMPENSATION EXPENSE FOR SHARE-BASED PAYMENT ARRANGEMENTS TO EMPLOYEES

	FOR THE YEAR ENDED DECEMBER 31,					
(In Millions)		**2017**		2016		2015
Restricted Stock Unit Awards	**$**	**87.3**	$	60.2	$	51.5
Stock Options		**9.0**		9.0		10.0
Performance Stock Units		**31.7**		17.6		14.9
Total Share-Based Compensation Expense	**$**	**128.0**	$	86.8	$	76.4
Tax Benefits Recognized	**$**	**48.7**	$	32.8	$	28.8

As of December 31, 2017 , there was $110.2 million of unrecognized compensation cost related to unvested share-based compensation arrangements granted under the Corporation's share-based compensation plans. That cost is expected to be recognized as expense over a weighted-average period of approximately two years .

The Northern Trust Corporation 2017 Long-Term Incentive Plan (2017 Plan) is administered by the Compensation and Benefits Committee (Committee) of the Board of Directors. All employees of the Corporation and its subsidiaries and all directors of the Corporation are eligible to receive awards under the 2017 Plan. The 2017 Plan provides for the grant of nonqualified and incentive stock options; tandem and free-standing stock appreciation rights; stock awards in the form of restricted stock, restricted stock units and other stock awards; and performance awards.

Beginning with grants made on February 21, 2017 under the Northern Trust Corporation 2012 Stock Plan (2012 Plan), restricted stock unit and performance stock unit grants continue to vest in accordance with the original terms of the award if the applicable employee retires, after satisfying applicable age and service requirements. For all applicable periods, stock option grants continue to vest in accordance with the original terms of the award if the applicable employee retires, after satisfying applicable age and service requirements.

Grants are outstanding under the 2017 Plan, the 2012 Plan, and the Amended and Restated Northern Trust Corporation 2002 Stock Plan (2002 Plan). The 2017 Plan was approved by stockholders in April 2017. Upon approval of the 2017 Plan, no additional shares have been or will be granted under the 2012 Plan or 2002 Plan. The total number of shares of the Corporation’s common stock authorized for issuance under the 2017 Plan is 20,000,000 plus shares forfeited under the 2012 Plan and 2002 Plan. As of December 31, 2017 , shares available for future grant under the 2017 Plan, including shares forfeited under the 2012 Plan and 2002 Plan, totaled 20,265,477 .

The following describes Northern Trust’s share-based payment arrangements and applies to awards under the 2017 Plan, 2012 Plan and the 2002 Plan, as applicable.

Stock Options. Stock options consist of options to purchase common stock at prices not less than 100% of the fair value thereof on the date the options are granted. Options have a maximum 10 year life and generally vest and become exercisable in 1 year to 4 years after the date of grant. All options terminate at such time as determined by the Committee and as provided in the terms and conditions of the respective option grants.

The weighted-average assumptions used for options granted during the years ended December 31, 2017 , 2016 , and 2015 are as follows:

TABLE 107: WEIGHTED-AVERAGE ASSUMPTIONS USED FOR OPTIONS GRANTED

	2017	2016	2015
Expected Term (in Years)	**6.9**	7.0	7.1
Dividend Yield	**1.81%**	2.57%	2.07%
Expected Volatility	**23.2**	32.3	30.4
Risk-Free Interest Rate	**2.11**	1.45	1.83

The expected term of options represents the period of time options granted are expected to be outstanding based primarily on the historical exercise behavior attributable to previous option grants. Dividend yield represents the estimated yield from dividends paid on the Corporation’s common stock over the expected term of the options. Expected volatility is determined based on a combination of the historical volatility of Northern Trust’s stock price and the implied volatility of traded options on Northern Trust stock. The risk-free interest rate is based on the U.S. Treasury yield curve at the time of grant for a period equal to the expected term of the options granted.

The following table provides information about stock options granted, vested, and exercised in the years ended December 31, 2017 , 2016 , and 2015 .

TABLE 108: STOCK OPTIONS GRANTED, VESTED, AND EXERCISED

	FOR THE YEAR ENDED DECEMBER 31,		
(In Millions, Except Per Share Information)	**2017**	2016	2015
Weighted Average Grant-Date Per Share Fair Value of Stock Options Granted	**$ 19.18**	$ 14.84	$ 18.72
Grant-Date Fair Value of Stock Options Vested	**7.3**	9.6	16.0
Stock Options Exercised			
Intrinsic Value as of Exercise Date	**74.7**	83.9	32.1
Cash Received	**108.0**	233.8	94.0
Tax Deduction Benefits Realized	**73.1**	80.0	30.1

The following is a summary of changes in nonvested stock options for the year ended December 31, 2017 .

TABLE 109: CHANGES IN NONVESTED STOCK OPTIONS

NONVESTED OPTIONS	SHARES	WEIGHTED-AVERAGE GRANT-DATE FAIR VALUE PER SHARE
Nonvested at December 31, 2016	1,259,160	$ 15.89
Granted	468,381	19.18
Vested	(471,089)	15.55
Forfeited or Cancelled	(9,947)	16.17
Nonvested at December 31, 2017	1,246,505	$ 17.25

A summary of the status of stock options at December 31, 2017 , and changes during the year then ended, are presented in the table below.

TABLE 110: STATUS OF STOCK OPTIONS AND CHANGES

($ In Millions Except Per Share Information)	SHARES	WEIGHTED AVERAGE EXERCISE PRICE PER SHARE	WEIGHTED AVERAGE REMAINING CONTRACTUAL TERM (YEARS)	AGGREGATE INTRINSIC VALUE
Options Outstanding, December 31, 2016	4,703,769	$ 55.20		
Granted	468,381	88.06		
Exercised	(1,997,362)	54.08		
Forfeited, Expired or Cancelled	(101,690)	53.35		
Options Outstanding, December 31, 2017	3,073,098	$ 60.99	5.8	$ 119.5
Options Exercisable, December 31, 2017	1,826,593	$ 53.66	4.2	$ 84.4

Restricted Stock Unit Awards. Restricted stock unit awards may be granted to participants which entitle them to receive a payment in the Corporation's common stock or cash and such other terms and conditions as the Committee deems appropriate. Each restricted stock unit provides the recipient the opportunity to receive one share of stock for each stock unit that vests. The restricted stock units granted in 2017 predominately vest at a rate equal to 50% on the third anniversary date of the grant and 50% on the fourth anniversary date. Restricted stock unit grants totaled 863,308 , 1,301,693 , and 970,317 , with weighted average grant-date fair values of $88.19 , $59.17 , and $70.79 per share, for the years ended December 31, 2017 , 2016 , and 2015 , respectively. The total fair value of restricted stock units vested during the years ended December 31, 2017 , 2016 , and 2015 , was $88.7 million , $52.3 million , and $58.1 million , respectively.

A summary of the status of outstanding restricted stock unit awards at December 31, 2017 , and changes during the year then ended, is presented in the table below.

TABLE 111: OUTSTANDING RESTRICTED STOCK UNIT AWARDS

($ In Millions)	NUMBER	AGGREGATE INTRINSIC VALUE
Restricted Stock Unit Awards Outstanding, December 31, 2016	3,695,657	$ 329.1
Granted	863,308	
Distributed	(1,040,725)	
Forfeited	(118,802)	
Restricted Stock Unit Awards Outstanding, December 31, 2017	3,399,438	$ 339.6
Units Convertible, December 31, 2017	168,111	$ 16.8

The following is a summary of nonvested restricted stock unit awards at December 31, 2017 , and changes during the year then ended.

TABLE 112: NONVESTED RESTRICTED STOCK UNIT AWARDS

NONVESTED RESTRICTED STOCK UNITS	NUMBER		WEIGHTED AVERAGE GRANT-DATE FAIR VALUE PER UNIT	WEIGHTED AVERAGE REMAINING VESTING TERM (YEARS)
Nonvested at December 31, 2016	**3,515,632**	**$**	**61.80**	**2.0**
Granted	**863,308**		**88.19**	
Vested	**(1,028,835)**		**58.64**	
Forfeited	**(118,778)**		**66.79**	
Nonvested at December 31, 2017	**3,231,327**	**$**	**69.67**	**1.9**

Performance Stock Units. Each performance stock unit provides the recipient the opportunity to receive one share of stock for each stock unit that vests over a three -year performance period, subject to satisfaction of specified performance targets that are a function of return on equity and continued employment until the end of the vesting period. For performance stock units outstanding as of December 31, 2017 , and granted in 2015 or 2016, the number of such units that may vest ranges from 0% to 125% of the original award granted based on the attainment of the applicable 3 -year average annual return on equity target. For performance stock units outstanding at December 31, 2017 , and granted in 2017, the number of such units that may vest ranges from 0% to 150% of the original award granted based on the attainment of the applicable 3 -year average annual return on equity target. Distribution of the shares is then made after vesting.

Performance stock unit grants totaled 231,269 , 354,606 , and 272,319 for the years ended December 31, 2017 , 2016 , and 2015 , respectively, with weighted average grant-date fair values of $69.80 , $62.67 , and $61.14 . Performance stock units outstanding at target level performance totaled 817,432 , 859,502 , and 787,140 at December 31, 2017 , 2016 , and 2015 , respectively. Performance stock units had aggregate intrinsic values of $81.7 million, $76.5 million , and $56.7 million , and weighted average remaining vesting terms of 1.1 years , 1.5 years , and 1.8 years , at December 31, 2017 , 2016 , and 2015 , respectively.

Non-employee Director Stock Awards. Stock units with total values of $1.2 million (13,354 units), $1.3 million (18,001 units), and $1.2 million (16,449 units) were granted to non-employee directors in 2017 , 2016 , and 2015 , respectively, which vest or vested on the date of the annual meeting of the Corporation's stockholders in the following years. Total expense recognized on these grants was $1.3 million , $1.3 million , and $1.1 million in 2017 , 2016 , and 2015 , respectively. Stock units granted to non-employee directors do not have voting rights. Each stock unit entitles a director to one share of common stock at vesting, unless a director elects to defer receipt of the shares. Directors may elect to defer the payment of their annual stock unit grant and cash-based compensation until termination of services as director. Deferred cash compensation is converted into stock units representing shares of common stock of the Corporation. Distributions of deferred stock units are made in stock. Distributions of the stock unit accounts that relate to cash-based compensation are made in cash based on the fair value of the stock units at the time of distribution.

Note 23 – Cash-Based Compensation Plans

Various incentive plans provide for cash incentives and bonuses to selected employees based upon accomplishment of corporate net income objectives, goals of the reporting segments and support functions, and individual performance. The provision for awards under these plans is charged to compensation expense and totaled $289.8 million in 2017 , $250.7 million in 2016 , and $233.0 million in 2015 .

Note 24 – Contingent Liabilities

Legal Proceedings. In the normal course of business, the Corporation and its subsidiaries are routinely defendants in or parties to pending and threatened legal actions, and are subject to regulatory examinations, information-gathering requests, investigations, and proceedings, both formal and informal. In certain legal actions, claims for substantial monetary damages are asserted. In regulatory matters, claims for disgorgement, restitution, penalties and/or other remedial actions or sanctions may be sought. Based on current knowledge, after consultation with legal counsel and after taking into account current accruals, management does not believe that the losses, fines or penalties, if any, arising from pending litigation or threatened legal actions or regulatory matters either individually or in the aggregate, after giving effect to applicable reserves and insurance coverage will have a material adverse effect on the consolidated financial position or liquidity of the Corporation, although such matters could have a material adverse effect on the Corporation's operating results for a particular period.

Under GAAP, (i) an event is "probable" if the "future event or events are likely to occur"; (ii) an event is "reasonably possible" if "the chance of the future event or events occurring is more than remote but less than likely"; and (iii) an event is "remote" if "the chance of the future event or events occurring is slight."

The outcome of litigation and regulatory matters is inherently difficult to predict and/or the range of loss often cannot be reasonably estimated, particularly for matters that (i) will be decided by a jury, (ii) are in early stages, (iii) involve uncertainty as to the likelihood of a class being certified or the ultimate size of the class, (iv) are subject to appeals or motions, (v) involve significant factual issues to be resolved, including with respect to the amount of damages, (vi) do not specify the amount of damages sought or (vii) seek very large damages based on novel and complex damage and liability legal theories. Accordingly, the Corporation cannot reasonably estimate the eventual outcome of these pending matters, the timing of their ultimate resolution or what the eventual loss, fines or penalties, if any, related to each pending matter will be.

In accordance with applicable accounting guidance, the Corporation records accruals for litigation and regulatory matters when those matters present loss contingencies that are both probable and reasonably estimable. When loss contingencies are not both probable and reasonably estimable, the Corporation does not record accruals. No material accruals have been recorded for pending litigation or threatened legal actions or regulatory matters.

For a limited number of matters for which a loss is reasonably possible in future periods, whether in excess of an accrued liability or where there is no accrued liability, the Corporation is able to estimate a range of possible loss. As of December 31, 2017 , the Corporation has estimated the range of reasonably possible loss for these matters to be from zero to approximately $30 million in the aggregate. The Corporation's estimate with respect to the aggregate range of reasonably possible loss is based upon currently available information and is subject to significant judgment and a variety of assumptions and known and unknown uncertainties. The matters underlying the estimated range will change from time to time, and actual results may vary significantly from the current estimate.

In certain other pending matters, there may be a range of reasonably possible loss (including reasonably possible loss in excess of amounts accrued) that cannot be reasonably estimated for the reasons described above. Such matters are not included in the estimate of reasonably possible loss discussed above.

In January 2015, the Public Prosecutor's Office of France recommended that certain charges be brought against Northern Trust Fiduciary Services (Guernsey) Limited (NTFS), an indirect subsidiary of the Corporation, relating to the administration of two trusts for which NTFS serves as trustee. In April 2015, a French investigating magistrate judge charged NTFS with complicity in estate tax fraud. Charges also were brought against a number of other persons and entities related to this matter. The trial related to this matter concluded in October 2016. In January 2017, the French court found no estate tax fraud had occurred and NTFS and all other persons and entities charged were acquitted. The Public Prosecutor's Office of France has appealed the court decision. The proceedings in the appellate court are scheduled to begin in March 2018. As trustee, NTFS provided no tax advice and had no involvement in the preparation or filing of the challenged estate tax filings.

Visa Class B Common Shares. Northern Trust, as a member of Visa U.S.A. Inc. (Visa U.S.A.) and in connection with the 2007 restructuring of Visa U.S.A. and its affiliates and the 2008 initial public offering of Visa Inc. (Visa), received certain Visa Class B common shares. The Visa Class B common shares are subject to certain selling restrictions until the final resolution of the covered litigation noted below, at which time the shares are convertible into Visa Class A common shares based on a conversion rate dependent upon the ultimate cost of resolving the covered litigation.

Certain members of Visa U.S.A. are obligated to indemnify Visa for losses resulting from certain litigation relating to interchange fees (the covered litigation). On October 19, 2012, Visa signed a settlement agreement with plaintiff representatives for binding settlement of the covered litigation. On January 14, 2014, the United States District Court for the Eastern District of New York entered a final judgment order approving the settlement with the class plaintiffs. A number of objectors appealed from that order and more than 30 opt-out cases have been filed by merchants in various federal district courts. On June 30, 2016, the United States Court of Appeals for the Second Circuit reversed the District Court's approval of the settlement and remanded the case to the District Court for further proceedings. In November 2016, a subset of plaintiffs filed a certiorari petition with the Supreme Court of the United States. In March 2017, the Supreme Court denied that petition. The ultimate resolution of the covered litigation and the timing for removal of the selling restrictions on the Visa Class B common shares are uncertain.

In June 2016 and 2015, Northern Trust recorded a $123.1 million and $99.9 million net gain on the sale of 1.1 million and 1.0 million of its Visa Class B common shares, respectively. These sales do not affect Northern Trust's risk related to the impact of the covered litigation on the rate at which such shares will ultimately convert into Visa Class A common shares. Northern Trust continued to hold approximately 4.1 million Visa Class B common shares, which are recorded at their original cost basis of zero as of both December 31, 2017 and 2016.

Note 25 – Derivative Financial Instruments

Northern Trust is a party to various derivative financial instruments that are used in the normal course of business to meet the needs of its clients; as part of its trading activity for its own account; and as part of its risk management activities. These instruments include foreign exchange contracts, interest rate contracts, total return swap contracts, credit default swap contracts, and swaps related to the sale of certain Visa Class B common shares

Northern Trust's primary risks associated with these instruments is the possibility that interest rates, foreign exchange rates, equity prices, or credit spreads could change in an unanticipated manner, resulting in higher costs or a loss in the underlying value of the instrument. These risks are mitigated by establishing limits, monitoring the level of actual positions taken against such established limits, and monitoring the level of any interest rate sensitivity gaps created by such positions. When establishing position limits, market liquidity and volatility, as well as experience in each market, are taken into account.

Credit risk associated with derivative instruments relates to the failure of the counterparty and the failure of Northern Trust to pay based on the contractual terms of the agreement, and is generally limited to the unrealized fair value gains and losses on these instruments, net of any collateral received or deposited. The amount of credit risk will increase or decrease during the lives of the instruments as interest rates, foreign exchange rates, equity prices or credit spreads fluctuate. Northern Trust's risk is controlled by limiting such activity to an approved list of counterparties and by subjecting such activity to the same credit and quality controls as are followed in lending and investment activities. Credit Support Annexes and other similar agreements are currently in place with a number of Northern Trust's counterparties which mitigate the aforementioned credit risk associated with derivative activity conducted with those counterparties by requiring that significant net unrealized fair value gains be supported by collateral placed with Northern Trust.

Northern Trust has elected to net derivative assets and liabilities when legally enforceable master netting arrangements or similar agreements exist between Northern Trust and the counterparty. Derivative assets and liabilities recorded in the consolidated balance sheets were each reduced by $1.4 billion and $1.7 billion as of December 31, 2017 and 2016 , respectively, as a result of master netting arrangements and similar agreements in place. Derivative assets and liabilities recorded at December 31, 2017 also reflect reductions of $427.6 million and $189.0 million , respectively, as a result of cash collateral received from and deposited with derivative counterparties. This compares with reductions of derivative assets and liabilities of $461.3 million and $722.1 million , respectively, at December 31, 2016 . Additional cash collateral received from and deposited with derivative counterparties totaling $67.0 million and $143.1 million , respectively, as of December 31, 2017 , and $70.8 million and $324.5 million , respectively, as of December 31, 2016 , was not offset against derivative assets and liabilities on the consolidated balance sheets as the amounts exceeded the net derivative positions with those counterparties. Northern Trust centrally clears certain interest rate derivative instruments as required under Title VII of the Dodd-Frank Wall Street Reform and Consumer Protection Act.

The following table presents the fair value of securities that have been either pledged to or accepted from counterparties for these derivative transactions.

TABLE 113: FAIR VALUE OF SECURITIES COLLATERAL FOR DERIVATIVE TRANSACTIONS

	DECEMBER 31,	
(in Millions)	**2017**	2016
Pledged to others:		
Not permitted by contract or custom to sell or repledge	**$ 39.9**	$ 70.7
Permitted by contract or custom to sell or repledge	**—**	—
Accepted from others:		
Not permitted by contract or custom to sell or repledge	**—**	—
Permitted by contract or custom to sell or repledge	**4.6**	—

Securities pledged or accepted as collateral are not offset against derivative assets or liabilities in the consolidated balance sheets. There was no repledged or sold collateral at December 31, 2017 or December 31, 2016 .

Certain master netting arrangements Northern Trust enters into with derivative counterparties contain credit risk-related contingent features in which the counterparty has the option to declare Northern Trust in default and accelerate cash settlement of net derivative liabilities with the counterparty in the event Northern Trust's credit rating falls below specified levels. The aggregate fair value of all derivative instruments with credit-risk-related contingent features that were in a liability position was $223.7 million and $358.2 million at December 31, 2017 and 2016 , respectively. Cash collateral amounts deposited with derivative counterparties on those dates included $35.8 million and $317.5 million , respectively, posted against these liabilities, resulting in a net maximum amount of termination payments that could have been required at December 31, 2017 and 2016 of $187.9 million and $40.7 million , respectively. Accelerated settlement of these liabilities would not have a material effect on the consolidated financial position or liquidity of Northern Trust.

Foreign exchange contracts are agreements to exchange specific amounts of currencies at a future date, at a specified rate of exchange. Foreign exchange contracts are entered into primarily to meet the foreign exchange needs of clients. Foreign exchange contracts are also used for trading purposes and risk management. For risk management purposes, Northern Trust uses foreign exchange contracts to reduce its exposure to changes in foreign exchange rates relating to certain forecasted non-functional currency denominated revenue and expenditure transactions, foreign currency denominated assets and liabilities, including investment securities and net investments in non-U.S. affiliates.

Interest rate contracts include swap and option contracts. Interest rate swap contracts involve the exchange of fixed and floating rate interest payment obligations without the exchange of the underlying principal amounts. Northern Trust enters into interest rate swap contracts with its clients and also may utilize such contracts to reduce or eliminate the exposure to changes in the cash flows or fair value of hedged assets or liabilities due to changes in interest rates. Interest rate option contracts may include caps, floors, collars and swaptions, and provide for the transfer or reduction of interest rate risk, typically in exchange for a fee. Northern Trust enters into option contracts as a seller of interest rate protection to clients. Northern Trust receives a fee at the outset of the agreement for the assumption of the risk of an unfavorable change in interest rates. This assumed interest rate risk is then mitigated by entering into an offsetting position with an outside counterparty. Northern Trust may also purchase or enter into option contracts for risk management purposes including to reduce the exposure to changes in the cash flows of hedged assets due to changes in interest rates.

Client-Related and Trading Derivative Instruments. Approximately 96% of Northern Trust's derivatives outstanding at December 31, 2017 and 2016 , measured on a notional value basis, relate to client-related and trading activities. These activities consist principally of providing foreign exchange services to clients in connection with Northern Trust's global custody business. However, in the normal course of business, Northern Trust also engages in trading of currencies for its own account.

The following table shows the notional and fair values of client-related and trading derivative financial instruments. Notional amounts of derivative financial instruments do not represent credit risk, and are not recorded in the consolidated balance sheets. They are used merely to express the volume of this activity. Northern Trust's credit-related risk of loss is limited to the positive fair value of the derivative instrument, net of any collateral received, which is significantly less than the notional amount.

TABLE 114: NOTIONAL AND FAIR VALUES OF CLIENT-RELATED AND TRADING DERIVATIVE FINANCIAL INSTRUMENTS

	DECEMBER 31, 2017			DECEMBER 31, 2016		
		FAIR VALUE			FAIR VALUE	
(In Millions)	**NOTIONAL VALUE**	**ASSET**	**LIABILITY**	NOTIONAL VALUE	ASSET	LIABILITY
Foreign Exchange Contracts	**$ 317,882.5**	**$ 2,527.0**	**$ 2,522.5**	$ 273,213.1	$ 3,274.2	$ 3,221.7
Interest Rate Contracts	**7,418.0**	**65.1**	**64.1**	6,968.3	87.0	85.2
Total	**$ 325,300.5**	**$ 2,592.1**	**$ 2,586.6**	$ 280,181.4	$ 3,361.2	$ 3,306.9

Changes in the fair value of client-related and trading derivative instruments are recognized currently in income. The following table shows the location and amount of gains and losses recorded in the consolidated statements of income for the years ended December 31, 2017 , 2016 , and 2015 .

TABLE 115: LOCATION AND AMOUNT OF CLIENT-RELATED AND TRADING DERIVATIVE GAINS AND LOSSES RECORDED IN INCOME

(In Millions)	LOCATION OF DERIVATIVE GAIN RECOGNIZED IN INCOME	AMOUNT OF DERIVATIVE GAIN RECOGNIZED IN INCOME DECEMBER 31, 2017	2016	2015
Foreign Exchange Contracts	Foreign Exchange Trading Income	**$ 209.9**	$ 236.6	$ 261.8
Interest Rate Contracts	Security Commissions and Trading Income	**10.7**	11.4	17.5
Total		**$ 220.6**	$ 248.0	$ 279.3

Risk Management Instruments. Northern Trust uses derivative instruments to hedge its exposure to foreign currency, interest rate, equity price, and credit risk.

The following table identifies the types and classifications of derivative instruments formally designated as hedges under GAAP and used by Northern Trust to manage risk, their notional and fair values, and the respective risks addressed.

TABLE 116: NOTIONAL AND FAIR VALUES OF DESIGNATED RISK MANAGEMENT DERIVATIVE FINANCIAL INSTRUMENTS

			December 31, 2017			December 31, 2016		
				FAIR VALUE			FAIR VALUE	
(In Millions)	DERIVATIVE INSTRUMENT	RISK CLASSIFICATION	**NOTIONAL VALUE**	**ASSET**	**LIABILITY**	NOTIONAL VALUE	ASSET	LIABILITY
FAIR VALUE HEDGES								
Available for Sale Investment Securities	Interest Rate Swap Contracts	Interest Rate	**$ 3,423.1**	**$ 15.7**	**$ 14.5**	$ 3,873.4	$ 88.3	$ 16.8
Senior Notes and Long-Term Subordinated Debt	Interest Rate Swap Contracts	Interest Rate	**1,050.0**	**16.0**	**3.7**	1,250.0	71.8	3.3
CASH FLOW HEDGES								
Forecasted Foreign Currency Denominated Transactions	Foreign Exchange Contracts	Foreign Currency	**436.2**	**13.5**	**6.4**	329.3	8.5	7.8
Foreign Currency Denominated Investment Securities	Foreign Exchange Contracts	Foreign Currency	**2,852.8**	**14.9**	**6.6**	1,431.6	151.5	0.8
Available for Sale Investment Securities	Interest Rate Contracts	Interest Rate	**$ 925.0**	**$ 0.2**	**$ 1.2**	$ 975.0	$ 0.1	$ 2.7
NET INVESTMENT HEDGES								
Net Investments in Non-U.S. Affiliates	Foreign Exchange Contracts	Foreign Currency	**3,011.3**	**0.6**	**179.6**	2,083.6	174.6	10.8
Total			**$ 11,698.4**	**$ 60.9**	**$ 212.0**	$ 9,942.9	$ 494.8	$ 42.2

Derivatives are designated as fair value hedges to limit Northern Trust’s exposure to changes in the fair value of assets and liabilities due to movements in interest rates. The following table shows the location and amount of derivative gains and losses recognized in the consolidated statements of income related to fair value hedges for the years ended December 31, 2017 , 2016 , and 2015 .

TABLE 117: LOCATION AND AMOUNT OF FAIR VALUE HEDGE DERIVATIVE GAINS AND LOSSES RECORDED IN INCOME

(In Millions)	DERIVATIVE INSTRUMENT	LOCATION OF DERIVATIVE GAIN/(LOSS) RECOGNIZED IN INCOME	AMOUNT OF DERIVATIVE GAIN/(LOSS) RECOGNIZED IN INCOME DECEMBER 31, 2017	2016	2015
Available for Sale Investment Securities	Interest Rate Swap Contracts	Interest Income	**$ (0.8)**	$ 63.4	$ (21.1)
Senior Notes and Long-Term Subordinated Debt	Interest Rate Swap Contracts	Interest Expense	**3.4**	5.0	34.7
Total			**$ 2.6**	$ 68.4	$ 13.6

Derivatives are also designated as cash flow hedges in order to minimize the variability in cash flows of earning assets or forecasted transactions caused by movements in interest or foreign exchange rates. There was no ineffectiveness recognized in earnings for cash flow hedges during the years ended December 31, 2017 , 2016 , or 2015 . As of December 31, 2017 , 23 months was the maximum length of time over which the exposure to variability in future cash flows of forecasted foreign currency denominated transactions was being hedged.

The following table provides cash flow hedge derivative gains and losses that were recognized in AOCI and the amounts reclassified to earnings during the years ended December 31, 2017 , 2016 and 2015 .

TABLE 118: CASH FLOW HEDGE DERIVATIVE GAINS AND LOSSES RECOGNIZED IN AOCI AND RECLASSIFIED TO INCOME

	FOREIGN EXCHANGE CONTRACTS (BEFORE TAX)			INTEREST RATE CONTRACTS (BEFORE TAX)		
(In Millions)	**2017**	2016	2015	**2017**	2016	2015
Net Gain/(Loss) Recognized in AOCI	**$ 32.5**	$ 7.9	$ (1.2)	**$ 1.3**	$ (3.4)	$ —
Net Gain/(Loss) Reclassified from AOCI to Earnings						
Other Operating Income	**5.0**	(6.4)	(8.0)	**—**	—	—
Interest Income	**19.3**	6.4	—	**0.3**	2.8	5.2
Other Operating Expense	**(0.1)**	(0.9)	(1.9)	**—**	—	—
Total	**$ 24.2**	$ (0.9)	$ (9.9)	**$ 0.3**	$ 2.8	$ 5.2

There were no material gains or losses reclassified during the years ended December 31, 2017 , 2016 , and 2015 as a result of the discontinuance of forecasted transactions that were no longer probable of occurring. It is estimated that a net gain of $6.2 million and $1.6 million will be reclassified into net income within the next twelve months relating to cash flow hedges of foreign currency denominated transactions and cash flow hedges of foreign currency denominated investment securities, respectively. It is estimated that a net loss of $0.1 million will be reclassified into earnings upon the receipt of interest payments on earning assets within the next twelve months relating to cash flow hedges of available for sale investment securities.

Certain foreign exchange contracts and qualifying nonderivative instruments are designated as net investment hedges to minimize Northern Trust's exposure to variability in the foreign currency translation of net investments in non-U.S. branches and subsidiaries. For net investment hedges, there was no ineffectiveness recorded for these hedges during the years ended December 31, 2017 , 2016 , and 2015 . Net investment hedge losses recognized in AOCI related to foreign exchange contracts were $223.2 million for the year ended December 31, 2017 . Net investment hedge gains recognized in AOCI related to foreign exchange contracts were $212.4 million for the year ended December 31, 2016 .

Derivatives that are not formally designated as hedges under GAAP are entered into for risk management purposes. Foreign exchange contracts are entered into to manage the foreign currency risk of non-U.S.-dollar-denominated assets and liabilities, the net investment in certain non-U.S. affiliates, commercial loans, and forecasted foreign-currency-denominated transactions. Swaps related to the sale of certain Visa Class B common shares were entered into which retain the risks associated with the ultimate conversion of the Visa Class B common shares into shares of Visa Class A common shares. Credit default swaps were entered into to manage the credit risk associated with certain loans and loan commitments. Total return swaps are entered into to manage the equity price risk associated with certain investments. The following table identifies the types of risk management derivative instruments not formally designated as hedges and their notional amounts and fair values.

TABLE 119: NOTIONAL AND FAIR VALUES OF NON-DESIGNATED RISK MANAGEMENT DERIVATIVE INSTRUMENTS

	DECEMBER 31, 2017			DECEMBER 31, 2016		
		FAIR VALUE			FAIR VALUE	
(In Millions)	**NOTIONAL VALUE**	**ASSET**	**LIABILITY**	NOTIONAL VALUE	ASSET	LIABILITY
Foreign Exchange Contracts	**$ 214.1**	**$ 1.1**	**$ 0.1**	$ 289.6	$ 0.8	$ 1.8
Other Financial Derivatives (1)	**404.7**	**—**	**30.4**	270.0	—	25.2
Total	**$ 618.8**	**$ 1.1**	**$ 30.5**	$ 559.6	$ 0.8	$ 27.0

(1) This line consists of swaps related to the sale of certain Visa Class B common shares and total return swap contracts.

The following table provides the location and amount of gains and losses recorded in the consolidated statements of income for the years ended December 31, 2017 , 2016 , and 2015 for derivative instruments not formally designated as hedges under GAAP.

TABLE 120: LOCATION AND AMOUNT OF GAINS AND LOSSES RECORDED IN INCOME FOR NON-DESIGNATED RISK MANAGEMENT DERIVATIVE INSTRUMENTS

(In Millions)	LOCATION OF DERIVATIVE GAIN/ (LOSS) RECOGNIZED IN INCOME	AMOUNT RECOGNIZED IN INCOME 2017	2016	2015
Foreign Exchange Contracts	Other Operating Income	**$ 8.2**	$ (6.7)	$ (10.9)
Other Financial Derivatives [1]	Other Operating Income	**(13.3)**	(6.1)	(1.0)
Total		**$ (5.1)**	$ (12.8)	$ (11.9)

(1) This line includes the statement of income impact of swaps related to the sale of certain Visa Class B common shares, total return swap contracts, and credit default swap contracts.

Note 26 – Offsetting of Assets and Liabilities

The following tables provide information regarding the offsetting of derivative assets and of securities purchased under agreements to resell within the consolidated balance sheets as of December 31, 2017 and 2016 .

TABLE 121: OFFSETTING OF DERIVATIVE ASSETS AND SECURITIES PURCHASED UNDER AGREEMENTS TO RESELL

December 31, 2017

(In Millions)	GROSS RECOGNIZED ASSETS	GROSS AMOUNTS OFFSET	NET AMOUNTS PRESENTED	GROSS AMOUNTS NOT OFFSET	NET AMOUNT [3]
Derivative Assets [1]					
Foreign Exchange Contracts Over the Counter (OTC)	**$ 2,106.3**	**$ 1,397.7**	**$ 708.6**	**$ —**	**$ 708.6**
Interest Rate Swaps OTC	**86.9**	**14.2**	**72.7**	**—**	**72.7**
Interest Rate Swaps Exchange Cleared	**10.1**	**10.1**	**—**	**—**	**—**
Cross Product Netting Adjustment	**—**	**10.4**	**—**	**—**	**—**
Cross Product Collateral Adjustment	**—**	**427.6**	**—**	**—**	**—**
Total Derivatives Subject to a Master Netting Arrangement	**2,203.3**	**1,860.0**	**343.3**	**—**	**343.3**
Total Derivatives Not Subject to a Master Netting Arrangement	**450.8**	**—**	**450.8**	**—**	**450.8**
Total Derivatives	**2,654.1**	**1,860.0**	**794.1**	**—**	**794.1**
Securities Purchased under Agreements to Resell [2]	**$ 1,303.3**	**$ —**	**$ 1,303.3**	**$ 1,303.3**	**$ —**

December 31, 2016

(In Millions)	GROSS RECOGNIZED ASSETS	GROSS AMOUNTS OFFSET	NET AMOUNTS PRESENTED	GROSS AMOUNTS NOT OFFSET	NET AMOUNT [3]
Derivative Assets [1]					
Foreign Exchange Contracts Over the Counter (OTC)	$ 2,800.4	$ 1,651.9	$ 1,148.5	$ —	$ 1,148.5
Interest Rate Swaps OTC	129.8	18.2	111.6	—	111.6
Interest Rate Swaps Exchange Cleared	117.4	21.8	95.6	—	95.6
Cross Product Netting Adjustment	—	17.2	—	—	—
Cross Product Collateral Adjustment	—	461.3	—	—	—
Total Derivatives Subject to a Master Netting Arrangement	3,047.6	2,170.4	877.2	—	877.2
Total Derivatives Not Subject to a Master Netting Arrangement	809.2	—	809.2	—	809.2
Total Derivatives	3,856.8	2,170.4	1,686.4	—	1,686.4
Securities Purchased under Agreements to Resell [2]	$ 1,967.5	$ —	$ 1,967.5	$ 1,967.5	$ —

(1) Derivative assets are reported in other assets in the consolidated balance sheets. Other assets (excluding derivative assets) totaled $3.9 billion and $3.3 billion as of December 31, 2017 and 2016 , respectively.
(2) Securities purchased under agreements to resell are reported in federal funds sold and securities purchased under agreements to resell in the consolidated balance sheets. Federal funds sold totaled $21.0 million and $6.8 million as of December 31, 2017 and 2016 , respectively.
(3) Northern Trust did not possess any cash collateral that was not offset in the consolidated balance sheets that could have been used to offset the net amounts presented in the consolidated balance sheets as of December 31, 2017 and 2016 .

The following table provides information regarding the offsetting of derivative liabilities and of securities sold under agreements to repurchase within the consolidated balance sheets as of December 31, 2017 and 2016 .

TABLE 122: OFFSETTING OF DERIVATIVE LIABILITIES AND SECURITIES SOLD UNDER AGREEMENTS TO REPURCHASE

December 31, 2017

(In Millions)	GROSS RECOGNIZED LIABILITIES	GROSS AMOUNTS OFFSET	NET AMOUNTS PRESENTED	GROSS AMOUNTS NOT OFFSET	NET AMOUNT (2)
Derivative Liabilities (1)					
Foreign Exchange Contracts OTC	**$ 1,889.2**	**$ 1,397.7**	**$ 491.5**	**$ —**	**$ 491.5**
Interest Rate Swaps OTC	**69.2**	**14.2**	**55.0**	**—**	**55.0**
Interest Rate Swaps Exchange Cleared	**14.3**	**10.1**	**4.2**	**—**	**4.2**
Other Financial Derivatives	**30.4**	**—**	**30.4**	**—**	**30.4**
Cross Product Netting Adjustment	**—**	**10.4**	**—**	**—**	**—**
Cross Product Collateral Adjustment	**—**	**189.0**	**—**	**—**	**—**
Total Derivatives Subject to a Master Netting Arrangement	**2,003.1**	**1,621.4**	**381.7**	**—**	**381.7**
Total Derivatives Not Subject to a Master Netting Arrangement	**825.9**	**—**	**825.9**	**—**	**825.9**
Total Derivatives	**2,829.0**	**1,621.4**	**1,207.6**	**—**	**1,207.6**
Securities Sold under Agreements to Repurchase	**$ 834.0**	**$ —**	**$ 834.0**	**$ 834.0**	**$ —**

December 31, 2016

(In Millions)	GROSS RECOGNIZED LIABILITIES	GROSS AMOUNTS OFFSET	NET AMOUNTS PRESENTED	GROSS AMOUNTS NOT OFFSET	NET AMOUNT (2)
Derivative Liabilities (1)					
Foreign Exchange Contracts OTC	$ 2,634.4	$ 1,651.9	$ 982.5	$ —	$ 982.5
Interest Rate Swaps OTC	86.2	18.2	68.0	—	68.0
Interest Rate Swaps Exchange Cleared	21.8	21.8	—	—	—
Other Financial Derivatives	25.2	—	25.2	—	25.2
Cross Product Netting Adjustment	—	17.2	—	—	—
Cross Product Collateral Adjustment	—	722.1	—	—	—
Total Derivatives Subject to a Master Netting Arrangement	2,767.6	2,431.2	336.4	—	336.4
Total Derivatives Not Subject to a Master Netting Arrangement	608.5	—	608.5	—	608.5
Total Derivatives	3,376.1	2,431.2	944.9	—	944.9
Securities Sold under Agreements to Repurchase	$ 473.7	$ —	$ 473.7	$ 473.7	$ —

(1) Derivative liabilities are reported in other liabilities in the consolidated balance sheets. Other liabilities (excluding derivative liabilities) totaled $2.4 billion and $2.7 billion as of December 31, 2017 and 2016 , respectively.
(2) Northern Trust did not place any cash collateral with counterparties that was not offset in the consolidated balance sheets that could have been used to offset the net amounts presented in the consolidated balance sheets as of December 31, 2017 and 2016 .

All of Northern Trust’s securities sold under agreements to repurchase (repurchase agreements) and securities purchased under agreements to resell (reverse repurchase agreements) involve the transfer of financial assets in exchange for cash subject to a right and obligation to repurchase those assets for an agreed upon amount. In the event of a repurchase failure, the cash or financial assets are available for offset. All of Northern Trust’s repurchase agreements and reverse repurchase agreements are subject to a master netting arrangement, which sets forth the rights and obligations for repurchase and offset. Under the master netting arrangement, Northern Trust is entitled to set off receivables from and collateral placed with a single counterparty against obligations owed to that counterparty. In addition, collateral held by Northern Trust can be offset against receivables from that counterparty.

Derivative asset and liability positions with a single counterparty can be offset against each other in cases where legally enforceable master netting arrangements or similar agreements exist. Derivative assets and liabilities can be further offset by cash collateral received from, and deposited with, the transacting counterparty. The basis for this view is that, upon termination of transactions subject to a master netting arrangement or similar agreement, the individual derivative receivables do not represent resources to which general creditors have rights and individual derivative payables do not represent claims that are equivalent to the claims of general creditors. Northern Trust centrally clears certain interest rate derivative instruments as required under Title VII of the Dodd-Frank Wall Street Reform and Consumer Protection Act. These transactions are subject to an agreement similar to a master netting arrangement, which has the same rights of offset as described above.

Note 27 – Off-Balance-Sheet Financial Instruments

Commitments and Letters of Credit. Northern Trust, in the normal course of business, enters into various types of commitments and issues letters of credit to meet the liquidity and credit enhancement needs of its clients. The contractual amounts of these instruments represent the potential credit exposure should the instrument be fully drawn upon and the client default. To control the credit risk associated with entering into commitments and issuing letters of credit, Northern Trust subjects such activities to the same credit quality and monitoring controls as its lending activities. Commitments and letters of credit consist of the following:

Legally Binding Commitments to Extend Credit generally have fixed expiration dates or other termination clauses. Since a significant portion of the commitments are expected to expire without being drawn upon, the total commitment amount does not necessarily represent future loans or liquidity requirements.

Standby Letters of Credit obligate Northern Trust to meet certain financial obligations of its clients, if, under the contractual terms of the agreement, the clients are unable to do so. These instruments are primarily issued to support public and private financial commitments, including commercial paper, bond financing, initial margin requirements on futures exchanges, and similar transactions. Northern Trust is obligated to meet the entire financial obligation of these agreements and in certain cases is able to recover the amounts paid through recourse against collateral received or other participants.

Commercial Letters of Credit are instruments issued by Northern Trust on behalf of its clients that authorize a third party (the beneficiary) to draw drafts up to a stipulated amount under the specified terms and conditions of the agreement. Commercial letters of credit are issued primarily to facilitate international trade.

The following table shows the contractual amounts of commitments and letters of credit.

TABLE 123: COMMITMENTS AND LETTERS OF CREDIT

	DECEMBER 31,	
(In Millions)	**2017**	2016
Legally Binding Commitments to Extend Credit (1)	**$ 26,822.6**	$ 32,768.1
Standby Letters of Credit (2)	**2,970.0**	3,846.1
Commercial Letters of Credit	**37.7**	24.0

(1)These amounts exclude $385.5 million and $377.2 million of commitments participated to others at December 31, 2017 and 2016 , respectively.
(2)These amounts include $92.5 million and $134.2 million of standby letters of credit secured by cash deposits or participated to others as of December 31, 2017 and 2016 , respectively. The weighted average maturity of standby letters of credit was 22 months at December 31, 2017 and 24 months at December 31, 2016 .

Other Off-Balance-Sheet Financial Instruments. As part of its securities custody activities and at the direction of its clients, Northern Trust lends securities owned by clients to borrowers who are reviewed and approved by the Northern Trust Capital Markets Credit Committee. In connection with these activities, Northern Trust has issued indemnifications to certain clients against certain losses that are a direct result of a borrower's failure to return securities when due, should the value of such securities exceed the value of the collateral required to be posted. Borrowers are required to collateralize fully securities received with cash or marketable securities. As securities are loaned, collateral is maintained at a minimum of 100% of the fair value of the securities plus accrued interest. The collateral is revalued on a daily basis. The amount of securities loaned as of December 31, 2017 and 2016 subject to indemnification was $143.6 billion and $102.3 billion , respectively. Because of the credit quality of the borrowers and the requirement to fully collateralize securities borrowed, management believes that the exposure to credit loss from this activity is not significant and no liability was recorded related to these indemnifications.

The Bank is a participating member of various cash, securities, and foreign exchange clearing and settlement organizations such as The Depository Trust Company in New York. It participates in these organizations on behalf of its clients and on its own behalf as a result of its own activities. A wide variety of cash and securities transactions are settled through these organizations, including those involving obligations of states and political subdivisions, asset-backed securities, commercial paper, dollar placements, and securities issued by the Government National Mortgage Association.

As a result of its participation in cash, securities, and foreign exchange clearing and settlement organizations, the Bank could be responsible for a pro rata share of certain credit-related losses arising out of the clearing activities. The method in which such losses would be shared by the clearing members is stipulated in each clearing organization's membership agreement. Credit exposure related to these agreements varies from day to day, primarily as a result of fluctuations in the volume of transactions cleared through the organizations. The estimated credit exposure at December 31, 2017 and 2016 was approximately $62 million and $59 million , respectively, based on the membership agreements and clearing volume for those days. Controls related to these clearing transactions are closely monitored by management to protect the assets of Northern Trust and its clients.

Note 28 – Variable Interest Entities

Variable Interest Entities (VIEs) are defined within GAAP as entities which either have a total equity investment that is insufficient to permit the entity to finance its activities without additional subordinated financial support or whose equity investors lack the characteristics of a controlling financial interest. Investors that finance a VIE through debt or equity interests, or other counterparties that provide other forms of support, such as guarantees, subordinated fee arrangements, or certain types of derivative contracts, are variable interest holders in the entity and the variable interest holder, if any, that has both the power to direct the activities that most significantly impact the entity and a variable interest that could potentially be significant to the entity is deemed to be the VIE's primary beneficiary and is required to consolidate the VIE.

Leveraged Leases. In leveraged leasing transactions, Northern Trust acts as lessor of the underlying asset subject to the lease and typically funds 20 - 30% of the asset's cost via an equity ownership in a trust with the remaining 70 - 80% provided by third party non-recourse debt holders. In such transactions, the trusts, which are VIEs, are created to provide the lessee use of the property with substantially all of the rights and obligations of ownership. The lessee's maintenance and operation of the leased property has a direct effect on the fair value of the underlying property, and the lessee also has the ability to increase the benefits it can receive and limit the losses it can suffer by the manner in which it uses the property. As a result, Northern Trust has determined that it is not the primary beneficiary of these VIEs given it lacks the power to direct the activities that most significantly impact the economic performance of the VIEs.

Northern Trust's maximum exposure to loss as a result of its involvement with the leveraged lease trust VIEs is limited to the carrying amounts of its leveraged lease investments. As of December 31, 2017 and 2016 , the carrying amounts of these investments, which are included in loans and leases in the consolidated balance sheets, were $131.0 million and $183.5 million , respectively. Northern Trust's funding requirements relative to the VIEs are limited to its invested capital. Northern Trust has no other liquidity arrangements or obligations to purchase assets of the VIEs that would expose Northern Trust to a loss.

Tax Credit Structures. Northern Trust invests in qualified affordable housing projects and community development entities (collectively, community development projects) that are designed to generate a return primarily through the realization of tax credits. The community development projects are formed as limited partnerships and limited liability companies in which Northern Trust invests as a limited partner/investor member through equity contributions. The economic performance of the community development projects, which are VIEs, is subject to the performance of their underlying investment and their ability to operate in compliance with the rules and regulations necessary for the qualification of tax credits generated by equity investments. Northern Trust has determined that it is not the primary beneficiary of any community development projects as it lacks the power to direct the activities that most significantly impact the economic performance of the underlying investments or to affect their ability to operate in compliance with the rules and regulations necessary for the qualification of tax credits generated by equity investments. This power is held by the general partners and managing members who exercise full and exclusive control of the operations of the VIEs.

Northern Trust's maximum exposure to loss as a result of its involvement with community development projects is limited to the carrying amounts of its investments, including any undrawn commitments. As of December 31, 2017 and 2016 , the carrying amounts of these investments in community development projects that generate tax credits, included in other assets in the consolidated balance sheets, totaled $415.3 million and $218.9 million , respectively, of which $386.1 million and $186.5 million are VIEs as of December 31, 2017 and 2016 , respectively. As of December 31, 2017 and 2016 , liabilities related to unfunded commitments on investments in tax credit community development projects, included in other liabilities in the consolidated balance sheets, totaled $241.1 million and $82.9 million , respectively, of which $215.2 million and $56.7 million related to undrawn commitments on VIEs as of December 31, 2017 and 2016 , respectively.

Northern Trust's funding requirements are limited to its invested capital and unfunded commitments for future equity contributions. Northern Trust has no exposure to loss from liquidity arrangements and no obligation to purchase assets of the community development projects.

Tax credits and other tax benefits attributable to community development projects totaled $57.9 million and $48.8 million , respectively, as of December 31, 2017 and 2016 .

Investment Funds. Northern Trust acts as asset manager for various funds in which clients of Northern Trust are investors. As an asset manager of funds, Northern Trust earns a competitively priced fee that is based on assets managed and varies with each fund's investment objective. Based on its analysis, Northern Trust has determined that it is not the primary beneficiary of these VIEs under GAAP.

Some of the funds for which Northern Trust acts as asset manager comply or operate in accordance with requirements that are similar to those in Rule 2a-7 of the Investment Company Act of 1940 for registered money market funds and therefore the funds are exempt from the consolidation requirements in Accounting Standards Codification 810-10. Northern Trust voluntarily waived $1.0 million and $8.1 million of money market mutual fund fees for the year ended December 31, 2017 and 2016 , respectively. Northern Trust does not have any contractual obligations to provide financial support to the funds. Any potential future support of the funds will be at the discretion of Northern Trust after an evaluation of the specific facts and circumstances.

Periodically, Northern Trust makes seed capital investments to certain funds. As of December 31, 2017 , Northern Trust had a $10.0 million investment, valued using net asset value per share and included in other assets, and no unfunded commitments related to seed capital investments. As of December 31, 2016 , Northern Trust had no seed capital investments and no unfunded commitments related to seed capital investments.

Note 29 – Pledged and Restricted Assets

Certain of Northern Trust's subsidiaries, as required or permitted by law, pledge assets to secure public and trust deposits, repurchase agreements and Federal Home Loan Bank borrowings, as well as for other purposes, including support for securities settlement, primarily related to client activities, for potential Federal Reserve Bank discount window borrowings, and for derivative contracts. As of December 31, 2017 , securities and loans totaling $40.1 billion ($30.8 billion of government-sponsored agency and other securities, $684.3 million of obligations of states and political subdivisions and $8.6 billion of loans) were pledged. This compares to $38.9 billion ($28.3 billion of government-sponsored agency and other securities, $939.8 million of obligations of states and political subdivisions and $9.6 billion of loans) at December 31, 2016 . Collateral required for these purposes totaled $11.0 billion and $9.3 billion at December 31, 2017 and December 31, 2016 , respectively. Available for sale securities with a total fair value of $833.4 million and $494.7 million , as of December 31, 2017 and December 31, 2016 , respectively, were included in the total pledged assets, which were pledged as collateral for agreements to repurchase securities sold transactions and derivative contracts. The secured parties to these transactions have the right to repledge or sell these securities.

Northern Trust is not permitted, by contract or custom, to repledge or sell securities accepted as collateral under certain repurchase agreements. The total fair value of securities accepted as collateral was $1.2 billion as of December 31, 2017 and $1.8 billion as of December 31, 2016 .

Northern Trust has the right to repledge or sell securities accepted as collateral under certain repurchase agreements. The fair value of these securities accepted as collateral was $78.3 million as of December 31, 2017 and $217.5 million as of December 31, 2016 . There was no repledged or sold collateral as of December 31, 2017 or December 31, 2016 .

Northern Trust has the right to repledge or sell securities accepted as collateral under derivative contracts. The total fair value of securities accepted as collateral was $4.6 million as of December 31, 2017 . There were no securities accepted as collateral under derivative contracts as of December 31, 2016 .

Deposits maintained to meet Federal Reserve Bank reserve requirements averaged $3.1 billion in 2017 as compared to $2.2 billion in 2016 .

Note 30 – Restrictions on Subsidiary Dividends and Loans or Advances

Various federal and state statutory provisions limit the amount of dividends the Bank can pay to the Corporation without regulatory approval. Approval of the Federal Reserve Board is required for payment of any dividend by a state-chartered bank that is a member of the Federal Reserve System if the total of all dividends declared by the bank in any calendar year would exceed the total of its retained net income (as defined by regulatory agencies) for that year combined with its retained net income for the preceding two years . In addition, a state member bank may not pay a dividend in an amount greater than its "undivided profits," as defined, without regulatory and stockholder approval.

Under Illinois law, an Illinois state bank, prior to paying a dividend, must carry over to surplus at least one-tenth of its net profits since the date of the declaration of the last preceding dividend, until the bank's surplus is equal to its capital. In addition, an Illinois state bank may not pay any dividend in an amount greater than its net profits then on hand, after deduction of losses and bad debts (defined as debts due to a state bank on which interest is past due and unpaid for a period of six months or more, unless the same are well secured and in the process of collection).

The Bank is also prohibited under federal law from paying any dividends if the Bank is undercapitalized or if the payment of the dividends would cause the Bank to become undercapitalized. In addition, the federal regulatory agencies are authorized to prohibit a bank or bank holding company from engaging in an unsafe or unsound banking practice. The payment of dividends could, depending on the financial condition of the Bank, be deemed to constitute an unsafe or unsound practice. The Dodd-Frank Wall Street Reform and Consumer Protection Act and Basel III impose additional restrictions on the ability of banking institutions to pay dividends (e.g., the Corporation must include proposed dividends in the capital plan that it submits to the Federal Reserve Board and such dividends may only be declared if the Federal Reserve Board does not object to the Corporation’s capital plan).

Under federal law, financial transactions by the Bank, the Corporation’s insured banking subsidiary, with the Corporation and its affiliates that are in the form of loans or extensions of credit, investments, guarantees, derivative transactions, repurchase agreements, securities lending transactions or purchases of assets, are restricted. Transfers of this kind to the Corporation or a nonbanking subsidiary by the Bank are limited to 10% of the Bank’s capital and surplus with respect to any single affiliate, and to 20% of the Bank’s capital and surplus with all affiliates in the aggregate, and are also subject to certain collateral requirements (in the case of credit transactions) and other restrictions on covered transactions. These transactions, as well as other transactions between the Bank and the Corporation or its affiliates, also must be on terms substantially the same as, or at least as favorable as, those prevailing at the time for comparable transactions with non-affiliated companies or, in the absence of comparable transactions, on terms, or under circumstances, including credit standards, that would be offered to, or would apply to, non-affiliated companies. Other state and federal laws may limit the transfer of funds by the Corporation’s banking subsidiaries to the Corporation and certain of its affiliates.

Note 31 – Reporting Segments and Related Information

Segment Information. Northern Trust is organized around its two client-focused reporting segments: C&IS and Wealth Management. Asset management and related services are provided to C&IS and Wealth Management clients primarily by the Asset Management business. The revenue and expenses of Asset Management and certain other support functions are allocated fully to C&IS and Wealth Management. Income and expense associated with the Corporation’s and the Bank’s wholesale funding activities and investment portfolios, as well as certain corporate-based expense, executive level compensation and nonrecurring items are not allocated to C&IS and Wealth Management, and are reported in Northern Trust’s third reporting segment, Treasury and Other, in the tables below.

C&IS and Wealth Management results are presented to promote a greater understanding of their financial performance. The information, presented on an internal management-reporting basis as opposed to GAAP which is used for consolidated financial reporting purposes, derives from internal accounting systems that support Northern Trust’s strategic objectives and management structure. The accounting policies used for management reporting are consistent with those described in Note 1, “Summary of Significant Accounting Policies.”

The following tables show the earnings contribution of Northern Trust's reporting segments for the years ended December 31, 2017 , 2016 , and 2015 .

TABLE 124: CORPORATE AND INSTITUTIONAL SERVICES RESULTS OF OPERATIONS

	FOR THE YEAR ENDED DECEMBER 31,		
(In Millions)	**2017**	2016	2015
Noninterest Income			
Trust, Investment and Other Servicing Fees	**$ 1,984.6**	$ 1,787.8	$ 1,696.9
Foreign Exchange Trading Income	**197.9**	224.4	249.4
Other Noninterest Income	**176.1**	147.0	170.5
Net Interest Income (Note)	**733.8**	565.0	414.4
Revenue (Note)	**3,092.4**	2,724.2	2,531.2
Provision for Credit Losses	**3.4**	1.9	(22.6)
Noninterest Expense	**2,194.5**	2,012.2	1,856.4
Income before Income Taxes (Note)	**894.5**	710.1	697.4
Provision for Income Taxes (Note)	**279.5**	212.9	212.8
Net Income	**$ 615.0**	$ 497.2	$ 484.6
Percentage of Consolidated Net Income	**51%**	48%	50%
Average Assets	**$ 80,105.6**	$ 76,194.7	$ 73,598.4

Note: Stated on an FTE basis.

TABLE 125: WEALTH MANAGEMENT RESULTS OF OPERATIONS

	FOR THE YEAR ENDED DECEMBER 31,		
(In Millions)	**2017**	2016	2015
Noninterest Income			
Trust, Investment and Other Servicing Fees	**$ 1,449.7**	$ 1,320.3	$ 1,283.6
Foreign Exchange Trading Income	**3.1**	8.6	12.4
Other Noninterest Income	**103.9**	105.7	111.8
Net Interest Income (Note)	**736.2**	651.4	568.1
Revenue (Note)	**2,292.9**	2,086.0	1,975.9
Provision for Credit Losses	**(31.4)**	(27.9)	(20.4)
Noninterest Expense	**1,405.3**	1,315.3	1,291.9
Income before Income Taxes (Note)	**919.0**	798.6	704.4
Provision for Income Taxes (Note)	**347.2**	301.1	264.7
Net Income	**$ 571.8**	$ 497.5	$ 439.7
Percentage of Consolidated Net Income	**48%**	48%	45%
Average Assets	**$ 26,599.9**	$ 26,525.0	$ 25,048.7

Note: Stated on an FTE basis.

TABLE 126: TREASURY AND OTHER RESULTS OF OPERATIONS

	FOR THE YEAR ENDED DECEMBER 31,		
(In Millions)	**2017**	2016	2015
Noninterest Income	**$ 30.8**	$ 133.1	$ 107.9
Net Interest Income (Note)	**5.0**	43.6	112.9
Revenue (Note)	**35.8**	176.7	220.8
Noninterest Expense	**169.6**	143.2	132.3
Income before Income Taxes (Note)	**(133.8)**	33.5	88.5
Provision for Income Taxes (Note)	**(146.0)**	(4.3)	39.0
Net Income	**$ 12.2**	$ 37.8	$ 49.5
Percentage of Consolidated Net Income	**1%**	4%	5%
Average Assets	**$ 12,901.9**	$ 12,850.6	$ 12,068.0

Note: Stated on an FTE basis.

TABLE 127: CONSOLIDATED FINANCIAL INFORMATION

	FOR THE YEAR ENDED DECEMBER 31,		
(In Millions)	**2017**	2016	2015
Noninterest Income			
Trust, Investment and Other Servicing Fees	**$ 3,434.3**	$ 3,108.1	$ 2,980.5
Foreign Exchange Trading Income	**209.9**	236.6	261.8
Other Noninterest Income	**301.9**	382.2	390.2
Net Interest Income (Note)	**1,475.0**	1,260.0	1,095.4
Revenue (Note)	**5,421.1**	4,986.9	4,727.9
Provision for Credit Losses	**(28.0)**	(26.0)	(43.0)
Noninterest Expense	**3,769.4**	3,470.7	3,280.6
Income before Income Taxes (Note)	**1,679.7**	1,542.2	1,490.3
Provision for Income Taxes (Note)	**480.7**	509.7	516.5
Net Income	**$ 1,199.0**	$ 1,032.5	$ 973.8
Average Assets	**$ 119,607.4**	$ 115,570.3	$ 110,715.1

Note: Stated on an FTE basis. The consolidated figures include $45.8 million , $25.1 million , and $25.3 million , of FTE adjustments for 2017 , 2016 , and 2015 , respectively.

Further discussion of reporting segment results is provided within the “Reporting Segments and Related Information” section of Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

Geographic Area Information. Northern Trust’s non-U.S. activities are primarily related to its asset servicing, asset management, foreign exchange, cash management, and commercial banking businesses. The operations of Northern Trust are managed on a reporting segment basis and include components of both U.S and non-U.S. source income and assets. Non-U.S. source income and assets are not separately identified in Northern Trust’s internal management reporting system. However, Northern Trust is required to disclose non-U.S. activities based on the domicile of the customer. Due to the complex and integrated nature of Northern Trust’s activities, it is difficult to segregate with precision revenues, expenses and assets between U.S. and non-U.S.-domiciled customers. Therefore, certain subjective estimates and assumptions have been made to allocate revenues, expenses and assets between U.S. and non-U.S. operations.

For purposes of this disclosure, all foreign exchange trading income has been allocated to non-U.S. operations. Interest expense is allocated to non-U.S. operations based on specifically matched or pooled funding. Allocations of indirect noninterest expenses, when made, are based on various methods such as time, space, and number of employees.

The table below summarizes Northern Trust's performance based on the allocation process described above without regard to guarantors or the location of collateral.

TABLE 128: DISTRIBUTION OF TOTAL ASSETS AND OPERATING PERFORMANCE

(In Millions)	TOTAL ASSETS	TOTAL REVENUE	INCOME BEFORE INCOME TAXES	NET INCOME
2017				
Non-U.S.	**$ 30,325.3**	**$ 1,709.7**	**$ 613.5**	**$ 430.0**
U.S.	**108,265.2**	**3,665.6**	**1,020.4**	**769.0**
Total	**$ 138,590.5**	**$ 5,375.3**	**$ 1,633.9**	**$ 1,199.0**
2016				
Non-U.S.	$ 24,944.0	$ 1,221.2	$ 284.3	$ 225.1
U.S.	98,982.9	3,740.6	1,232.8	807.4
Total	$ 123,926.9	$ 4,961.8	$ 1,517.1	$ 1,032.5
2015				
Non-U.S.	$ 30,636.5	$ 1,358.4	$ 483.2	$ 344.4
U.S.	86,113.1	3,344.2	981.8	629.4
Total	$ 116,749.6	$ 4,702.6	$ 1,465.0	$ 973.8

Note: Total revenue is comprised of net interest income and noninterest income.

Note 32 – Regulatory Capital Requirements

Northern Trust and the Bank are subject to various regulatory capital requirements administered by the federal bank regulatory authorities. Under these requirements, banks must maintain specific ratios of total and Tier 1 capital to risk-weighted assets and of Tier 1 capital to adjusted average quarterly assets in order to be classified as "well-capitalized." The regulatory capital requirements impose certain restrictions upon banks that meet minimum capital requirements but are not "well-capitalized" and obligate the federal bank regulatory authorities to take "prompt corrective action" with respect to banks that do not maintain such minimum ratios. Such prompt corrective action could have a direct material effect on a bank's financial statements.

As of December 31, 2017 and 2016 , the Bank had capital ratios above the levels required for classification as a "well-capitalized" institution and had not received any regulatory notification of a lower classification. Additionally, Northern Trust's subsidiary banks located outside the U.S. are subject to regulatory capital requirements in the jurisdictions in which they operate. As of December 31, 2017 and 2016 , Northern Trust's non-U.S. banking subsidiaries had capital ratios above their specified minimum requirements. There were no conditions or events since December 31, 2017 , that management believes have adversely affected the capital categorization of any Northern Trust subsidiary bank.

The table below provides capital ratios for the Corporation and the Bank determined by Basel III phased in requirements.

TABLE 129: RISK-BASED CAPITAL AMOUNTS AND RATIOS

($ In Millions)	December 31, 2017 ADVANCED APPROACH BALANCE	RATIO	STANDARDIZED APPROACH BALANCE	RATIO	December 31, 2016 ADVANCED APPROACH BALANCE	RATIO	STANDARDIZED APPROACH BALANCE	RATIO
Common Equity Tier 1								
Northern Trust Corporation	**$ 8,626.3**	**13.5%**	**$ 8,626.3**	**12.6%**	$ 8,480.4	12.4%	$ 8,480.4	11.8%
The Northern Trust Company	**8,517.8**	**13.7**	**8,517.8**	**12.6**	8,201.4	12.4	8,201.4	11.5
Minimum to qualify as well-capitalized								
Northern Trust Corporation	**4,161.2**	**6.5**	**4,460.1**	**6.5**	4,436.7	6.5	4,681.4	6.5
The Northern Trust Company	**4,032.7**	**6.5**	**4,406.8**	**6.5**	4,296.2	6.5	4,624.8	6.5
Tier 1								
Northern Trust Corporation	**9,473.4**	**14.8**	**9,473.4**	**13.8**	9,319.9	13.7	9,319.9	12.9
The Northern Trust Company	**8,517.8**	**13.7**	**8,517.8**	**12.6**	8,201.4	12.4	8,201.4	11.5
Minimum to qualify as well-capitalized:								
Northern Trust Corporation	**5,121.5**	**8.0**	**5,489.3**	**8.0**	5,460.6	8.0	5,761.7	8.0
The Northern Trust Company	**4,963.3**	**8.0**	**5,423.8**	**8.0**	5,287.6	8.0	5,692.1	8.0
Total								
Northern Trust Corporation	**10,707.4**	**16.7**	**10,861.2**	**15.8**	10,281.6	15.1	10,475.0	14.5
The Northern Trust Company	**9,527.8**	**15.4**	**9,681.6**	**14.3**	9,271.4	14.0	9,463.4	13.3
Minimum to qualify as well-capitalized:								
Northern Trust Corporation	**6,401.9**	**10.0**	**6,861.6**	**10.0**	6,825.8	10.0	7,202.1	10.0
The Northern Trust Company	**6,204.2**	**10.0**	**6,779.7**	**10.0**	6,609.5	10.0	7,115.1	10.0
Tier 1 Leverage								
Northern Trust Corporation	**9,473.4**	**7.8**	**9,473.4**	**7.8**	9,319.9	8.0	9,319.9	8.0
The Northern Trust Company	**8,517.8**	**7.0**	**8,517.8**	**7.0**	8,201.4	7.0	8,201.4	7.0
Minimum to qualify as well-capitalized:								
Northern Trust Corporation	**6,075.9**	**5.0**	**6,075.9**	**5.0**	5,847.9	5.0	5,847.9	5.0
The Northern Trust Company	**6,057.9**	**5.0**	**6,057.9**	**5.0**	5,831.0	5.0	5,831.0	5.0
Supplementary Leverage [(1)]								
Northern Trust Corporation	**9,473.4**	**6.8**	**N/A**	**N/A**	9,319.9	6.8	N/A	N/A
The Northern Trust Company	**8,517.8**	**6.1**	**N/A**	**N/A**	8,201.4	6.0	N/A	N/A
Minimum to qualify as well-capitalized:								
Northern Trust Corporation	**4,175.7**	**N/A**	**N/A**	**N/A**	4,129.9	N/A	N/A	N/A
The Northern Trust Company	**4,164.7**	**N/A**	**N/A**	**N/A**	4,120.0	N/A	N/A	N/A

(1) Effective January 1, 2018, the Corporation will be subject to a minimum supplementary leverage ratio of 3 percent .

The risk-based capital guidelines that apply to the Corporation and the Bank, commonly referred to as Basel III, are based upon the 2011 capital accord of the Basel Committee. The Basel III rules are currently being phased in, and will come into full effect by January 1, 2022.

Under the final Basel III rules, the Corporation and the Bank are required to calculate and publicly disclose risk-based capital ratios using two methodologies: an advanced approach and a standardized approach. Under the advanced approach, credit risk weighted assets (RWA) are based on internal credit models and parameters. Additionally, the advanced approach incorporates operational risk RWA. Under the standardized approach, RWA are based on supervisory prescribed risk weights that are primarily dependent on counterparty type and asset class.

As required by the Collins Amendment of the Dodd-Frank Act, the capital adequacy of the Corporation and the Bank is assessed based on the lower of the advanced approach or standardized approach capital ratios.

The U.S.'s implementation of Basel III has increased the minimum capital thresholds for banking organizations and tightened the standards for what qualifies as capital. The Corporation and the Bank believe their capital strength, balance sheets and business models leave them well positioned for the continued U.S. implementation of Basel III.

Note 33 – Northern Trust Corporation (Corporation only)

Condensed financial information is presented below. Investments in wholly-owned subsidiaries are carried on the equity method of accounting.

TABLE 130: CONDENSED BALANCE SHEETS

	DECEMBER 31,	
(In Millions)	**2017**	2016
ASSETS		
Cash on Deposit with Subsidiary Bank	**$ 1,002.5**	$ 757.0
Securities	**0.9**	0.9
Advances to Wholly-Owned Subsidiaries – Banks	**2,460.0**	2,560.0
– Nonbank	**13.5**	13.5
Investments in Wholly-Owned Subsidiaries – Banks	**9,223.9**	8,635.0
– Nonbank	**212.9**	184.8
Other Assets	**706.4**	599.1
Total Assets	**$ 13,620.1**	$ 12,750.3
LIABILITIES		
Senior Notes	**$ 1,497.3**	$ 1,496.6
Long Term Debt	**1,129.6**	785.0
Floating Rate Capital Debt	**277.5**	277.4
Other Liabilities	**499.5**	420.9
Total Liabilities	**3,403.9**	2,979.9
STOCKHOLDERS' EQUITY		
Preferred Stock	**882.0**	882.0
Common Stock	**408.6**	408.6
Additional Paid-in Capital	**1,047.2**	1,035.8
Retained Earnings	**9,685.1**	8,908.4
Accumulated Other Comprehensive Income (Loss)	**(414.3)**	(370.0)
Treasury Stock	**(1,392.4)**	(1,094.4)
Total Stockholders' Equity	**10,216.2**	9,770.4
Total Liabilities and Stockholders' Equity	**$ 13,620.1**	$ 12,750.3

TABLE 131: CONDENSED STATEMENTS OF INCOME

	FOR THE YEAR ENDED DECEMBER 31,		
(In Millions)	**2017**	2016	2015
OPERATING INCOME			
Dividends – Bank Subsidiaries	**$ 525.0**	$ 300.0	$ 600.0
– Nonbank Subsidiaries	**—**	3.4	8.7
Intercompany Interest and Other Charges	**58.2**	39.8	38.5
Interest and Other Income	**18.1**	7.5	5.4
Total Operating Income	**601.3**	350.7	652.6
OPERATING EXPENSES			
Interest Expense	**76.5**	63.5	59.3
Other Operating Expenses	**25.9**	19.9	56.8
Total Operating Expenses	**102.4**	83.4	116.1
Income before Income Taxes and Equity in Undistributed Net Income of Subsidiaries	**498.9**	267.3	536.5
Benefit for Income Taxes	**43.7**	28.3	29.0
Income before Equity in Undistributed Net Income of Subsidiaries	**542.6**	295.6	565.5
Equity in Undistributed Net Income of Subsidiaries – Banks	**632.6**	708.3	392.8
– Nonbank	**23.8**	28.6	15.5
Net Income	**$ 1,199.0**	$ 1,032.5	$ 973.8
Preferred Stock Dividends	**49.8**	23.4	23.4
Net Income Applicable to Common Stock	**$ 1,149.2**	$ 1,009.1	$ 950.4

TABLE 132: CONDENSED STATEMENTS OF CASH FLOWS

	FOR THE YEAR ENDED DECEMBER 31,		
(In Millions)	**2017**	2016	2015
OPERATING ACTIVITIES:			
Net Income	**$ 1,199.0**	$ 1,032.5	$ 973.8
Adjustments to Reconcile Net Income to Net Cash Provided by (Used in) Operating Activities:			
Equity in Undistributed Net Income of Subsidiaries	**(656.4)**	(736.9)	(408.3)
Change in Prepaid Expenses	**(0.3)**	3.0	1.2
Change in Accrued Income Taxes	**17.2**	(17.9)	22.8
Other, net	**55.7**	55.7	58.4
Net Cash Provided by Operating Activities	**615.2**	336.4	647.9
INVESTING ACTIVITIES:			
Proceeds from Sale, Maturity and Redemption of Securities – Available for Sale	**—**	0.2	1.3
Change in Capital Investments in Subsidiaries	**—**	(3.0)	(10.0)
Advances to Wholly-Owned Subsidiaries	**100.0**	(295.0)	—
Other, net	**1.9**	1.2	0.2
Net Cash Used in Investing Activities	**101.9**	(296.6)	(8.5)
FINANCING ACTIVITIES:			
Proceeds from Senior Notes and Long-Term Debt	**350.0**	—	—
Proceeds from Issuance of Preferred Stock – Series C and Series D	**—**	493.5	—
Treasury Stock Purchased	**(523.1)**	(411.1)	(496.9)
Net Proceeds from Stock Options	**108.0**	233.8	94.0
Cash Dividends Paid on Common Stock	**(356.8)**	(333.0)	(321.4)
Cash Dividends Paid on Preferred Stock	**(49.8)**	(23.4)	(27.0)
Other, net	**0.1**	(0.1)	—
Net Cash Used in Financing Activities	**(471.6)**	(40.3)	(751.3)
Net Change in Cash on Deposit with Subsidiary Bank	**245.5**	(0.5)	(111.9)
Cash on Deposit with Subsidiary Bank at Beginning of Year	**757.0**	757.5	869.4
Cash on Deposit with Subsidiary Bank at End of Year	**$ 1,002.5**	$ 757.0	$ 757.5

SUPPLEMENTAL ITEM – SELECTED STATISTICAL AND SUPPLEMENTAL FINANCIAL DATA

TABLE 133: QUARTERLY FINANCIAL DATA (UNAUDITED)

STATEMENTS OF INCOME	2017				2016			
($ In Millions Except Per Share Information)	FOURTH QUARTER	THIRD QUARTER	SECOND QUARTER	FIRST QUARTER	FOURTH QUARTER	THIRD QUARTER	SECOND QUARTER	FIRST QUARTER
Trust, Investment and Other Servicing Fees	$ 910.0	$ 867.9	$ 848.2	$ 808.2	$ 794.4	$ 788.3	$ 777.2	$ 748.2
Other Noninterest Income	134.5	123.1	131.5	122.7	122.7	122.3	239.8	134.0
Net Interest Income								
Interest Income	488.1	453.8	417.2	410.3	371.0	349.2	344.7	352.0
Interest Expense	108.1	99.6	75.7	56.8	46.7	46.1	45.0	44.2
Net Interest Income	380.0	354.2	341.5	353.5	324.3	303.1	299.7	307.8
Provision for Credit Losses	(13.0)	(7.0)	(7.0)	(1.0)	(22.0)	(3.0)	(3.0)	2.0
Noninterest Expense	1,001.9	935.6	937.4	894.5	873.9	843.0	925.0	828.8
Provision for Income Taxes	79.0	118.2	122.9	114.8	123.0	116.1	131.7	113.8
Net Income	$ 356.6	$ 298.4	$ 267.9	$ 276.1	$ 266.5	$ 257.6	$ 263.0	$ 245.4
Preferred Stock Dividends	5.9	17.3	5.9	20.7	5.8	5.9	5.8	5.9
Net Income Applicable to Common Stock	$ 350.7	$ 281.1	$ 262.0	$ 255.4	$ 260.7	$ 251.7	$ 257.2	$ 239.5
PER COMMON SHARE								
Net Income – Basic	$ 1.52	$ 1.21	$ 1.12	$ 1.10	$ 1.12	$ 1.09	$ 1.11	$ 1.03
– Diluted	1.51	1.20	1.12	1.09	1.11	1.08	1.10	1.03
AVERAGE BALANCE SHEET ASSETS								
Cash and Due from Banks	$ 2,838.8	$ 2,666.8	$ 2,701.1	$ 2,116.6	$ 1,923.6	$ 1,933.8	$ 2,093.9	$ 2,192.4
Federal Reserve and Other Central Bank Deposits	25,995.8	25,182.9	22,570.0	21,806.9	20,079.6	20,829.6	19,657.8	21,170.2
Interest-Bearing Due from and Deposits with Banks (1)	7,084.7	7,145.8	7,653.9	6,684.3	7,869.1	8,232.2	9,827.9	9,056.8
Federal Funds Sold and Securities Purchased under Agreements to Resell	1,389.8	1,945.8	2,059.4	2,011.7	1,980.1	1,613.2	1,915.2	1,593.7
Securities (2)	45,601.9	44,742.3	43,731.8	44,777.7	45,297.6	43,258.7	40,756.5	38,803.3
Loans and Leases	33,235.6	33,468.2	33,891.4	33,671.2	33,818.5	33,910.1	34,456.1	33,993.4
Allowance for Credit Losses Assigned to Loans and Leases	(149.1)	(155.1)	(162.3)	(160.8)	(189.7)	(192.9)	(195.4)	(193.5)
Other Assets	6,314.5	6,162.7	5,955.4	5,568.8	6,758.5	6,797.8	6,401.8	6,800.8
Total Assets	$ 122,312.0	$ 121,159.4	$ 118,400.7	$ 116,476.4	$ 117,537.3	$ 116,382.5	$ 114,913.8	$ 113,417.1
LIABILITIES AND STOCKHOLDERS' EQUITY								
Deposits								
Demand and Other Noninterest-Bearing	$ 21,385.5	$ 21,736.4	$ 23,518.1	$ 25,712.5	$ 26,168.4	$ 25,829.3	$ 26,718.0	$ 26,214.5
Savings, Money Market, and Other	15,996.1	15,617.1	15,236.1	15,446.7	15,136.8	15,025.7	15,041.3	15,367.3
Savings Certificates and Other Time	1,189.2	1,255.1	1,312.7	1,338.5	1,413.2	1,450.3	1,405.0	1,459.6
Non-U.S. Offices – Interest-Bearing	58,632.0	58,503.4	56,672.3	52,435.9	51,866.5	51,468.6	50,443.8	49,434.9
Total Deposits	97,202.8	97,112.0	96,739.2	94,933.6	94,584.9	93,773.9	93,608.1	92,476.3
Short-Term Borrowings	8,411.9	7,264.5	5,412.0	5,659.1	6,598.0	6,961.0	6,195.0	5,584.1
Senior Notes	1,497.2	1,497.0	1,496.9	1,496.7	1,496.5	1,496.3	1,496.1	1,497.4
Long-Term Debt	1,540.1	1,672.5	1,536.1	1,324.9	1,360.5	1,406.9	1,403.2	1,399.3
Floating Rate Capital Debt	277.5	277.5	277.4	277.4	277.4	277.4	277.4	277.3
Other Liabilities	3,271.7	3,295.7	2,963.1	2,993.3	3,600.7	3,236.4	3,141.3	3,491.5
Stockholders' Equity	10,110.8	10,040.2	9,976.0	9,791.4	9,619.3	9,230.6	8,792.7	8,691.2
Total Liabilities and Stockholders' Equity	$ 122,312.0	$ 121,159.4	$ 118,400.7	$ 116,476.4	$ 117,537.3	$ 116,382.5	$ 114,913.8	$ 113,417.1
ANALYSIS OF NET INTEREST INCOME								
Earning Assets	$ 113,307.8	$ 112,485.0	$ 109,906.5	$ 108,951.8	$ 109,044.9	$ 107,843.8	$ 106,613.5	$ 104,617.4
Interest-Related Funds	87,544.0	86,087.1	81,943.5	77,979.2	78,148.9	78,086.2	76,261.8	75,019.9
Noninterest-Related Funds	$ 25,763.8	$ 26,397.9	$ 27,963.0	$ 30,972.6	$ 30,896.0	$ 29,757.6	$ 30,351.7	$ 29,597.5
Net Interest Income (Fully Taxable Equivalent)	396.0	366.2	350.4	362.4	329.3	310.1	306.6	314.0
Net Interest Margin (Fully Taxable Equivalent)	1.39%	1.29%	1.28%	1.35%	1.20%	1.14%	1.16%	1.21%
COMMON STOCK DIVIDEND AND MARKET PRICE								
Dividends-Common Stock	$ 0.42	$ 0.42	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.36	$ 0.36
Market Price Range – High	101.46	99.30	98.72	91.14	90.96	71.66	74.86	71.13
– Low	91.06	85.69	84.93	81.92	66.83	61.86	61.32	54.38

(1) Interest-Bearing Due from and Deposits with Banks includes the interest-bearing component of Cash and Due from Banks and Interest-Bearing Deposits with Banks as presented on the consolidated balance sheets.
(2) Securities include Federal Reserve and Federal Home Loan Bank stock and certain community development investments which are classified in other assets in the consolidated balance sheets as of December 31, 2017 , and December 31, 2016 .
Note: The common stock of the Corporation is traded on The NASDAQ Stock Market LLC under the symbol "NTRS".

TABLE 134: AVERAGE CONSOLIDATED BALANCE SHEETS WITH ANALYSIS OF NET INTEREST INCOME (INTEREST AND RATE ON A FULLY TAXABLE EQUIVALENT BASIS)

	2017			2016			2015		
($ In Millions)	**INTEREST**	**AVERAGE BALANCE**	**RATE (4)**	INTEREST	AVERAGE BALANCE	RATE (4)	INTEREST	AVERAGE BALANCE	RATE (4)
AVERAGE EARNING ASSETS									
Federal Reserve and Other Central Bank Deposits	**$ 155.1**	**$ 23,903.9**	**0.65%**	$ 91.4	$ 20,434.4	0.45%	$ 63.9	$ 19,949.8	0.32%
Interest-Bearing Due from and Deposits with Banks (1)	**63.8**	**7,143.3**	**0.89**	64.3	8,742.7	0.73	84.9	10,713.4	0.79
Federal Funds Sold and Securities Purchased under Agreements to Resell	**27.5**	**1,850.2**	**1.48**	18.4	1,775.7	1.04	6.3	1,162.6	0.54
Securities									
U.S. Government	**89.4**	**6,342.5**	**1.41**	78.1	7,073.1	1.10	55.2	4,985.5	1.11
Obligations of States and Political Subdivisions	**13.1**	**887.3**	**1.48**	11.3	585.8	1.94	7.4	113.2	6.58
Government Sponsored Agency	**283.2**	**17,987.0**	**1.57**	177.2	17,421.0	1.02	144.0	16,458.8	0.87
Other (2)	**253.3**	**19,498.9**	**1.30**	189.9	16,961.4	1.12	149.5	15,850.4	0.94
Total Securities	**639.0**	**44,715.7**	**1.43**	456.5	42,041.3	1.09	356.1	37,407.9	0.95
Loans and Leases (3)	**929.8**	**33,565.2**	**2.77**	811.4	34,043.5	2.38	738.1	33,016.1	2.24
Total Earning Assets	**1,815.2**	**111,178.3**	**1.63**	1,442.0	107,037.6	1.35	1,249.3	102,249.8	1.22
Allowance for Credit Losses Assigned to Loans and Leases	**—**	**(156.8)**	**—**	—	(192.9)	—	—	(255.9)	—
Cash and Due from Banks	**—**	**2,583.1**	**—**	—	2,035.3	—	—	2,138.7	—
Buildings and Equipment	**—**	**466.0**	**—**	—	445.5	—	—	442.5	—
Client Security Settlement Receivables	**—**	**891.6**	**—**	—	1,136.6	—	—	1,002.2	—
Goodwill	**—**	**544.0**	**—**	—	524.9		—	530.8	—
Other Assets	**—**	**4,101.2**	**—**	—	4,583.3	—	—	4,607.0	—
Total Assets	**$ —**	**$ 119,607.4**	**—%**	$ —	$ 115,570.3	—%	$ —	$ 110,715.1	—%
AVERAGE SOURCE OF FUNDS									
Deposits									
Savings, Money Market, and Other	**$ 24.3**	**$ 15,575.6**	**0.16%**	$ 11.9	$ 15,142.4	0.08%	$ 9.7	$ 15,306.9	0.06%
Savings Certificates and Other Time	**9.4**	**1,273.4**	**0.74**	8.3	1,432.0	0.58	7.5	1,609.9	0.47
Non-U.S. Offices – Interest-Bearing	**148.4**	**56,583.2**	**0.26**	63.3	50,808.2	0.12	57.1	49,377.1	0.12
Total Interest-Bearing Deposits	**182.1**	**73,432.2**	**0.25**	83.5	67,382.6	0.12	74.3	66,293.9	0.11
Short-Term Borrowings	**67.1**	**6,696.0**	**1.00**	21.8	6,337.0	0.34	6.0	4,757.9	0.13
Senior Notes	**46.9**	**1,496.9**	**3.13**	46.8	1,496.6	3.13	46.8	1,497.2	3.13
Long-Term Debt	**39.2**	**1,519.4**	**2.58**	26.4	1,392.4	1.90	24.4	1,426.4	1.71
Floating Rate Capital Debt	**4.9**	**277.5**	**1.75**	3.5	277.4	1.25	2.4	277.3	0.86
Total Interest-Related Funds	**340.2**	**83,422.0**	**0.41**	182.0	76,886.0	0.24	153.9	74,252.7	0.21
Interest Rate Spread	**—**	**—**	**1.22**	—	—	1.11	—	—	1.01
Demand and Other Noninterest-Bearing Deposits	**—**	**23,072.6**	**—**	—	26,231.3	—	—	24,474.1	—
Other Liabilities	**—**	**3,132.2**	**—**	—	3,367.7	—	—	3,363.8	—
Stockholders' Equity	**—**	**9,980.6**	**—**	—	9,085.3	—	—	8,624.5	—
Total Liabilities and Stockholders' Equity	**$ —**	**$ 119,607.4**	**—%**	$ —	$ 115,570.3	—%	$ —	$ 110,715.1	—%
Net Interest Income/Margin (FTE Adjusted)	**$ 1,475.0**	**$ —**	**1.33%**	$ 1,260.0	$ —	1.18%	$ 1,095.4	$ —	1.07%
Net Interest Income/Margin (Unadjusted)	**$ 1,429.2**	**$ —**	**1.29%**	$ 1,234.9	$ —	1.15%	$ 1,070.1	$ —	1.05%
Net Interest Income/Margin Components (FTE Adjusted)									
U.S.	**$ 1,076.4**	**$ 90,090.3**	**1.19%**	$ 959.5	$ 88,514.4	1.08%	$ 842.5	$ 78,136.5	1.08%
Non-U.S.	**398.6**	**21,088.0**	**1.89**	300.5	18,523.2	1.62%	252.9	24,113.3	1.05%
Consolidated	**$ 1,475.0**	**$ 111,178.3**	**1.33%**	$ 1,260.0	$ 107,037.6	1.18%	$ 1,095.4	$ 102,249.8	1.07%

(1) Interest-Bearing Due from and Deposits with Banks includes interest-bearing component of Cash and Due from Banks and Interest-Bearing Deposits with Banks as presented on the consolidated balance sheets.
(2) Other securities include Federal Reserve and Federal Home Loan Bank stock and certain community development investments for purposes of presenting earning assets; such securities are presented in other assets on the consolidated balance sheets.
(3) Average balances include nonaccrual loans. Lease financing receivable balances are reduced by deferred income.
(4) Rate calculations are based on actual balances rather than the rounded amounts presented in the Average Consolidated Balance Sheets with Analysis of Net Interest Income.
Notes: Net Interest Income (FTE Adjusted) includes adjustments to a fully taxable equivalent basis for loans and securities. Such adjustments are based on a blended federal and state tax rate of 38.1% . Total taxable equivalent interest adjustments amounted to $45.8 million in 2017 , $25.1 million in 2016 and $25.3 million in 2015 . Interest revenue on cash collateral positions is reported above within interest-bearing due from and deposits with banks and within loans and leases. Interest expense on cash collateral positions is reported above within non-U.S. offices interest-bearing deposits. Related cash collateral received from and deposited with derivative counterparties is recorded net of the associated derivative contract within other assets and other liabilities, respectively.

TABLE 135: CHANGES IN NET INTEREST INCOME

(INTEREST AND RATE ON A FULLY TAXABLE EQUIVALENT BASIS)	2017/2016 CHANGE DUE TO			2016/2015 CHANGE DUE TO		
(In Millions)	AVERAGE BALANCE	RATE	TOTAL	AVERAGE BALANCE	RATE	TOTAL
Increase (Decrease) in Interest Income						
Money Market Assets						
Federal Reserve and Other Central Bank Deposits	**$ 17.6**	**$ 46.1**	**$ 63.7**	$ 1.6	$ 25.9	$ 27.5
Interest-Bearing Due from and Deposits with Banks	**2.5**	**(3.0)**	**(0.5)**	(14.6)	(6.0)	(20.6)
Federal Funds Sold and Securities Purchased under Agreements to Resell	**0.8**	**8.3**	**9.1**	4.4	7.7	12.1
Securities						
U.S. Government	**(6.5)**	**17.8**	**11.3**	23.4	(0.5)	22.9
Obligations of States and Political Subdivisions	**3.4**	**(1.6)**	**1.8**	4.7	(0.8)	3.9
Government Sponsored Agency	**6.1**	**99.9**	**106.0**	8.4	24.8	33.2
Other	**30.6**	**32.8**	**63.4**	10.8	29.6	40.4
Loans and Leases	**20.5**	**97.9**	**118.4**	(5.1)	78.4	73.3
Total	**$ 75.0**	**$ 298.2**	**$ 373.2**	$ 33.6	$ 159.1	$ 192.7
Increase (Decrease) in Interest Expense						
Deposits						
Savings and Money Market	**$ 0.3**	**$ 12.1**	**$ 12.4**	$ (0.1)	$ 2.3	$ 2.2
Savings Certificates and Other Time	**(0.7)**	**1.8**	**1.1**	(0.6)	1.4	0.8
Non-U.S. Offices Time	**7.5**	**77.6**	**85.1**	6.2	—	6.2
Short-Term Borrowings	**1.3**	**44.0**	**45.3**	2.7	13.1	15.8
Senior Notes	**—**	**0.1**	**0.1**	—	—	—
Subordinated Notes						
Long-Term Debt	**10.3**	**2.5**	**12.8**	0.6	1.4	2.0
Floating Rate Capital Debt	**—**	**1.4**	**1.4**	—	1.1	1.1
Total	**$ 18.7**	**$ 139.5**	**$ 158.2**	$ 8.8	$ 19.3	$ 28.1
Increase in Net Interest Income	**$ 56.3**	**$ 158.7**	**$ 215.0**	$ 24.8	$ 139.8	$ 164.6

Note: Changes not due solely to average balance changes or rate changes are allocated proportionately to average balance and rate based on their relative absolute magnitudes.

Investment Securities Portfolio

TABLE 136: REMAINING MATURITY AND AVERAGE YIELD OF SECURITIES HELD TO MATURITY AND AVAILABLE FOR SALE

	December 31, 2017								
	ONE YEAR OR LESS		ONE TO FIVE YEARS		FIVE TO TEN YEARS		OVER TEN YEARS		AVERAGE
($ in Millions)	BOOK	YIELD	BOOK	YIELD	BOOK	YIELD	BOOK	YIELD	MATURITY
Securities Held to Maturity									
U.S. Government	$ 35.0	1.12%	$ —	—%	$ —	—%	$ —	—%	1 mo.
Obligations of States and Political Subdivisions	16.5	3.68	18.1	4.97	—	—	—	—	18 mos.
Government Sponsored Agency	0.4	3.90	0.8	4.83	1.3	4.85	3.3	4.87	130 mos.
Other – Fixed	5,032.7	1.16	5,187.4	0.69	31.9	1.75	73.8	2.30	22 mos.
– Floating	607.3	1.98	1,461.5	2.13	579.0	2.19	—	—	37 mos.
Total Securities Held to Maturity	$ 5,691.9	1.26%	$ 6,667.8	1.02%	$ 612.2	2.18%	$ 77.1	2.41%	25 mos.
Securities Available for Sale									
U.S. Government	$ 398.0	1.33%	$ 3,865.2	1.50%	$ 1,437.1	1.58%	$ —	—%	37 mos.
Obligations of States and Political Subdivisions	430.1	0.85	316.3	1.23	—	—	—	—	12 mos.
Government Sponsored Agency	3,152.3	1.73	9,666.8	1.76	4,822.1	1.76	1,035.4	2.03	52 mos.
Asset-Backed – Fixed	741.9	1.53	1,425.5	1.81	—	—	—	—	18 mos.
Asset-Backed – Floating	106.9	1.76	452.1	1.87	—	—	—	—	30 mos.
Auction Rate Securities	—	—	0.6	2.33	—	—	3.7	2.95	166 mos.
Other – Fixed	1,313.3	1.39	2,920.3	1.97	205.3	1.81	—	—	28 mos.
– Floating	84.5	1.83	1,291.0	1.78	70.6	1.75	3.1	1.85	36 mos.
Total Securities Available for Sale	$ 6,227.0	1.55%	$ 19,937.8	1.74%	$ 6,535.1	1.73%	$ 1,042.2	2.03%	42 mos.

Note: Yield is calculated on amortized cost and presented on a taxable equivalent basis giving effect to the applicable federal and state tax rates.

As of December 31, 2017 , Northern Trust had no holdings of the securities of any single issuer greater than 10% of stockholders' equity, except for U.S. government, government agencies, government corporations, government-sponsored agencies, and non-U.S. sovereign securities. See Note 4, "Securities," to the consolidated financial statements provided in Item 8, "Financial Statements and Supplementary Data," for more information on securities.

Loans and Leases Portfolio

TABLE 137: REMAINING MATURITY OF SELECTED LOANS AND LEASES

(In Millions)	December 31, 2017 TOTAL	ONE YEAR OR LESS	ONE TO FIVE YEARS	OVER FIVE YEARS
U.S. (Excluding Residential Real Estate and Private Client Loans):				
Commercial and Institutional	**$ 9,042.2**	**$ 5,478.2**	**$ 2,059.4**	**$ 1,504.6**
Commercial Real Estate	**3,482.7**	**764.9**	**2,033.6**	**684.2**
Lease Financing, net	**229.2**	**10.2**	**110.5**	**108.5**
Other-Commercial	**265.4**	**160.8**	**60.4**	**44.2**
Other-Personal	**33.5**	**1.7**	**2.4**	**29.4**
Total U.S.	**$ 13,053.0**	**$ 6,415.8**	**$ 4,266.3**	**$ 2,370.9**
Non-U.S.	**$ 1,538.5**	**$ 1,467.8**	**$ 37.5**	**$ 33.2**
Total Selected Loans and Leases	**$ 14,591.5**	**$ 7,883.6**	**$ 4,303.8**	**$ 2,404.1**
Interest Rate Sensitivity of Loans and Leases:				
Fixed Rate	**$ 8,525.1**	**$ 5,995.2**	**$ 1,299.2**	**$ 1,230.7**
Variable Rate	**6,066.4**	**1,925.5**	**2,995.4**	**1,145.5**
Total	**$ 14,591.5**	**$ 7,920.7**	**$ 4,294.6**	**$ 2,376.2**

TABLE 138: DISTRIBUTION OF NON-U.S. LOANS BY TYPE

(In Millions)	2017	2016	DECEMBER 31, 2015	2014	2013
Commercial	**$ 289.5**	$ 318.0	$ 335.2	$ 154.0	$ 497.0
Non-U.S. Governments and Official Institutions	**—**	—	—	—	250.1
Banks	**—**	26.2	8.5	—	10.4
Other	**1,249.0**	1,533.6	794.0	1,376.6	197.2
Total	**$ 1,538.5**	$ 1,877.8	$ 1,137.7	$ 1,530.6	$ 954.7

Note: Non-U.S. loans primarily include short duration advances related to the processing of custodied client investments.

TABLE 139: ALLOWANCE FOR CREDIT LOSSES RELATING TO NON-U.S. OPERATIONS

The following table should be read in conjunction with the “Risk Management” section of Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

(In Millions)	2017	2016	2015	2014	2013
Balance at Beginning of Year	**$ —**	$ —	$ 3.3	$ 2.1	$ 3.4
Charge-Offs	**—**	—	—	—	—
Recoveries	**—**	—	—	—	—
Provision for Credit Losses	**—**	—	(3.3)	1.2	(1.3)
Balance at End of Year	**$ —**	$ —	$ —	$ 3.3	$ 2.1

The SEC requires the disclosure of the allowance for credit losses that is applicable to international operations. The above table has been prepared in compliance with this disclosure requirement and is used in determining non-U.S. operating performance. The amounts shown in the table should not be construed as being the only amounts that are available for non-U.S. loan charge-offs, since the entire allowance for credit losses assigned to loans and leases is available to absorb losses on both U.S. and non-U.S. loans. In addition, these amounts are not intended to be indicative of future charge-off trends.

Summary of Loans and Leases Loss Experience

TABLE 140: ANALYSIS OF ALLOWANCE FOR CREDIT LOSSES

The following table should be read in conjunction with the “Risk Management” section of Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

($ in Millions)	2017	2016	2015	2014	2013
Balance at Beginning of Year	**$ 192.0**	$ 233.3	$ 295.9	$ 307.9	$ 327.6
Charge-Offs					
Commercial					
Commercial and Institutional	**10.3**	15.8	9.2	5.4	5.0
Commercial Real Estate	**1.1**	0.8	3.9	7.5	11.7
Total Commercial	**11.4**	16.6	13.1	12.9	16.7
Personal					
Residential Real Estate	**8.0**	10.4	16.7	21.2	37.0
Private Client	**2.1**	0.3	0.9	2.0	5.5
Other	**—**	—	—	—	0.1
Total Personal	**10.1**	10.7	17.6	23.2	42.6
Total Charge-Offs	**21.5**	27.3	30.7	36.1	59.3
Recoveries					
Commercial					
Commercial and Institutional	**3.7**	3.3	1.7	1.3	3.6
Commercial Real Estate	**1.8**	1.5	3.8	9.8	5.0
Total Commercial	**5.5**	4.8	5.5	11.1	8.6
Personal					
Residential Real Estate	**5.4**	6.6	4.5	5.6	9.4
Private Client	**0.4**	0.7	1.2	1.4	1.6
Total Personal	**5.8**	7.3	5.7	7.0	11.0
Total Recoveries	**11.3**	12.1	11.2	18.1	19.6
Net Charge-Offs	**10.2**	15.2	19.5	18.0	39.7
Provision for Credit Losses	**(28.0)**	(26.0)	(43.0)	6.0	20.0
Effect of Foreign Exchange Rates	**—**	(0.1)	(0.1)	—	—
Net Change in Allowance	**(38.2)**	(41.3)	(62.6)	(12.0)	(19.7)
Balance at End of Year	**153.8**	192.0	233.3	295.9	307.9
Allowance Assigned To:					
Loans and Leases	**$ 131.2**	$ 161.0	$ 193.8	$ 267.0	$ 278.1
Undrawn Commitments and Standby Letters of Credit	**22.6**	31.0	39.5	28.9	29.8
Total Allowance for Credit Losses	**$ 153.8**	$ 192.0	$ 233.3	$ 295.9	$ 307.9
Loans and Leases at Year-End	**$ 32,592.2**	$ 33,822.1	$ 33,180.9	$ 31,640.2	$ 29,385.5
Average Total Loans and Leases	**$ 33,565.2**	$ 34,043.5	$ 33,016.1	$ 30,215.6	$ 28,696.5
As a Percent of Year-End Loans and Leases					
Net Loan Charge-Offs	**0.03 %**	0.04 %	0.06%	0.06%	0.14%
Provision for Credit Losses	**(0.09)**	(0.08)	(0.13)	0.02	0.07
Allowance at Year-End Assigned to Loans and Leases	**0.40**	0.48	0.58	0.84	0.95
As a Percent of Average Loans and Leases					
Net Loan Charge-Offs	**0.03 %**	0.04 %	0.06%	0.06%	0.14%
Allowance at Year-End Assigned to Loans and Leases	**0.39**	0.47	0.59	0.88	0.97

Deposits

TABLE 141: AVERAGE DEPOSITS BY TYPE

(In Millions)		DECEMBER 31, 2017		2016		2015
U.S. Offices						
Demand and Noninterest-Bearing						
Individuals, Partnerships and Corporations	**$**	**16,410.6**	$	20,764.8	$	20,684.9
Correspondent Banks		**60.3**		58.0		59.8
Other Noninterest-Bearing		**1.4**		76.3		124.6
Total Demand and Noninterest-Bearing		**16,472.3**		20,899.1		20,869.3
Interest-Bearing						
Savings, Money Market, and Other		**15,575.6**		15,142.4		15,306.9
Savings Certificates less than $100,000		**130.1**		150.9		175.9
Savings Certificates $100,000 and more		**717.3**		672.0		669.9
Other		**426.0**		609.1		764.1
Total Interest-Bearing		**16,849.0**		16,574.4		16,916.8
Total U.S. Offices		**33,321.3**		37,473.5		37,786.1
Non-U.S. Offices						
Noninterest-Bearing		**6,600.3**		5,332.2		3,604.8
Interest-Bearing		**56,583.2**		50,808.2		49,377.1
Total Non-U.S. Offices		**63,183.5**		56,140.4		52,981.9
Total Deposits	**$**	**96,504.8**	$	93,613.9	$	90,768.0

TABLE 142: DISTRIBUTION OF NON-U.S. DEPOSITS BY TYPE

(In Millions)		DECEMBER 31, 2017		2016		2015
Commercial	**$**	**70,987.1**	$	57,354.0	$	50,965.8
Non-U.S. Governments and Official Institutions		**4,246.0**		3,971.8		5,464.3
Banks		**305.5**		276.6		489.5
Other Time		**6.3**		9.4		18.2
Other Demand		**6.1**		8.8		3.9
Total	**$**	**75,551.0**	$	61,620.6	$	56,941.7

TABLE 143: REMAINING MATURITY OF TIME DEPOSITS $100,000 OR MORE

		DECEMBER 31, 2017				
		U.S. OFFICES				**NON-U.S. OFFICES**
(In Millions)		**CERTIFICATES OF DEPOSIT**		**OTHER TIME**		
3 Months or Less	**$**	**507.2**	**$**	**—**	**$**	**12,680.0**
Over 3 through 6 Months		**219.0**		**—**		**13.7**
Over 6 through 12 Months		**237.5**		**—**		**2.4**
Over 12 Months		**60.9**		**—**		**0.2**
Total	**$**	**1,024.6**	**$**	**—**	**$**	**12,696.3**

TABLE 144: AVERAGE RATES PAID ON INTEREST-RELATED DEPOSITS BY TYPE

	DECEMBER 31,		
Interest-Related Deposits – U.S. Offices	**2017**	2016	2015
Savings, Money Market, and Other	**0.16%**	0.08%	0.06%
Savings Certificates less than $100,000	**0.15**	0.15	0.19
Savings Certificates $100,000 and more	**0.46**	0.35	0.38
Other Time	**1.38**	0.94	0.63
Total U.S. Offices Interest-Related Deposits	**0.20**	0.12	0.10
Total Non-U.S. Offices Interest-Related Deposits	**0.26**	0.12	0.12
Total Interest-Related Deposits	**0.25%**	0.12%	0.11%

Non-U.S. Operations (Based on Obligor's Domicile)

See also Note 31, "Reporting Segments and Related Information," provided in Item 8, "Financial Statements and Supplementary Data."

TABLE 145: SELECTED AVERAGE ASSETS AND LIABILITIES ATTRIBUTABLE TO NON-U.S. OPERATIONS

(In Millions)	**2017**	2016	2015	2014	2013
Total Assets	**$ 26,510.1**	$ 24,031.0	$ 29,411.2	$ 28,072.8	$ 29,315.6
Time Deposits with Banks	**5,013.4**	6,331.3	13,712.9	16,106.9	17,785.5
Loans	**2,014.8**	1,894.3	1,759.4	1,490.2	1,164.0
Customers' Acceptance Liability	**—**	—	—	—	0.5
Non-U.S. Investments	**14,047.8**	10,255.7	8,590.8	6,446.5	5,334.1
Total Liabilities	**64,267.3**	57,270.0	54,521.0	52,123.3	48,144.4
Deposits	**63,183.5**	56,139.8	52,981.2	49,854.7	45,865.7
Liability on Acceptances	**—**	—	—	—	0.5

TABLE 146: PERCENT OF NON-U.S.-RELATED AVERAGE ASSETS AND LIABILITIES TO TOTAL CONSOLIDATED AVERAGE ASSETS

	2017	2016	2015	2014	2013
Assets	**22%**	21%	27%	27%	31%
Liabilities	**54%**	50%	49%	50%	51%

NON-U.S. OUTSTANDINGS

As used in this discussion and the following table, non-U.S. outstandings are cross-border outstandings as defined by the SEC. They consist of loans, securities, interest-bearing deposits with financial institutions, accrued interest and other monetary assets. Not included are letters of credit, loan commitments, and non-U.S. office local currency claims on residents. Non-U.S. outstandings related to a country are net of guarantees given by third parties resident outside the country and the value of tangible, liquid collateral held outside the country. However, transactions with branches of non-U.S. banks are included in these outstandings and are classified according to the country location of the non-U.S. bank's head office.

Short-term interbank time deposits with non-U.S. banks represent the largest category of non-U.S. outstandings. Northern Trust actively participates in the interbank market with U.S. and non-U.S. banks.

Northern Trust places deposits with non-U.S. counterparties that have strong internal (Northern Trust) risk ratings and external credit ratings. These non-U.S. banks are approved and monitored by Northern Trust's Capital Markets Credit Committee, which has credit authority for exposure to all non-U.S. banks and approves credit limits. This process includes financial analysis of the non-U.S. banks, use of an internal risk rating system and consideration of external market indicators. Each counterparty is reviewed at least annually and potentially more frequently based on credit fundamentals or general market conditions. Separate from the entity-specific review process, the average life to maturity of deposits with non-U.S. banks is deliberately maintained on a short-term basis in order to respond quickly to changing credit conditions. Northern Trust also utilizes certain risk mitigation tools and agreements that may reduce exposures through use of collateral and/or balance sheet netting. Additionally, the Capital Market Credit Committee oversees country-risk analyses and imposes limits to country exposure.

Table of Contents

The following table provides information on non-U.S. outstandings by country that exceed 1.00% of Northern Trust's assets.

TABLE 147: NON-U.S. OUTSTANDINGS

(In Millions)	BANKS	COMMERCIAL AND OTHER	TOTAL
AT DECEMBER 31, 2017			
Japan	**$ 510**	**$ 3,375**	**$ 3,885**
Canada	**1,437**	**196**	**1,633**
AT DECEMBER 31, 2016			
Japan	$ 900	$ 1,608	$ 2,508
Canada	2,114	309	2,423
France	1,311	233	1,544
Sweden	1,112	217	1,329
AT DECEMBER 31, 2015			
Canada	$ 2,293	$ 277	$ 2,570
Japan	2,290	—	2,290
United Kingdom	428	764	1,192

Countries whose aggregate outstandings totaled between 0.75% and 1.00% of total assets were as follows: Germany with aggregate oustandings of $1.3 billion and France with aggregate outstandings of $1.3 billion at December 31, 2017; Australia with aggregate outstandings of $1.2 billion and Germany with aggregate outstandings of $1.2 billion at December 31, 2016; Germany with aggregate outstandings of $1.1 billion , Singapore with aggregate outstandings of $1.1 billion , Sweden with aggregate outstandings of $1.1 billion , France with aggregate outstandings of $1.0 billion , Switzerland with aggregate outstandings of $976 million , Australia with aggregate outstandings of $962 million , Netherlands with aggregate outstandings of $943 million and Finland with aggregate outstandings of $925 million at December 31, 2015.

TABLE 148: PURCHASED FUNDS

Federal Funds Purchased (Overnight Borrowings)

	DECEMBER 31,		
(In Millions)	**2017**	2016	2015
Balance on December 31	**$ 2,286.1**	$ 204.8	$ 351.5
Highest Month-End Balance	**2,286.1**	378.5	982.2
Year – Average Balance	**1,102.6**	617.7	823.6
– Average Rate	**0.95%**	0.25%	0.08%
Average Rate at Year-End	**1.17%**	0.07%	0.05%

Securities Sold under Agreements to Repurchase

	DECEMBER 31,		
(In Millions)	**2017**	2016	2015
Balance on December 31	**$ 834.0**	$ 473.7	$ 546.6
Highest Month-End Balance	**834.0**	565.5	802.4
Year – Average Balance	**738.9**	847.1	649.5
– Average Rate	**0.81%**	0.27%	0.05%
Average Rate at Year-End	**1.29%**	0.64%	0.36%

Other Borrowings
(Includes Treasury Investment Program Balances, Term Federal Funds Purchased and Other Short-Term Borrowings)

	DECEMBER 31,		
(In Millions)	**2017**	2016	2015
Balance on December 31	**$ 6,051.1**	$ 5,109.5	$ 4,055.1
Highest Month-End Balance	**7,040.4**	6,037.6	4,123.2
Year – Average Balance	**4,854.5**	4,872.1	3,284.9
– Average Rate	**1.04%**	0.37%	0.15%
Average Rate at Year-End	**1.38%**	0.57%	0.16%

Total Purchased Funds

	DECEMBER 31,		
(In Millions)	**2017**	2016	2015
Balance on December 31	**$ 9,171.2**	$ 5,788.0	$ 4,953.2
Year – Average Balance	**6,696.0**	6,337.0	4,757.9
– Average Rate	**1.00%**	0.34%	0.13%

ITEM 9 – CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A – CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

As of December 31, 2017 , the Corporation’s management, with the participation of the Corporation’s Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of the Corporation’s disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) that are designed to ensure that information required to be disclosed by the Corporation in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms. Based on such evaluation, such officers have concluded that, as of December 31, 2017 , the Corporation’s disclosure controls and procedures are effective.

Management’s Report on Internal Control Over Financial Reporting

Management of the Corporation is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) to provide reasonable assurance to the Corporation’s management and Board of Directors regarding the preparation of reliable published financial statements. This internal control includes monitoring mechanisms, and actions are taken to correct deficiencies identified.

Management assessed the Corporation’s internal control over financial reporting as of December 31, 2017 , based on the criteria for effective internal control over financial reporting described in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, management concluded that, as of December 31, 2017 , the Corporation maintained effective internal control over financial reporting. Additionally, KPMG LLP, the independent registered public accounting firm that audited the Corporation’s consolidated financial statements as of, and for the year ended, December 31, 2017 , included in this Annual Report on Form 10-K, has issued an attestation report on the effectiveness of the Corporation’s internal control over financial reporting as of December 31, 2017 .

Changes in Internal Control Over Financial Reporting

There have been no changes in the Corporation’s internal control over financial reporting identified in connection with the evaluation required by Rules 13a-15 and 15d-15 under the Exchange Act during the last fiscal quarter that have materially affected, or are reasonably likely to materially affect, the Corporation’s internal control over financial reporting.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

TO THE STOCKHOLDERS AND BOARD OF DIRECTORS OF NORTHERN TRUST CORPORATION:

Opinion on Internal Control Over Financial Reporting

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

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

Basis for Opinion

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

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

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

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

KPMG LLP

CHICAGO , ILLINOIS
FEBRUARY 27, 2018

ITEM 9B – OTHER INFORMATION

Not applicable.

PART III

ITEM 10 – DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information called for by this item is incorporated by reference to “Supplemental Item – Executive Officers of the Registrant” in Part I of this Annual Report on Form 10-K, as well as the following sections of the Corporation’s definitive Proxy Statement for the 2018 Annual Meeting of Stockholders: “Item 1 – Election of Directors,” “Information about the Nominees for Director,” “Security Ownership by Directors and Executive Officers – Section 16(a) Beneficial Ownership Reporting Compliance,” “Corporate Governance – Code of Business Conduct and Ethics,” “Corporate Governance – Director Nominations and Qualifications,” “Board and Board Committee Information – Audit Committee” and “Board and Board Committee Information – Committee Composition.”

ITEM 11 – EXECUTIVE COMPENSATION

The information called for by this item is incorporated herein by reference to the “Executive Compensation” and “Director Compensation” sections of the Corporation’s definitive Proxy Statement for the 2018 Annual Meeting of Stockholders.

ITEM 12 – SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information called for by this item is incorporated herein by reference to the “Security Ownership by Directors and Executive Officers,” “Security Ownership of Certain Beneficial Owners,” and “Equity Compensation Plan Information” sections of the Corporation’s definitive Proxy Statement for the 2018 Annual Meeting of Stockholders.

ITEM 13 – CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information called for by this item is incorporated herein by reference to the “Board and Board Committee Information,” “Corporate Governance – Director Independence” and the “Corporate Governance – Related Person Transactions Policy” sections of the Corporation’s definitive Proxy Statement for the 2018 Annual Meeting of Stockholders.

ITEM 14 – PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information called for by this item is incorporated herein by reference to the “Audit Matters” section of the Corporation’s definitive Proxy Statement for the 2018 Annual Meeting of Stockholders.

PART IV

ITEM 15 – EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

ITEM 15(a)(1) AND (2) – NORTHERN TRUST CORPORATION AND SUBSIDIARIES LIST OF FINANCIAL STATEMENTS AND FINANCIAL STATEMENT SCHEDULES

The following financial statements of the Corporation and its Subsidiaries included in Item 8, "Financial Statements and Supplementary Data," of this Annual Report on Form 10-K are incorporated herein by reference.

For Northern Trust Corporation and Subsidiaries:
Consolidated Balance Sheets - December 31, 2017 and 2016
Consolidated Statements of Income - Years Ended December 31, 2017, 2016, and 2015
Consolidated Statements of Comprehensive Income - Years Ended December 31, 2017, 2016, and 2015
Consolidated Statements of Changes in Stockholders' Equity - Years Ended December 31, 2017, 2016, and 2015
Consolidated Statements of Cash Flows - Years Ended December 31, 2017, 2016, and 2015
Notes to Consolidated Financial Statements
Report of Independent Registered Public Accounting Firm

Financial statement schedules have been omitted for the reason that they are not required or are not applicable.

The Quarterly Financial Data (Unaudited) of the Corporation included in "Supplemental Item – Selected Statistical and Supplemental Financial Data" is incorporated herein by reference.

ITEM 15(a)(3) – EXHIBITS

The exhibits listed on the Exhibit Index to this Annual Report on Form 10-K are filed herewith or are incorporated herein by reference to other filings.

ITEM 16 – FORM 10-K SUMMARY

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the Registrant has duly caused this Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized.

Date: February 27, 2018

Northern Trust Corporation

(Registrant)

By: /s/ Michael G. O'Grady

Michael G. O'Grady

President and Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this Annual Report on Form 10-K has been signed below by the following persons on behalf of the Registrant and in the capacities and on the date indicated.

Signature	Capacity
/s/ Michael G. O'Grady *Michael G. O'Grady*	President and Chief Executive Officer (Principal Executive Officer)
/s/ S. Biff Bowman *S. Biff Bowman*	Executive Vice President and Chief Financial Officer (Principal Financial Officer)
/s/ Aileen B. Blake *Aileen B. Blake*	Executive Vice President and Controller (Principal Accounting Officer)
/s/ Frederick H. Waddell *Frederick H. Waddell*	Chairman
/s/ Linda Walker Bynoe *Linda Walker Bynoe*	Director
/s/ Susan Crown *Susan Crown*	Director
/s/ Dean M. Harrison *Dean M. Harrison*	Director
/s/ Jay L. Henderson *Jay L. Henderson*	Director
/s/ Jose Luis Prado *Jose Luis Prado*	Director

/s/ Thomas E. Richards	Director
Thomas E. Richards	
/s/ John W. Rowe	Director
John W. Rowe	
/s/ Martin P. Slark	Director
Martin P. Slark	
/s/ David H.B. Smith, Jr.	Director
David H.B. Smith, Jr.	
/s/ Donald Thompson	Director
Donald Thompson	
/s/ Charles A. Tribbett, III	Director
Charles A. Tribbett, III	

Date: February 27, 2018

EXHIBIT INDEX

Exhibit Number	Description
3.1	Restated Certificate of Incorporation of Northern Trust Corporation, as amended to date (incorporated herein by reference to Exhibit 3.1 to the Corporation's Current Report on Form 8-K filed April 19, 2006).
3.2	Certificate of Designation of Series C Non-Cumulative Perpetual Preferred Stock of Northern Trust Corporation, dated August 4, 2014 (incorporated herein by reference to Exhibit 4.1 to the Corporation's Current Report on Form 8-K filed August 4, 2014).
3.3	Certificate of Designation of Series D Non-Cumulative Perpetual Preferred Stock of Northern Trust Corporation, dated August 4, 2016 (incorporated herein by reference to Exhibit 3.1 to the Corporation's Current Report on Form 8-K filed August 8, 2016).
3.4	By-laws of Northern Trust Corporation, as amended to date (incorporated herein by reference to Exhibit 3.1 to the Corporation's Current Report on Form 8-K filed December 13, 2017).
4.1	Deposit Agreement, dated August 5, 2014, among Northern Trust Corporation, Wells Fargo Bank, N.A., as depositary (which, effective February 1, 2018, was succeeded by Equiniti Trust Company), and the holders from time to time of the depositary receipts described therein (incorporated by reference to Exhibit 4.1 to the Corporation's Current Report on Form 8-K filed August 5, 2014).
4.2	Deposit Agreement, dated August 8, 2016, among Northern Trust Corporation, Wells Fargo Bank, N.A., as depositary (which, effective February 1, 2018, was succeeded by Equiniti Trust Company), and the holders from time to time of the depositary receipts described therein (incorporated by reference to Exhibit 4.2 to the Corporation's Current Report on Form 8-K filed August 8, 2016).
4.3	Certain instruments defining the rights of the holders of long-term debt of the Corporation and certain of its subsidiaries, none of which authorize a total amount of indebtedness in excess of 10% of the total assets of the Corporation and its subsidiaries on a consolidated basis, have not been filed as exhibits. The Corporation hereby agrees to furnish a copy of any of these agreements to the SEC upon request.
10.1**	Deferred Compensation Plans Trust Agreement, dated May 11, 1998, between Northern Trust Corporation and Harris Trust and Savings Bank as Trustee (which, effective August 31, 1999, was succeeded by U.S. Trust Company, N.A., which effective June 1, 2009, was succeeded by Evercore Trust Company, N.A., and, which, effective October 19, 2017, was succeeded by Newport Trust Company) regarding the Supplemental Employee Stock Ownership Plan for Employees of The Northern Trust Company, the Supplemental Thrift-Incentive Plan for Employees of The Northern Trust Company, the Supplemental Pension Plan for Employees of The Northern Trust Company, and the Northern Trust Corporation Deferred Compensation Plan (incorporated herein by reference to Exhibit 10(iv) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended June 30, 1998).
(i)**	Amendment, dated August 31, 1999 (incorporated herein by reference to Exhibit 10(vi) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended September 30, 1999).
(ii)**	Second Amendment, dated as of May 16, 2000 (incorporated herein by reference to Exhibit 10(v) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended June 30, 2000).
10.2**	Northern Trust Corporation Supplemental Employee Stock Ownership Plan, as amended and restated effective as of January 1, 2008 (incorporated herein by reference to Exhibit 10(vi) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2008).

Exhibit Number	Description
10.3**	Northern Trust Corporation Supplemental Thrift-Incentive Plan, as amended and restated effective as of January 1, 2008 (incorporated herein by reference to Exhibit 10(vii) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2008).
(i)**	Amendment Number One, dated October 29, 2009 and effective January 1, 2010 (incorporated herein by reference to Exhibit 10(vi)(1) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2009).
(ii)**	Amendment Number Two, dated August 6, 2015 and effective January 1, 2015 (incorporated herein by reference to Exhibit 10.1 to the Corporation's Quarterly Report on Form 10-Q for the quarter ended September 30, 2015).
10.4**	Northern Trust Corporation Supplemental Pension Plan, as amended and restated effective January 1, 2009 (incorporated herein by reference to Exhibit 10(viii) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2008).
10.5**	Northern Trust Corporation Deferred Compensation Plan, as amended and restated effective as of November 1, 2017.
10.6**	Amended and Restated Northern Trust Corporation 2002 Stock Plan, effective as of January 1, 2008 (incorporated herein by reference to Exhibit 10(xiv) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2008).
(i)**	Form of 2010 Stock Option Terms and Conditions (incorporated herein by reference to Exhibit 10(x)(9) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2009).
(ii)**	Form of 2011 Executive Stock Option Terms and Conditions (incorporated herein by reference to Exhibit 10(v) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended March 31, 2011).
(iii)**	Form of 2012 Executive Stock Option Award Terms and Conditions (incorporated herein by reference to Exhibit 10.7(xix) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2011).
10.7**	Northern Trust Corporation 2012 Stock Plan (incorporated herein by reference to Exhibit 10.1 to the Corporation's Current Report on Form 8-K filed April 19, 2012).
(i)**	Form of Director Stock Unit Agreement (incorporated herein by reference to Exhibit 10(iii) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended March 31, 2012).
(ii)**	Form of Director Prorated Stock Agreement (incorporated herein by reference to Exhibit 10(iv) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended March 31, 2012).
(iii)**	Form of New Director Stock Unit Agreement (incorporated herein by reference to Exhibit 10(v) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended March 31, 2012).
(iv)**	Form of 2012 Executive Stock Option Terms and Conditions (incorporated herein by reference to Exhibit 10(i) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended September 30, 2012).

Exhibit Number	Description
(v)**	Form of 2013 Executive Stock Option Terms and Conditions (incorporated herein by reference to Exhibit 10.7(xii) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2012).
(vi)**	Form of 2014 Executive Stock Option Terms and Conditions (incorporated herein by reference to Exhibit 10.7(xi) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2013).
(vii)**	Form of 2014 Stock Unit Award Terms and Conditions (incorporated herein by reference to Exhibit 10.7(xiii) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2013).
(viii)**	Form of 2014 Stock Unit Award Terms and Conditions (Alternate Vesting) (incorporated herein by reference to Exhibit 10.7(xiv) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2013).
(ix)**	Terms and Conditions of 2016 Equity Awards under the Northern Trust Corporation 2012 Stock Plan (incorporated herein by reference to Exhibit 10.1 to the Corporation's Quarterly Report on Form 10-Q for the quarter ended March 31, 2016).
(x)**	Form of 2017 Stock Option Award Terms and Conditions, as amended.
(xi)**	Form of 2017 Stock Unit Award Terms and Conditions, as amended.
(xii)**	Form of 2017 Performance Stock Unit Award Terms and Conditions, as amended.
10.8**	Northern Trust Corporation Management Performance Plan, as amended and restated effective October 16, 2012 (incorporated herein by reference to Exhibit 10(viii) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended September 30, 2012).
10.9**	Northern Trust Corporation 1997 Stock Plan for Non-Employee Directors (incorporated herein by reference to Exhibit 10(xix) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 1998).
10.10**	Northern Trust Corporation 1997 Deferred Compensation Plan for Non-Employee Directors, as amended and restated effective as of July 15, 2014 (incorporated herein by reference to Exhibit 10.1 to the Corporation's Quarterly Report on Form 10-Q for the quarter ended June 30, 2014).
10.11**	Northern Trust Corporation 2018 Deferred Compensation Plan for Non-Employee Directors.
10.12**	Northern Trust Corporation Key Officer Change in Control Severance Plan (incorporated herein by reference to Exhibit 10.2 to the Corporation's Current Report on Form 8-K filed April 28, 2017).
10.13**	Northern Trust Corporation Executive Change in Control Severance Plan (incorporated herein by reference to Exhibit 10.1 to the Corporation's Current Report on Form 8-K filed April 28, 2017).
10.14**	Form of Employment Security Agreement (Tier 1) (incorporated herein by reference to Exhibit 10(ii) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended September 30, 2007).

Exhibit Number	Description
10.15**	Revised Form of Employment Security Agreement (Tier 1) (incorporated herein by reference to Exhibit 10(i) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended June 30, 2011).
10.16**	Form of Employment Security Agreement (Tier 2) (incorporated herein by reference to Exhibit 10.1 to the Corporation's Quarterly Report on Form 10-Q for the quarter ended September 30, 2010).
10.17**	Form of Non-Solicitation Agreement and Confidentiality Agreement (incorporated herein by reference to Exhibit 10(iii) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended March 31, 2009).
10.18**	Northern Trust Corporation 2012 Long Term Cash Incentive Plan (incorporated herein by reference to Exhibit 10(i) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended March 31, 2012).
(i)**	Form of 2012 Long Term Cash Incentive Award Terms and Conditions (incorporated herein by reference to Exhibit 10.19 to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2011).
(ii)**	Amendment Number One to the 2012 Long Term Cash Incentive Plan, dated as of January 20, 2015 (incorporated herein by reference to Exhibit 10.14(ii) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2014).
10.19**	Northern Trust Corporation 2017 Long Term Cash Incentive Plan (incorporated herein by reference to Exhibit 10.7 to the Corporation's Quarterly Report on Form 10-Q for the quarter ended March 31, 2017).
(i)**	Form of Cash Incentive Award Terms and Conditions, as amended.
10.20**	Northern Trust Corporation 2017 Long-Term Incentive Plan (incorporated herein by reference to Exhibit 10.1 to the Corporation's Current Report on Form 8-K filed April 26, 2017).
(i)**	Form of Director Stock Unit Agreement (incorporated herein by reference to Exhibit 10.10 to the Corporation's Quarterly Report on Form 10-Q for the quarter ended March 31, 2017).
(ii)**	Form of Director Stock Unit Agreement (prorated) (incorporated herein by reference to Exhibit 10.11 to the Corporation's Quarterly Report on Form 10-Q for the quarter ended March 31, 2017).
10.21**	Northern Trust Corporation Executive Financial Consulting and Tax Preparation Services Plan, as amended and restated effective January 1, 2008 (incorporated herein by reference to Exhibit 10 (xxxiii) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2007).
10.22**	Northern Partners Incentive Plan – EMEA Plan (incorporated herein by reference to Exhibit 10.9 to the Corporation's Quarterly Report on Form 10-Q for the quarter ended March 31, 2017).
21	Subsidiaries of the Registrant.
23	Consent of Independent Registered Public Accounting Firm.
31.1	Rule 13a-14(a)/15d-14(a) Certification of CEO Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Rule 13a-14(a)/15d-14(a) Certification of CFO Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.

Exhibit Number	Description
32	Certifications of CEO and CFO Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101	Includes the following financial and related information from the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2017, formatted in Extensible Business Reporting Language (XBRL): (i) the Consolidated Balance Sheets as of December 31, 2017 and 2016, (ii) the Consolidated Statements of Income for the twelve months ended December 31, 2017, 2016 and 2015, (iii) the Consolidated Statements of Comprehensive Income for the twelve months ended December 31, 2017, 2016 and 2015, (iv) the Consolidated Statements of Changes in Stockholders' Equity for the twelve months ended December 31, 2017, 2016 and 2015, (v) the Consolidated Statements of Cash Flows for the twelve months ended December 31, 2017, 2016 and 2015, and (vi) Notes to Consolidated Financial Statements.

** *Indicates a management contract or a compensatory plan or agreement.*

Exhibit 10.5

NORTHERN TRUST CORPORATION
DEFERRED COMPENSATION PLAN
(As Amended and Restated Effective as of November 1, 2017)

INTRODUCTION

The Northern Trust Corporation Deferred Compensation Plan (the "Plan") was established by Northern Trust Corporation, a Delaware corporation (the "Corporation") effective as of May 1, 1998. The primary purpose of the Plan is to provide a select group of management or highly compensated employees of the Corporation (and its subsidiaries and affiliates) with the opportunity to voluntarily defer all or a portion of their Incentive Compensation (as defined in Article I below). The Plan is also intended to provide Participants in the Plan with the ability to save on a tax-deferred basis. The Plan was most recently amended and restated effective as of January 1, 2008. The Corporation now hereby amends and restates the Plan, generally effective November 1, 2017, with respect to amounts attributable to services performed in 2018 and years thereafter, except as otherwise indicated (with such other effective dates as are noted herein) to make certain design changes and to update the Plan for changes in the regulations under Code Section 409A.

ARTICLE I
DEFINITIONS

Wherever used herein the following terms shall have the meanings hereinafter set forth:

1.1 "Assigned Base Salary" means the regular annual base wage rate of the Participant, excluding overtime wages or wages related to shift differential.

1.2 "Beneficiary" means any person eligible to receive a death benefit under the respective Incentive Compensation Plan as designated by the Participant or otherwise provided under such Incentive Compensation Plan, in the event of the death of the Participant.

1.3 "Board" means the Board of Directors of the Corporation.

1.4 A "Change in Control" shall be deemed to have occurred if the event set forth in any one of the following paragraphs shall have occurred:

(a) any Person is or becomes the Beneficial Owner, directly or indirectly, of securities of the Corporation (not including in the securities beneficially owned by such Person any securities acquired directly from the Corporation or its Affiliates) representing 30% or more of the combined voting power of the Corporation's then outstanding securities, excluding any Person who becomes such a Beneficial Owner in connection with a transaction described in clause (i) of paragraph (c) below ;

(b) the election to the Board, without the recommendation or approval of two-thirds of the incumbent Board, of directors constituting a majority of the number of directors of the Corporation then in office, provided, however, that directors whose initial assumption of office is in connection with an actual or threatened election contest, including but not limited to a consent solicitation, relating to the election of directors of the Corporation will not be considered as incumbent members of the Board for purposes of this section; or

(c) there is consummated a merger or consolidation of the Corporation or any direct or indirect Subsidiary of the Corporation with any other company, other than (i) a merger or consolidation which would result in the voting securities of the Corporation outstanding immediately prior to such merger or consolidation continuing to represent (either by remaining outstanding or by being converted into voting securities of the surviving entity or any parent thereof), at least 60% of the combined voting power of the securities of the Corporation or such surviving entity or any parent thereof outstanding immediately after such merger or consolidation, or (ii) a merger or consolidation effected to implement a recapitalization of the Corporation (or similar transaction) in which no Person is or becomes the Beneficial Owner, directly or indirectly, of securities of the Corporation (not including in the securities beneficially owned by such Person any securities acquired directly from the Corporation or its Affiliates) representing 20% or more of the combined voting power of the Corporation's then outstanding securities; or

(d) there is consummated the sale or disposition by the Corporation of all or substantially all of the Corporation's assets, other than a sale or disposition by the Corporation of all or substantially all of the Corporation's assets to an entity, at least 60% of the combined voting power of the voting securities of which are owned by stockholders of the Corporation in substantially the same proportions as their ownership of the Corporation immediately prior to such sale or the stockholders of the Corporation approve a plan of complete liquidation or dissolution of the Corporation.

Notwithstanding the foregoing, a "Change in Control" shall not be deemed to have occurred by virtue of the consummation of any transaction or series of integrated transactions immediately following which the record holders of the common stock of the Corporation immediately prior to such transaction or series of transactions continue to have substantially the same proportionate ownership in an entity which owns all or substantially all of the assets of the Corporation immediately following such transaction or series of transactions.

For purposes of this Section 1.4 the following definitions shall apply:

"Affiliate" shall have the meaning set forth in Rule 12b-2 under Section 12 of the Exchange Act; "Beneficial Owner" shall have the meaning set forth in Rule 13d-3 under the Exchange Act, except that a Person shall not be deemed to be the Beneficial Owner of any securities with respect to which such Person has properly filed a Form 13-G; "Exchange Act" shall mean the Securities Exchange Act of 1934, as amended; and "Person" shall have the meaning given in Section 3(a)(9) of the Exchange Act, as modified and used in Sections 13(d) and 14(d) thereof, except that such term shall not include (i) the Corporation or any of its Affiliates, (ii) a trustee or other fiduciary holding securities under an employee benefit plan of the Corporation or any of its Subsidiaries, (iii) an underwriter temporarily holding securities pursuant to an offering of such securities or (iv) a corporation owned, directly or indirectly, by the stockholders of the Corporation in substantially the same proportions as their ownership of stock of the Corporation. "Subsidiary" shall mean any corporation, limited liability company, partnership, joint venture or similar entity in which the Corporation owns, directly or indirectly, an equity interest possessing more than 50% of the combined voting power of the total outstanding equity interests of such entity.

1.5 "Code" means the Internal Revenue Code of 1986, as amended from time to time.

1.6 "Committee" means the Employee Benefit Administrative Committee, which has the responsibility for administering various benefit plans of the Company, as constituted from time to time.

1.7 "Company" means The Northern Trust Company, an Illinois banking corporation; the Corporation; and such U.S. Related Companies as shall, with the consent of the Board, adopt the Plan.

1.8 "Corporation" means Northern Trust Corporation, a Delaware corporation, and, to the extent provided in Section 8.8 below, any successor corporation or other entity resulting from a merger or consolidation into or with the Corporation or a transfer or sale of substantially all of the assets of the Corporation.

1.9 "Deferred Compensation Account" means an individual bookkeeping account for each Participant established hereunder.

1.10 "Early Retirement Age" means the Participant's age upon the date the Participant has both attained at least age 55 and earned 15 or more years of "Credited Service" as defined under the Pension Plan, provided, however, that in the case of amounts credited to a Participant's Deferred Compensation Account that are attributable to services performed prior to 2018, "Early Retirement Age" shall have the meaning assigned to it under the Plan as in effect prior to November 1, 2017.

1.11 "Effective Date" means November 1, 2017, for the amended and restated Plan. The original effective date of the Plan was May 1, 1998.

1.12 "409A Amount" means the portion of the Deferred Compensation Account of a Participant that consists of amounts deferred in taxable years beginning after December 31, 2004, and earnings on such amounts, as determined in accordance with Code Section 409A and applicable regulations and other guidance promulgated thereunder. The portion, if any, of a Participant's Deferred Compensation Account that consists of amounts deferred on or before December 31, 2004, and earnings on such amounts, is referred to herein as the Participant's "Grandfathered Amount." An amount is considered deferred on or before December 31, 2004, if on or before that date the Participant had a legally binding right to be paid the amount, and the right to the amount was earned and vested. "409A Amount attributable to services performed prior to 2018" means all amounts credited to a Participant's Deferred Compensation Account that are attributable to services performed prior to 2018, excluding any Grandfathered Amounts.

1.13 "Incentive Compensation" means cash compensation earned pursuant to the Incentive Compensation Plans.

1.14 "Incentive Compensation Plans" means the Partners Incentive Plan, the Management Performance Plan and/or any other bonus program defined by the Company to be included.

1.15 "Initial Plan Year" means the eight-consecutive-month period commencing on the original effective date and ending on December 31, 1998.

1.16 "Investment Committee" means the Employee Benefit Investment Committee of the Company, as constituted from time to time, which has the investment responsibilities specifically assigned to it under Article IV.

1.17 "Key Employee" means a Participant who is a "specified employee" within the meaning of Code Section 409A(a)(2)(B)(i). The Company's Key Employees shall be identified annually pursuant to Section 5.7.

1.18 "Normal Retirement Age" means age 65, provided that in the case of an individual who commences participation in the Pension Plan after his sixtieth (60^{th}) birthday, the individual's "Normal Retirement Age" shall mean his age on the earlier of (i) the fifth (5^{th}) anniversary of the date the individual commenced participation in the Pension Plan, or (ii) the date the individual completes five (5) years of "Vesting Service," as defined under the Pension Plan.

1.19 "Participant" means an employee of the Company (a) who resides in the United States or is a United States expatriate on temporary foreign assignment, (b) who is eligible to participate in the Plan in accordance with Article II and (c) who has a Deferred Compensation Account under the Plan; provided, that the following shall not be considered Participants: (i) an employee employed by any office or branch of the Company located in a foreign country who, as to the United States, is a nonresident alien, and (ii) an employee who (A) as to the United States, is a foreign national, (B) is working for the Company at a location located in the United States, and (C) is covered by a retirement plan sponsored by a non-U.S. affiliate of the Corporation in the country in which that affiliate is located.

1.20 "Pension Plan" means The Northern Trust Company Pension Plan, as amended from time to time.

1.21 "Plan" means the Northern Trust Corporation Deferred Compensation Plan, as amended from time to time.

1.22 "Plan Year" means the calendar year.

1.23 "Postponed Retirement Age" means the Participant's age after Normal Retirement Age when such Participant incurs a Break in Service.

1.24 "Related Company" means any person with whom the Company is considered to be a single employer under Section 414(b) of the Code and all persons with whom the Company would be considered a single employer under Code Section 414(c), substituting 50% for the 80% standard that would otherwise apply.

1.25 "Retirement Deferral" means the category of deferral described in Section 5.1(a).

1.26 "Retirement Date" means the date, if any, of the Participant's Separation from Service after reaching the Participant's Normal, Early or Postponed Retirement Age.

1.27 "Retirement Distribution Date" means the last business day of the 12 th month following the month in which the Participant's Retirement Date occurs.

1.28 "Separation from Service" means a Participant's termination of employment with the Company for any reason other than death. A termination of employment will be deemed to occur when the Company and the Participant reasonably anticipate that the level of bona fide services the Participant will perform for the Company (whether as an employee or an independent contractor, but not as a director) after a certain date will permanently decrease to less than 50 percent of the average level of bona fide services performed by the Participant for the Company (as an employee or independent contractor, but not as a director) in the immediately preceding 36 months (or the full period of the Participant's services to the Company if the Participant has been providing services to the Company for less than 36 months), determined in accordance with Treas. Reg. Sec. 1.409A-1(h). The employment relationship will be treated as continuing intact while the Participant is on a bona fide leave of absence (determined in accordance with Treas. Reg. Sec. 1.409A-1(h)), but (a) only if there is a reasonable expectation that the Participant will return to active employment status, and (b) only to the extent that such leave of absence does not exceed 6 months, or, if longer, for so long as the Participant has a statutory or contractual right to reemployment. For purposes of this Section 1.28, references to the Company shall include the Company and all Related Companies.

1.29 Short-Term Deferral means the category of deferral described in Section 5.1(b).

1.30 "Short-Term Distribution Date" means the last business day of January of any Plan Year as provided under Section 5.1 of the Plan and as irrevocably set forth in each of the Participant's Short-Term Deferral election forms.

ARTICLE II
ELIGIBILITY

2.1 Conditions for Deferrals for 1998 and 1999 Incentive Compensation Payments . For Incentive Compensation which otherwise would be paid during the 1998 or 1999 Plan Years, an employee of the Company who participates in an Incentive Compensation Plan and (i) whose Assigned Base Salary, determined as of April 1, 1998, is at least $100,000, or (ii) whose Assigned Base Salary determined as of April 1, 1998 plus Incentive Compensation paid under the Incentive Compensation Plans during the period commencing on April 1, 1997 and ending on March 31, 1998 is at least $150,000, shall be eligible to defer Incentive Compensation under the Plan.

2.2 Conditions for Deferrals in Subsequent Plan Years . For Plan Years beginning after 1999 and prior to 2018, the Plan required that the Participant's Assigned Base Salary or Assigned Based Salary plus Incentive Compensation meet certain dollar thresholds described in the Plan. For Incentive Compensation attributable to services performed in the 2018 Plan Year and each subsequent Plan Year, an employee of the Company who participates in an Incentive Compensation Plan for such year and whose Assigned Base Salary, determined as of November 15 immediately preceding the Participant's deferral election made under Section 3.2 below with respect to such year, is at least $165,000 (or such other amount as the Committee from time to time determines) shall be eligible to defer Incentive Compensation under the Plan for such year.

ARTICLE III
DEFERRAL OPPORTUNITY

3.1 Amount Which May Be Deferred . Each Participant may elect to defer all or a portion of his or her annual Incentive Compensation as determined by the Committee; provided, however, the amount of each deferral for each payment of Incentive Compensation shall be at least $2,500. Participants shall always be one hundred percent (100%) vested in the amount they defer.

3.2 Deferral Election . Participants shall make the election to defer Incentive Compensation under the Plan on a Deferral Election Form within such dates as the Committee from time to time establishes; provided, that any such election must be made on or before December 31 of the Participant's taxable year preceding the taxable year in which the Participant performs the services that give rise to the Incentive Compensation to be deferred. Participants shall make the following determinations on each Deferral Election Form, which determinations shall become irrevocable on December 31 of the Plan Year in which the election is made (or such earlier date in that Plan Year as the Committee may determine):

(a) the amount to be deferred with respect to the Participant's Incentive Compensation to which the election applies pursuant to the terms of Sections 3.1 and 3.2 herein;

(b) with respect to the automatic Retirement Deferral election described in Section 5.1(a), the date as of which payments are to commence in accordance with Section

5.1(a) and the form in which such benefits are to be paid in accordance with Section 5.2, subject to the terms and conditions of Article V; and

(c) if the Participant is making an optional Short-Term Deferral election described in Section 5.1(b), the Short-Term Distribution Date on which such Short-Term Deferral is to be paid in accordance with and subject to the terms and conditions of Article V.

3.3 Partial Year Employment and Initial Election . An employee who commences employment with the Company after the beginning of a Plan Year shall not be permitted to make an election to defer Incentive Compensation attributable to services performed in such Plan Year. Further, an employee who commences employment with the Company after November 15 of any Plan Year (or such other date as the Company may determine in its sole discretion) shall not be eligible under Section 2.2 to defer Incentive Compensation attributable to services performed in the subsequent Plan Year.

3.4 Disability or Other Absence . Subject to Section 5.1(d), if the Participant experiences a disability, all previous Deferral Elections will remain in force unless the Committee, in its sole discretion, determines that the Participant has incurred an unforeseeable emergency pursuant to Section 5.3 of the Plan, in which case it will waive, upon the Participant's request, such election(s). Subject to the foregoing, if the Participant takes a paid or unpaid leave of absence, all previous Deferral Elections will remain in full force.

ARTICLE IV
INVESTMENT OF DEFERRED INCENTIVE COMPENSATION

4.1 Investment Options/Earnings Credited to Participant Accounts. The Deferred Compensation Account of each Participant shall be a notional account. All amounts credited to such accounts shall be bookkeeping entries only. The Investment Committee may permit Participants to select among certain investment alternatives designated by the Investment Committee, and amounts credited to Participant Deferred Compensation Accounts shall be treated as if they were invested in such investment alternatives and shall be credited with earnings based on the performance of such investment alternatives.

4.2 A Participant may transfer amounts credited to the Particpant's Deferred Compensation Account among the investment alternatives specified by the Investment Committee in accordance with such rules and requirements as established by the Investment Committee on a uniform and nondiscriminatory basis. Transfers among investment alternatives shall generally be made effective on the business day following the business day a transfer election is filed, subject to the Investment Committee's discretion to suspend transfers in the event of market disruption or such other factor that the Investment Committee deems relevant.

4.3 Participant Statements . Statements that identify the Participant's Deferred Compensation Account balance shall be provided, or made available, to Participants no less frequently than annually.

4.4 Notwithstanding anything in the Plan to the contrary, for a period of two years after the date of an occurrence of a Change in Control, neither the Investment Committee, nor the Company or Corporation or any successor of any of the foregoing, shall eliminate any of the investment alternatives and elections that were in effect immediately prior to the Change in Control and shall not decrease the frequency with which Participants may change investment elections. Notwithstanding the foregoing, in the event that an investment alternative is discontinued by its sponsor and therefore becomes unavailable to Participants, the Investment Committee or its successor shall provide a substitute alternative with substantially similar investment objectives and policies.

4.5 Valuation of Deferred Compensation Accounts . Participants' Deferred Compensation Accounts shall be valued as of each business day.

ARTICLE V
DISTRIBUTIONS AND LIMITS ON DISTRIBUTIONS

5.1 Deferral Period . Pursuant to Section 3.2, each Participant shall irrevocably elect the Deferral Period for the Incentive Compensation payments deferred in any Plan Year, as described below:

(a) *Automatic Retirement Deferral Election* . Subject to Section 5.1(b), each Participant shall be deemed to irrevocably elect, with respect to the Incentive Compensation payments deferred in any Plan Year under Section 3.2, a Retirement Deferral, pursuant to which payments under the Plan shall commence, provided that the Participant incurs a Retirement Date and subject to Section 5.6, (i) either (A) within sixty (60) days of the Participant's Retirement Date, or (B) on the Retirement Distribution Date, and (ii) in the form elected by the Participant in accordance with Section 5.2 of the Plan, each as elected by the Participant in accordance with Section 3.2 (provided, however, that payments must commence in accordance with clause (i)(B) of this Section 5.1(a) if the Participant elects to receive payment in the form provided under Section 5.2(b)). Any election by the Participant to defer Incentive Compensation under Section 3.2 and this Section 5.1 shall not be effective unless the Participant completes the elections described in clauses (i) and (ii) of this Section 5.1(a).

(b) *Optional Short-Term Deferral Election* . In addition to the automatic Retirement Deferral election described in Section 5.1(a), each Participant may also irrevocably elect, with respect to the Incentive Compensation payments deferred in any Plan Year, a Short-Term Deferral, pursuant to which payments under the Plan shall commence only in the form provided under Section 5.2(a) of this Plan on any Short-Term Distribution Date elected by the Participant, provided that such Short-Term Distribution Date shall be no earlier than the Short-Term Distribution Date that is subsequent to three (3) Plan Years following the end of the Plan Year in which the Incentive

Compensation would have otherwise been paid to the Participant [1], and provided that such Short-Term Distribution Date occurs prior to the Participant's Separation from Service. In all events, if a Participant's Separation from Service occurs prior to the Participant's Short-Term Distribution Date, the Participant's Incentive Compensation will be distributed in accordance with Section 5.1(a) or Section 5.1(d), as applicable.

(c) Notwithstanding anything in the Plan to the contrary, Incentive Compensation paid after a Participant's Retirement Date, other Separation from Service or death, is not eligible for deferral and will not be deferred, regardless of the Participant's prior Deferral Election.

(d) Notwithstanding any Deferral Period(s) elected by a Participant pursuant to Section 3.2(b) or 3.2(c), as applicable, and this Section 5.1, and subject to Section 5.6, if a Participant has a Separation from Service prior to Early Retirement Age and prior to the Short-Term Distribution Date, if any, elected by the Participant in accordance with Section 5.1(b),

(i) such Participant shall be paid out of the Plan in one (1) lump sum in cash within sixty (60) days after such Separation from Service; or

(ii) (A) with respect to a Participant's 409A Amount, if the Participant has been on disability leave for a period of six (6) months and the Participant does not retain a right to reemployment under an applicable statute or by contract, such Participant's 409A Amount shall be paid out of the Plan in one (1) lump sum in cash within sixty (60) days after such six (6) month disability period has elapsed; and

(B) with respect to a Participant's Grandfathered Amount, if any, if the Participant has been on disability leave for a period of twelve (12) months, such Participant's Grandfathered Amount shall be paid out of the Plan in one (1) lump sum in cash within sixty (60) days after such twelve (12) month disability period has elapsed.

For purposes of this Section 5.1(d), the amount distributed shall be an amount equal to the value of the Participant's Deferred Compensation Account on the last business day of the month preceding the date of payment.

[1] Example: Incentive Compensation earned with respect to services performed in 2018 would normally be paid in February of 2019. A Short Term Deferral with respect to this amount would have to be filed by December 31, 2017, and would have to defer receipt until the Distribution Date in February 2023 as that is the Distribution Date that is subsequent to the three Plan Year (2020, 2021 and 2022) following the Plan Year in which the Incentive Compensation would be paid.

5.2 Payment of Deferred Amounts. Subject to Section 5.6(d), payment of a Participant's Deferred Compensation Account under the Plan shall be made in cash in one of the following forms irrevocably elected by the Participant pursuant to Sections 3.2(b) and 5.1:

(a) *Lump Sum Payment*. Payments shall be made in one (1) lump sum in an amount equal to the value of the Participant's Deferred Compensation Account (i) in the case of payment pursuant to an election made under Sections 3.2(b) and 5.1(a)(i)(A), on the last business day of the month preceding the date of payment; (ii) in the case of payment pursuant to an election to commence payment under Sections 3.2(b) and 5.1(a)(i)(B) in the form of a lump sum, on the Retirement Distribution Date; and (iii) in the case of payment pursuant to an election made under Section 5.1(b) on the Short-Term Distribution Date.

(b) *Installment Payments*. Payments shall be made in either five (5) or ten (10) annual installments, as irrevocably elected by the Participant. Subject to Section 5.6, the initial payment shall be made on the Retirement Distribution Date. The remaining installment payments shall be made in the form of cash each year thereafter on the anniversary date of the Retirement Distribution Date (notwithstanding any delay of an initial payment due to the application of Section 5.6), until the Participant's entire Deferred Compensation Account has been paid. The amount of each installment payment shall be equal to value of the Participant's Deferred Compensation Account on the Retirement Distribution Date or anniversary date thereof. as applicable (or if that day is not a business day, then on the immediately preceding business day), multiplied by a fraction, the numerator of which is one (1), and the denominator of which is the number of installment payments remaining.

For purposes of this Plan, an amount shall be deemed distributed on the Short-Term Distribution Date, Retirement Distribution Date or the anniversary of a Retirement Distribution Date, as applicable, if it is distributed no later than the last day of the calendar year in which such applicable date occurs or, if later, by the 15th day of the third calendar month after such applicable date occurs, subject to and in accordance with the provisions of Treasury Regulation section 1.409A-3(d), including without limitation the requirement that the employee shall in no event have the right directly or indirectly to designate the taxable year of payment.

5.3 Unforeseeable Emergency. The Committee shall have the sole authority to alter the timing or manner of payment of amounts from a Participant's Deferred Compensation Account in the event that the Participant establishes, to the satisfaction of the Committee that the Participant has experienced an unforeseeable emergency, as defined in Treas. Reg. Sec. 1.409A-3(i)(3)(i). In such event, the Committee may, upon the request of the Participant:

(a) Provide that all or a portion of the amount previously deferred by the Participant immediately shall be paid to the Participant in a lump sum payment; or

(b) Provide that all or a portion of the installments payable over a period of time immediately shall be paid to the Participant in a lump sum payment.

However, the amount distributed pursuant to this Section 5.3 shall not exceed the amount that is reasonably necessary for the Participant to satisfy the emergency need at the time of distribution, as determined by the Committee in its sole discretion. In determining the amount reasonably necessary to satisfy a Participant's emergency need, the Committee must take into account any additional compensation that is available to the Participant if the Committee has waived the Participant's previous Deferral Elections upon the Participant's request pursuant to Section 3.4.

The Committee shall determine whether the Participant has experienced an unforeseeable emergency based on the relevant facts and circumstances. An unforeseeable emergency will be deemed to exist in the event of an illness or accident of the Participant or the Participant's dependent (as defined in Section 152(a) of the Code, without regard to Sections 152(b)(1), (b)(2) and (d)(1)(B)), loss of the Participant's property due to casualty, or other similar unforeseeable and extraordinary circumstances arising as a result of events beyond the control of the Participant. The Committee's decision with respect to whether the Participant has experienced an unforeseeable emergency and the manner in which, if at all, the payment of deferred amounts shall be altered or modified, shall be final, conclusive, and not subject to appeal.

Notwithstanding anything in this Section 5.3 to the contrary, no amounts may be distributed on account of this Section 5.3 if such unforeseeable emergency may be relieved:

(i) Through reimbursement or compensation by insurance or otherwise;

(ii) By liquidation of the Participant's assets, to the extent the liquidation of such assets would not itself cause severe financial hardship; or

(iii) By cessation of deferrals under the Plan.

5.4 Maximum Deductible Amount. An amount that would otherwise be paid from the Deferred Compensation Account of a Participant in a given Plan Year may be delayed to the extent that the Company reasonably anticipates that if the payment were made as scheduled the Company's deduction with respect to such payment would not be permitted due to the application of Code Section 162(m). Subject to the first sentence of Section 5.5, amounts not paid as a result of the above limitation shall be paid in the earlier of (a) the Company's first taxable year in which the Company reasonably anticipates that if the payment is made during such year the deduction of such payment will not be barred by application of Section 162(m), or (b) the period beginning with the date of the Participant's Separation from Service or death, and ending on the later of (i) the last day of the taxable year of the Company in which the Participant incurs a Separation from Service or dies, or (ii) the 15th day of the third month following the Participant's Separation from Service or death.

5.5 Death of Participant. A Participant, who at the time of his death is employed by the Company or any Related Company and who dies before a complete distribution of his Deferred Compensation Account has been made to him, or who has a Separation from Service and subsequently dies before a complete distribution of his Deferred Compensation Account has been paid to him, shall have his remaining Deferred Compensation Account distributed in cash in one (1) lump sum to his Beneficiary. Such distribution shall be made any time during the period beginning on the date of death and ending on December 31 of the first calendar year following the calendar year in which the Participant's death occurs.

5.6 Limits on Distributions to Key Employees. Anything in the Plan to the contrary notwithstanding, including without limitation Section 5.3, if a Participant is a Key Employee, any distribution of a 409A Amount to such Participant due to the Participant's Separation from Service that would otherwise be made during the six months following such Separation from Service shall in no event be made earlier than the earlier of (i) the date that is six months and one day following such Separation from Service, or (ii) the Participant's death.

5.7 Annual Identification of Key Employees. The Specified Employee Identification Date, as defined in Treas. Reg. Sec. 1.409A-1(i)(3), to be used in determining Key Employees of the Company shall be September 30 of any Plan Year. The January 1 of the Plan Year next following that Plan Year shall be the Specified Employee Effective Date, as defined in Treas. Reg. Sec. 1.409A-1(i)(4), for Participants identified as Key Employees on the immediately preceding Specified Employee Identification Date. Participants identified as Key Employees on a Specified Employee Identification Date (September 30) shall be treated as Key Employees under the Plan for the 12-month period beginning on the Specified Employee Effective Date (January 1) next following such Specified Employee Identification Date.

5.8 Grandfathered Amount. Notwithstanding anything herein to the contrary, a Participant's Grandfathered Amount, if any, shall be paid at the time and in the form determined under the Plan as in effect October 3, 2004.

5.9 409A Amounts Attributable to Service Prior to 2018. Notwithstanding anything herein to the contrary, a Participant's 409A amounts attributable to services performed prior to 2018 shall be paid at the time and in the form determined under the Plan as in effect prior to November 1, 2017, which are described in Supplement 2; provided, however that amounts payable on account of the death of Participant shall be paid in accordance with Section 5.5

ARTICLE VI
ADMINISTRATION OF THE PLAN

6.1 Terms Include Authorized Delegates. Where appropriate, the terms "Company," "Corporation," "Committee" or "Investment Committee" as used in this Plan shall also include any applicable subcommittee or any duly authorized delegate of the Company, the Corporation, the Committee or the Investment Committee, as the case may be. Such duly authorized delegate may be an individual or an organization within the Company, the Corporation, the Committee or the Investment Committee, or may be an unrelated third party individual or organization.

6.2 Authority of the Committees. The Committee shall administer the Plan and shall have full power to select employees for participation in the Plan and to determine the terms and conditions of each employee's participation; to construe and interpret the Plan and any agreement or instrument entered into hereunder; and to establish, amend, or waive rules and regulations for the Plan's administration. Further, the Committee shall have full power to make any other determination which may be necessary or advisable for the Plan's administration. The Investment Committee shall have those powers set forth in Section 4.1 of the Plan.

6.3 Decisions Binding. Subject to the provisions of Article VII, all determinations and decisions made by the Committee or the Investment Committee pursuant to the provisions of the Plan, and all related orders, resolutions or actions of the Board, the Compensation and Benefits Committee of the Board, the Chief Executive Officer of the Corporation or the Executive Vice President and Human Resources Department Head of the Corporation (or the duly authorized designee of either of the latter two individuals) shall be final, conclusive, and binding on all persons, including the Company, its stockholders, employees, Participants, and their estates and beneficiaries.

ARTICLE VII
AMENDMENT OR TERMINATION

7.1 Amendment or Termination. The Corporation has set no termination date for the Plan but reserves the right to amend or terminate the Plan when, in the sole discretion of the Corporation, such amendment or termination is advisable.

(a) Any such termination shall be made by action of the Compensation and Benefits Committee of the Board (or by action of the Board if the Compensation and Benefits Committee is unavailable or unable to act for any reason) and shall be effective as of the date set forth in such resolution.

(b) Any such amendment shall be made in accordance with the following:

(i) material amendments to the Plan shall be made by action of the Compensation and Benefits Committee of the Board (or by action of the Board, if the Compensation and Benefits Committee is unavailable or unable to act for any reason); and

(ii) (A) non-material or administrative amendments to the Plan or (B) any amendment to the Plan deemed required, authorized or desirable under applicable statutes, regulations or rulings, shall be made by action of either the Chief Executive Officer of the Corporation or the Executive Vice President and Human Resources Department Head of the Corporation (or either of their duly authorized designees).

7.2 Effect of Amendment or Termination. No amendment or termination of the Plan shall directly or indirectly reduce the balance of any deferred compensation held hereunder as of the effective date of such amendment or termination. Upon termination of the Plan, distribution of amounts in a Participant's Deferred Compensation Account shall be made to him or his Beneficiary in the manner and at the time described in Article V of the Plan. No additional credits shall be made to the Deferred Compensation Account of a Participant for any Plan Year beginning after the termination of the Plan, but the Company shall continue to credit gains and losses attributable to investments made pursuant to Section 4.1 to such Deferred Compensation Account until the balance of such Account has been fully distributed to the Participant or his Beneficiary.

7.3 Amendments Necessary to Satisfy Code Section 409A. Anything in the preceding Sections 7.1 or 7.2 or elsewhere in the Plan to the contrary notwithstanding:

(a) the Plan may be amended in any manner necessary to ensure that the Plan complies in all applicable respects with Code Section 409A; and

(b) the Plan may not be amended in any manner that would cause the Plan to fail to comply in any applicable respect with Code Section 409A.

ARTICLE VIII
GENERAL PROVISIONS

8.1 Plan Unfunded / Participant's Rights Unsecured. The Plan at all times shall be entirely unfunded and no provision shall at any time be made with respect to segregating any assets of the Company for payment of any benefits hereunder. The Company shall contribute assets to a rabbi trust described in Revenue Procedure 92-64 (the "Trust") for the purpose of paying benefits under this Plan, and if and to the extent that the Company does so, benefits under the Plan shall be payable pursuant to and in accordance with the Trust Agreement, which shall in all events provide that all assets held thereunder remain subject to the claims of the general creditors of the Company. No Participant, Beneficiary or any other person shall have any interest in any particular assets of the Company or the Trust by reason of the right to receive a benefit under the Plan and any such Participant, Beneficiary or other person shall have only the rights of a general unsecured creditor of the Company with respect to any rights under the Plan and Trust Agreement.

8.2 Tax Withholding. In connection with any deferral under the Plan, the Company shall have the right to withhold from nondeferred Incentive Compensation amounts or other compensation available at the time of the award an amount sufficient to satisfy the FICA tax withholding requirements applicable to such deferrals, or to require the Participant to remit to the Company an amount sufficient to satisfy the tax obligation. In connection with any distribution to the Participant of deferred Incentive Compensation, the Company shall have the right to withhold from such distribution an amount sufficient to satisfy Federal, State, and local tax withholding requirements applicable to such distributions.

8.3 No Guaranty of Benefits. Nothing contained in the Plan shall constitute a guaranty by the Company or any other person or entity that the assets of the Company will be sufficient to pay any benefit hereunder.

8.4 No Enlargement of Employee Rights. No Participant shall have any right to receive a distribution of contributions made under the Plan except in accordance with the terms of the Plan. Establishment of the Plan shall not be construed to give any Participant the right to be retained in the service of the Company.

8.5 Spendthrift Provision. No interest of any person or entity in, or right to receive a distribution under, the Plan shall be subject in any manner to sale, transfer, assignment, pledge, attachment, garnishment, or other alienation or encumbrance of any kind; nor may such interest or right to receive a distribution be taken, either voluntarily or involuntarily, for the satisfaction of the debts of, or other obligations or claims against, such person or entity, including claims for alimony, support, separate maintenance and claims in bankruptcy proceedings.

8.6 Applicable Law. To the extent not preempted by Federal law, the Plan shall be construed and administered under the laws of the State of Illinois.

8.7 Incapacity of Recipient. If any benefit under the Plan shall be payable to a minor or a person not adjudicated incompetent but who, by reason of illness or mental or physical disability, is, in the opinion of the Committee, unable to properly manage his affairs, such benefit shall be paid in such of the following ways as the Committee deems best: (a) to the person directly; (b) in the case of a minor, to a custodian under any Uniform Gift to Minors Act for the person; or (c) to the person's spouse, adult child or blood relative. Any benefit so paid shall be a complete discharge of any liability of the Company and the Plan therefor.

8.8 Successors. The Plan shall not be automatically terminated by a transfer or sale of assets of the Corporation or by the merger or consolidation of the Corporation into or with any other corporation or other entity, but the Plan shall be continued after such sale, merger or consolidation only if and to the extent that the transferee, purchaser or successor entity agrees to continue the Plan. In the event that the Plan is not continued by the transferee, purchaser or successor entity, then the Plan shall terminate subject to the provisions of Section 7.2.

8.9 Unclaimed Benefit. Each Participant shall keep the Committee informed of his current address and the current address of his designated Beneficiary. None of the Corporation, the Company or the Committee shall be obligated to search for the whereabouts of any person. If the Committee is unable to locate the Participant or any Beneficiary of the Participant, then none of the Corporation, the Company or the Plan shall have any further obligation to pay any benefit hereunder to such Participant or Beneficiary and such benefit shall be forfeited; provided, however, that if the Participant or Beneficiary makes a valid claim for any benefit that has been forfeited, the forfeited benefit shall be reinstated.

8.10 Electronic or Telephonic Notices. Any election, notice, direction or other such action required or permitted to be made in writing under the Plan may also be made electronically, telephonically or otherwise, to the extent then permitted by applicable law and the administrative rules prescribed by the Committee.

8.11 Limitations on Liability. Notwithstanding any of the preceding provisions of the Plan, neither the Company, any member of the Committee or the Investment Committee nor any individual acting as an employee or agent of the Company, the Committee or the Investment Committee shall be liable to any Participant, former Participant, Beneficiary or any other person for any claim, loss, liability or expense incurred in connection with the Plan.

8.12 Gender; Headings. Words in the masculine gender shall include the feminine and the singular shall include the plural, and vice versa, unless qualified by the context. Any headings used herein are included for ease of reference only, and are not to be construed so as to alter the terms hereof.

8.13 Compliance with Code Section 409A. The Plan is intended to comply in all applicable respects with the requirements of Code Section 409A and shall be construed and administered so as to comply with that Code section.

IN WITNESS WHEREOF, Northern Trust Corporation has caused this amendment and restatement of the Plan to be executed on its behalf by its duly authorized officer this ___ day of October, 2017, effective as of November 1, 2017 (or as of such other dates as are noted herein).

NORTHERN TRUST CORPORATION

By: /s/Kathryn A. O'Neill
Name: Kathryn A. O'Neill
Title: Senior Vice President, Compensation, Benefits and Global Mobility

SUPPLEMENT #1

Special 2005 Deferral Election Cancellations

This Supplement #1 to the Northern Trust Corporation Deferred Compensation Plan, as amended and restated effective November 1, 2017 (the "Plan"), is made a part of the Plan and supersedes any provisions thereof to the extent that they are not consistent with this Supplement. Unless the context clearly implies or indicates to the contrary, a word, term or phrase used or defined in the Plan is similarly used or defined for purposes of this Supplement #1.

1. Effective Date . January 1, 2005.

2. Application . This Supplement #1 shall apply to:

(a) Any Participant who, prior to February 28, 2005, requested the cancellation of the Participant's previous election to defer all or a portion of the cash award payment of Incentive Compensation scheduled to be made to the Participant on February 28, 2005;

(b) Any Participant who previously elected to defer all or a portion of the cash award payment of Incentive Compensation scheduled to be made to the Participant in the Plan Year beginning January 1, 2005 (the "2005 Plan Year") and whose 2005 Plan Year payment schedule for such Incentive Compensation was changed from annual to quarterly after such deferral election had been made;

(individually, a "Special Election Cancellation Participant" and, collectively, the "Special Election Cancellation Participants"); and

(c) Any Participant who would be considered a "specified employee" as defined in proposed regulation section 1.409A-1(i) issued by the U.S. Treasury Department and the Internal Revenue Service; who terminates employment for any reason on or after the Effective Date of this Supplement #1 and on or before October 31, 2005 (individually, a "2005 Specified Employee Participant" and, collectively, the "2005 Specified Employee Participants").

3. Special Provision . The following special provision shall apply to the Special Election Cancellation Participants:

Special 2005 Deferral Election Cancellation : Pursuant to and in accordance with Notice 2005-1 and proposed regulations under Code section 409A issued by the U.S. Treasury Department and the Internal Revenue Service, each Special Election Cancellation Participant shall have the opportunity to cancel a previous election to defer all or a portion of the cash award payment of Incentive Compensation for the 2005 Plan Year described in Paragraph 2(a) or (b) above, by executing and delivering to the Company a cancellation of the Participant's previous election to defer, in the form prescribed by the Company, subject to the requirements specified in paragraphs 4 and 6 below. Any amount the deferral of which is cancelled in accordance with this Paragraph 3 shall be distributed no later than December 31, 2005, or the date such amount becomes vested, if later.

4. Special Election Deadline . To be effective, the election cancellation referred to in Paragraph 3 above must be executed and delivered to the Company by the Special Election Cancellation Participant on or before the date specified by the Company that is after the Effective Date of this Supplement #1, but no later than December 1, 2005.

5. Special Provision . The following special provision will apply to the 2005 Specified Employee Participants:

Special 2005 Termination of Participation : Pursuant to and in accordance with Notice 2005-1 and proposed regulations under Code section 409A issued by the U.S. Treasury Department and the Internal Revenue Service, each 2005 Specified Employee Participant shall be considered to have terminated participation in the Plan with respect to any amounts that would otherwise be subject to Code section 409A, effective as of the date such 2005 Specified Employee Participant terminated employment with the Company. Anything in the Plan to the contrary notwithstanding, such amounts shall be distributed in a lump sum distribution to such 2005 Specified Employee Participant no later than December 31, 2005, or the date such amounts become vested, if later.

6. Limitations on Supplement . Nothing in this Supplement #1 shall be construed to provide any Special Election Cancellation Participant or 2005 Specified Employee Participant with any rights or benefits under the Plan other than those described in Paragraphs 3 through 5, as applicable, above.

SUPPLEMENT #2

Summary of Distribution Provisions
Applicable to a Participant's 409A Amount attributable to services prior to 2018

The following summarizes and in some cases reproduces the principal provisions applicable to the payment of a Participant's 409A Amount attributable to services performed prior to 2018, if any. To the extent that there is any conflict between this summary and the terms of the Plan as in effect prior to November 1, 2017, the pre-November 1, 2017 terms of the Plan control. References in the provisions below to a Participant's "409Amount" refer to the Participant's 409A Amount attributable to services performed prior to 2018.

1. "Distribution Date" was defined under the pre-November 1, 2017 Plan as the last business day of February of any Plan Year as provided under Section 5.1 of the Plan and as irrevocably set forth in each of the Participant's Deferral Election forms.

2. Deferral Election. Section 3.2 of the Plan provided that Participants "shall make the election to defer Incentive Compensation under the Plan on a Deferral Election Form by such dates as the Committee from time to time establishes; provided, that any such election must be made on or before December 31 of the Participant's taxable year preceding the taxable year in which the Participant performs the services that give rise to the Incentive Compensation to be deferred. Participants shall make the following determinations on each Deferral Election Form, which determinations shall become irrevocable on December 31 of the Plan Year in which the election is made (or such earlier date in that Plan Year as the Committee may determine):

    (a) The amount to be deferred with respect to the Participant's Incentive Compensation paid during the Plan Year for which the election applies, pursuant to the terms of Section 3.1 herein;

    (b) The deferral period after which payments of deferred amounts commence (the "Deferral Period"), pursuant to the terms of Section 5.1 herein; and

    (c) The form of the payment of the deferred amount, pursuant to the terms of Section 5.2 herein.

3. Article V described the payment provisions applicable to Retirement Deferrals and Short- Term Deferrals. Under the pre-November 1, 2017 Plan, Retirement Deferrals were not automatic. Sections 5.1 and 5.2 provided:

    "5.1 Deferral Period . Pursuant to Section 3.2, each Participant shall irrevocably elect the Deferral Period for the Incentive Compensation payments deferred in any Plan Year; provided that the Deferral Period elected by a Participant shall be either a Short-Term Deferral (as provided under Section 5.1(a)) or a Retirement Deferral (as provided under Section 5.1(b)).

(a) If the Participant elects a Short-Term Deferral, payments under the Plan shall commence only in the form provided under Section 5.2(a) of this Plan on any Distribution Date elected by the Participant; provided that such Distribution Date shall be no earlier than the Distribution Date that is subsequent to three (3) Plan Years following the end of the Plan Year in which the Incentive Compensation would have otherwise been paid to the Participant.

(b) Subject to Section 5.6, if the Participant elects a Retirement Deferral, payments under the Plan shall commence following the Participant's Separation from Service after reaching the Participant's Normal, Early or Postponed Retirement date, as such dates are defined in the Pension Plan (such Separation from Service in those circumstances referred to as a "Retirement Date"), provided that payments under the Plan shall commence, as elected by the Participant in accordance with Section 3.2, either (i) within sixty (60) days of the Participant's Retirement Date or (ii) on the Distribution Date immediately following the Plan Year in which the Participant's Retirement Date occurs (provided that payments must commence under (ii) if the Participant elects to receive the payments in the form provided under Section 5.2(b) of the Plan).

(c) Notwithstanding anything in the Plan to the contrary, Incentive Compensation paid after a Participant's Retirement Date or other Separation from Service is not eligible for deferral and will not be deferred, regardless of the Participant's prior Deferral Election.

(d) Notwithstanding any Deferral Period(s) elected by a Participant pursuant to Section 3.2(b) and this Section 5.1, and subject to Section 5.6, if at any time before the end of the elected Deferral Period,

(i) a Participant incurs a Separation from Service, such Participant shall be paid out of the Plan in one (1) lump sum in cash within sixty (60) days after such Separation from Service; or

(ii) (A) with respect to a Participant's 409A Amount, the Participant has been on disability leave for a period of six (6) months, such Participant's 409A Amount shall be paid out of the Plan in one (1) lump sum in cash within sixty (60) days after such six (6) month disability period; and

(B) with respect to the Participant's Grandfathered Amount, if any, the Participant has been on disability leave for a period of twelve (12) months, such Participant's Grandfathered Amount shall be paid out of the Plan in one (1) lump sum in cash within sixty (60) days after such twelve (12) month disability period.

5.2 Payment of Deferred Amounts. Payment of a Participant's Deferred Compensation Account under the Plan shall be made in cash in one of the following forms irrevocably elected by the Participant pursuant to Sections 3.2(b) and 5.1:

(a) *Lump Sum Payment*. Payments will be made in one (1) lump sum.

(b) *Installment Payments*. Payments will be made in either five (5) or ten (10) annual installments, as irrevocably elected by the Participant. Subject to Section 5.6, the initial payment shall be made on the Distribution Date following the Participant's Retirement Date. The remaining installment payments shall be made in the form of cash each year thereafter (on each anniversary date of the initial payment), until the Participant's entire Deferred Compensation Account has been paid. The amount of each installment payment shall be equal to the value of the the Participant's Deferred Compensation Account on the last business day of January immediately prior to each such payment, multiplied by a fraction, the numerator of which is one (1), and the denominator of which is the number of installment payments remaining.

All benefits hereunder shall be paid from the Trust, as further described in Article IV."

Exhibit 10.11

NORTHERN TRUST CORPORATION
2018 NON-EMPLOYEE DIRECTOR DEFERRED COMPENSATION PLAN

1. **Purpose** . The purpose of the Northern Trust Corporation 2018 Non-Employee Director Deferred Compensation Plan is to provide non-employee members of the Board of Directors of Northern Trust Corporation, a Delaware corporation (the " Corporation "), with the opportunity to elect to defer all or a portion of (i) the cash retainer fees otherwise payable to them by the Corporation into deferred stock units and (ii) the restricted stock units granted to them by the Corporation. This Plan shall replace the Northern Trust Corporation 1997 Deferred Compensation Plan for Non-Employee Directors for calendar years beginning on or after January 1, 2018.

2. **Definitions** . For purposes of the Plan:

(a) **" Account "** shall mean the separate account maintained on the books of the Corporation for each Participant pursuant to Section 7 , consisting of the Cash Retainer Sub-Account and the RSU Sub-Account.

(b) **" Board "** shall mean the Board of Directors of the Corporation.

(c) **" Committee "** shall mean the Compensation and Benefits Committee of the Board, or a subcommittee thereof, or such other committee designated by the Board to administer the Plan.

(d) **" Common Stock "** shall mean the common stock, par value $1.66 2/3 per share, of the Corporation, and all rights appurtenant thereto.

(e) **" Deferred Stock Units "** shall mean deferred stock units credited to a Participant's Account pursuant to elections by the Participant under Sections 5 and 6 .

(f) **" Director "** shall mean any member of the Board who is not an employee of the Corporation or any of its subsidiaries or affiliates; provided , however , an individual who is serving as an advisory director pursuant to the appointment and designation as such by the Board and who is not an employee of the Corporation or any subsidiary or affiliate of the Corporation shall not be a Director for purposes of the Plan and shall not be eligible to defer compensation under the Plan.

(g) **" Effective Date "** shall mean December 31, 2017.

(h) **" Fair Market Value "** means as of any date the closing price of the Common Stock as reported on the NASDAQ Stock Market for that date or, if no closing price is reported for that date, the closing price on the next preceding date for which a closing price is reported, unless otherwise determined by the Committee.

(i) **" Participant "** shall mean a Director who makes a deferral election under Section 5 or 6 of the Plan.

(j) **" Plan "** shall mean the Northern Trust Corporation 2018 Non-Employee Director Deferred Compensation Plan, as set forth herein and as amended from time to time.

(k) **" Restricted Stock Units "** or **" RSUs "** shall mean restricted stock units granted to the Participant under the Stock Plan.

(l) **" Section 409A "** shall mean Section 409A of the Internal Revenue Code of 1986, as amended.

(m) **" Separation from Service "** shall mean a "separation from service" from the Corporation, within the meaning of Section 409A and the regulations promulgated thereunder.

(n) **" Stock Plan "** shall mean the Northern Trust Corporation 2017 Long-Term Incentive Plan, as amended from time to time, or any successor equity plan adopted by the Corporation.

3. **Administration**. The Plan shall be administered by the Committee. The Committee shall, subject to the terms of this Plan, interpret this Plan and the application thereof and establish, amend and revoke rules and regulations as it deems necessary or desirable for the administration of the Plan. All such interpretations, rules, regulations and conditions shall be final, binding and conclusive upon the Participants and all other persons having or claiming any right or interest in the Plan or the Deferred Stock Units.

A majority of the Committee shall constitute a quorum. The Committee shall take action either by (i) a majority of the members of the Committee present at any meeting at which a quorum is present or (ii) written approval by all of the members of the Committee without a meeting. The Committee may authorize any one or more of its members or any officer of the Corporation to execute and deliver documents on behalf of the Committee.

No member of the Board or Committee, and no officer of the Corporation to whom the Committee delegates any of its power and authority hereunder, shall be liable for any act, omission, interpretation, construction or determination made in connection with this Plan in good faith, and the members of the Board and the Committee and such officers shall be entitled to indemnification and reimbursement by the Corporation in respect of any claim, loss, damage or expense (including attorneys' fees) arising therefrom to the full extent permitted by law (except as otherwise may be provided in the Corporation's Certificate of Incorporation and/or By-laws) and under any directors' and officers' liability insurance that may be in effect from time to time.

4. **Eligibility**. Each Director shall be eligible to participate in the Plan and to make the elections provided under Sections 5 and 6.

5. **Deferral of Cash Retainer**.

(a) **Annual Elections**. Prior to the first day of each calendar year beginning on or after January 1, 2018, each Director may elect to defer payment of all or a portion of the Director's cash retainer fees to be earned in such calendar year that will be credited to the Cash Retainer Sub-Account of the Participant's Account. To be effective, such election must be completed and delivered to the Corporation prior to the first day of such calendar year. Any election made under this Section shall become irrevocable as of December 31 of the year prior to the year in which the services relating to the cash retainer fee are performed.

(b) **Initial Participant Elections**. An individual who becomes a Director for the first time after a calendar year has commenced may make a deferral election, not later than the 30th day following the date the individual becomes a Director, with respect to all or a portion of the Director's annual cash retainer that is earned after the date of such election that will credited to the Cash Retainer Sub-Account of the Participant's Account.

(c) **Effect of Elections**. Any election made pursuant to this Section shall remain in effect for future calendar years unless and until the Participant makes a new election in accordance with Section 5(a). In order to change the amount of a deferral for any subsequent calendar year (or to cease deferrals), a Participant must make a new election prior to the calendar year for which the new election is to be effective.

6. **Deferral of Restricted Stock Units**.

(a) **Annual Elections**. Prior to the first day of each calendar year beginning on or after January 1, 2018, each Director may elect, in accordance with rules and procedures established by the Committee, to defer payment of all or a portion of the Restricted Stock Units granted to the Director in such calendar year that will be credited to the RSU Sub-Account of the Participant's Account. To be effective, such election must be completed and delivered to the Corporation prior to the first day of such calendar year. Any election made under this Section shall become irrevocable as of December 31 of the year prior to the year in which the RSUs relating to the election are granted.

(b) **Initial Participant Elections**. An individual who becomes a Director for the first time after a calendar year has commenced may make a deferral election, not later than the earlier of (i) the 30th day following the date the individual becomes a Director and (ii) to the extent permitted by Section 409A, the day prior to the grant of Restricted Stock Units in such calendar year to the Director, with respect to all or a portion of the RSUs granted to the Director in such calendar year that will credited to the RSU Sub-Account of the Participant's Account.

(c) **Effect of Elections** . Any election made pursuant to this Section shall remain in effect for future calendar years unless and until the Participant makes a new election in accordance with Section 6(a) . In order to change the number of Restricted Stock Units deferred for any subsequent calendar year (or to cease deferrals), a Participant must make a new election prior to the calendar year for which the new election is to be effective.

7. **Account** .

(a) **Cash Retainers** . The crediting of Deferred Stock Units to the Cash Retainer Sub-Account of the Participant's Account with respect to the deferral of cash retainer fees pursuant to Section 5 shall be made as of the dates the fees earned by the Participant during the applicable calendar year would otherwise have been payable to the Participant. The number of Deferred Stock Units to be credited shall be equal to the result of dividing the amount deferred as of each such date by the Fair Market Value of one share of Common Stock on such date.

(b) **Restricted Stock Units** . The crediting of Deferred Stock Units to the RSU Sub-Account of the Participant's Account with respect to the deferral of Restricted Stock Units pursuant to Section 6 shall be made as of the dates the RSUs granted to the Participant during the applicable calendar year become vested. The number of Deferred Stock Units to be credited shall be equal to the number of RSUs that are deferred by the Participant as of such date.

(c) **Cash Dividends** . Whenever any cash dividends are declared on the Common Stock, the Corporation will credit the Cash Retainer and RSU Sub-Accounts of the Account of each Participant on the date such dividend is paid with a number of additional Deferred Stock Units equal to the result of dividing (i) the product of (x) the total number of Deferred Stock Units credited to the Participant's Sub-Account on the record date for such dividend and (y) the per share amount of such dividend by (ii) the Fair Market Value of one share of Common Stock on the date such dividend is paid by the Corporation to the holders of Common Stock.

(d) **Capitalization Adjustments** . In the event of (i) any change in the Common Stock through a merger, consolidation, reorganization, recapitalization or otherwise, (ii) a stock dividend, or (iii) a stock split, combination or other changes in the Common Stock, all as described in Section 5.7 of the Stock Plan, the Deferred Stock Units credited to the Cash Retainer and RSU Sub-Accounts of the Account of each Participant shall be increased or decreased proportionately in accordance with Section 5.7 of the Stock Plan.

8. **Payment of Account** . Payment of the Cash Retainer and RSU Sub-Accounts of the Participant's Account shall be paid to the Participant (or, in the event of the Participant's death, to the Participant's beneficiary, as provided in Section 10) in shares of Common Stock equal to the number of Deferred Stock Units credited to each Sub-Account (provided that any fractional Deferred Stock Units shall be paid in cash based on the Fair Market Value of one share of Common Stock on the payment date), as provided below. Deferred Stock Units issued and settled under this Plan shall be granted under the Stock Plan and shall be considered "Other Stock Awards" granted pursuant to Section 3.4 of the Stock Plan.

(a) **Cash Retainer Sub-Account** . Amounts credited to the Cash Retainer Sub-Account with respect to a deferral year shall be paid, as irrevocably elected by the Participant at the time of the deferral election, as follows:

(i) in a single lump sum on the 10 th business day following the date the Director incurs a Separation from Service for any reason other than his or her death; or

(ii) in up to ten annual installments beginning on the 10 th business day following the date the Director incurs a Separation from Service for any reason other than his or her death, as irrevocably designated by the Director with respect to the applicable deferral year.

In the absence of an effective election with respect to a deferral year, payment shall be made in accordance with sub-paragraph (i) above for such deferral year.

(b) **RSU Sub-Account** . RSUs credited to the RSU Sub-Account with respect to a deferral year shall be paid, as irrevocably elected by the Participant at the time of the deferral election, as follows:

(i) in a single lump sum on the 10 th business day following the date the Director incurs a Separation from Service for any reason other than his or her death; or

(ii) in up to ten annual installments beginning on the 10 th business day following the date the Director incurs a Separation from Service for any reason other than his or her death, as irrevocably designated by the Director with respect to the applicable deferral year.

In the absence of an effective election with respect to a deferral year, payment shall be made in accordance with sub-paragraph (i) above for such deferral year.

(c) **Distribution upon Death .** If a Director incurs a Separation from Service due to death or his or her death occurs after Separation from Service but before payment to him or her of the entire balance of his or her Cash Retainer Sub-Account or RSU Sub-Account, all or the remaining balance of his or her Cash Retainer Sub-Account or RSU Sub-Account shall be paid to such Director's beneficiaries in a lump sum on, or in up to ten annual installments beginning on, the 10th business day following the date of death, as irrevocably elected by such Director in accordance with the provisions of, and subject to the deadlines of, Sections 5 and 6 . If no such designation is in effect for some portion of the Director's Cash Retainer Sub-Account or RSU Sub-Account on the date of his or her death, that portion of the Director's Cash Retainer Sub-Account or RSU Sub-Account shall be paid to his or her beneficiaries in a single lump sum on the 10th business day following the date of such Director's death.

9. **Change in Control** . In the event of a Change in Control (as defined in the Stock Plan) that constitutes a change in the ownership or effective control of the Corporation or in the ownership of a substantial portion of the Corporation's assets under Section 409A, the Account of each Participant shall be paid to the Participant in a lump sum in cash within ten business days after the date of the Change in Control, in an amount equal to the result of multiplying (i) the number of Deferred Stock Units credited to the Participant's Account on the Change in Control date by (ii) the Fair Market Value of one share of Common Stock on the Change in Control date.

10. **Beneficiary Designation** . Each Participant shall have the right, at any time, to designate any person or persons, including a trust, as his beneficiary or beneficiaries to whom payment under the Plan shall be paid in the event of his or her death prior to payment to the Participant of his or her Account. Any beneficiary designation may be made or changed by a Participant by a written instrument, in such form prescribed by the Committee, which is filed with the Corporation prior to the Participant's death. If a Participant fails to designate a beneficiary, or if all designated beneficiaries predecease the Participant, the Account shall be paid to the Participant's estate.

11. **Amendment and Termination** . The Board may amend or terminate the Plan at any time in whole or in part; provided, however, that no amendment or termination shall reduce the Deferred Stock Units credited to a Participant's Account or adversely affect the rights of a Participant to such Deferred Stock Units, without the consent of the Participant (or the Participant's beneficiary in the event of the Participant's death). Notwithstanding the foregoing, the Plan may be amended at any time, without the consent of any Participant (or beneficiary) if necessary or desirable to comply with the requirements, or avoid the application, of Section 409A.

12. **General Provisions** .

(a) **Unfunded Plan** . All payments hereunder shall be made by the Corporation from its general assets at the time and in the manner provided for in the Plan. No funds, securities or other property of any nature shall be segregated or earmarked for any current or former Participant, beneficiary or other person, and his or her sole right is as a general creditor of the Corporation with an unsecured claim against its general assets.

(b) **Non-Alienation of Benefits** . Neither a Participant nor any other person shall have any rights to sell, assign, transfer, pledge, anticipate, or otherwise encumber the amounts, if any, payable under the Plan to the Participant or any other person. Any attempted sale, assignment, transfer or pledge shall be null and void and without any legal effect. No part of the amounts payable under the Plan shall be subject to seizure or sequestration for the payment of any debts, judgments, alimony or separate maintenance owed by a Participant or any other person, nor be transferable by operation of law in the event of a Participant's or any other person's bankruptcy or insolvency.

(c) **Section 409A** . Notwithstanding any provision of the Plan to the contrary, the Plan will be construed, administered or deemed amended as necessary to comply with the requirements of Section 409A to avoid taxation under Section 409A to the extent Section 409A applies to the Plan. Each payment and benefit hereunder shall constitute a "separately identified" amount within the meaning of Treasury Regulation §1.409A-2(b)(2). The Committee, in its sole discretion shall determine the requirements of Section 409A that are applicable to the Plan and shall interpret the terms of the Plan in a manner consistent therewith. Under no circumstances, however, shall the Corporation or any affiliate or any of its or their employees, officers, directors, service providers or agents have any liability to any person for any taxes, penalties or interest due on amounts paid or payable under the Plan, including any taxes, penalties or interest imposed under Section 409A.

(d) **No Stockholder Rights** . Neither the Participant nor any other person shall have any rights as a stockholder of the Corporation with respect to the Deferred Stock Units credited to the Participant's Account until the shares of Common Stock are issued to the Participant (or the beneficiary of the Participant).

(e) **Severability** . If any provision of the Plan shall be held illegal or invalid for any reason, such illegality or invalidity shall not affect the remaining provisions of the Plan, and the Plan shall be enforced as if the invalid provisions had never been set forth therein.

(f) **Successors in Interest** . The obligation of the Corporation under the Plan shall be binding upon any successor or successors of the Corporation, whether by merger, consolidation, sale of assets or otherwise, and for this purpose reference herein to the Corporation shall be deemed to include any such successor or successors.

(g) **Governing Law; Interpretation** . The Plan shall be construed and enforced in accordance with, and governed by, the laws of the State of Delaware, without giving effect to principles of conflict of laws.

NORTHERN TRUST CORPORATION

AMENDMENT TO
TERMS AND CONDITIONS
RELATING TO THE LONG TERM CASH INCENTIVE AWARD
GRANTED PURSUANT TO THE 2017 LONG TERM CASH INCENTIVE PLAN

1. Section 2(e) is hereby revised by adding the following provision at the end thereof, effective as of the original Grant Date reflected in the Award Notice:

"Notwithstanding the foregoing, you will continue to vest in the unvested portion of the Cash Award pursuant to this Section 2(e) regardless of whether you cease to be Retired from the Industry if (i) the Corporation, in its sole discretion, characterizes your termination as a Severance-Eligible Termination, (ii) your termination is subject to mutual agreement and you have executed an effective settlement agreement, waiver and release that is satisfactory to the Corporation, in its sole discretion, (iii) you cease to be an employee by reason of Disability, or (iv) a forfeiture upon your ceasing to be Retired from the Industry would violate applicable law."

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NORTHERN TRUST CORPORATION

TERMS AND CONDITIONS
RELATING TO THE LONG TERM CASH INCENTIVE AWARD
GRANTED PURSUANT TO THE 2017 LONG TERM CASH INCENTIVE PLAN

1. Grant of Cash Award . The long-term cash incentive award granted to you pursuant to your Award Notice is subject to these Terms and Conditions Relating to the Cash Award Granted Pursuant to the 2017 Long Term Cash Incentive Plan (the “Terms and Conditions”), the Cash Award Notice (the “Award Notice”) and all of the terms and conditions of the Northern Trust Corporation 2017 Long Term Cash Incentive Plan (the “Plan”), which is incorporated herein by reference. In the case of a conflict between these Terms and Conditions, the Award Notice and the terms of the Plan, the provisions of the Plan will govern. Capitalized terms used but not defined herein have the meaning provided therefor in the Plan.

2. Vesting and Settlement; Cash Award . Your right to receive the long-term cash incentive award shall be only as follows:

(a) Cash Award . The Corporation shall maintain a long-term cash incentive account on its books in your name which shall reflect the cash amount set forth in your Award Notice plus any interest accrued on such amount from the date of grant through the Vesting Date at a per-annum rate equal to the mid-term applicable federal rate for the month of February 2017, compounded annually (the "Cash Award").

(b) Normal Vesting . If you continue to be an Employee, you will receive the Cash Award as soon as administratively practicable following each Vesting Date pursuant to the following vesting schedule (unless otherwise specified in **Exhibit I**):

Vesting Date	Percentage of Cash Award Vesting
First Anniversary of Grant Date	0%
Second Anniversary of Grant Date	0%
Third Anniversary of Grant Date	50%
Fourth Anniversary of Grant Date	50%

(c) Cause . Notwithstanding anything to the contrary contained in these Terms and Conditions, if your Employer terminates your employment for Cause, your Cash Award, whether vested but unsettled or unvested, immediately shall terminate and be forfeited.

(d) Death, Disability, Severance-Eligible Termination, Redundancy . If you cease to be an Employee by reason of Disability, death, or you qualify for Severance-Eligible Termination, or you cease to be an Employee under circumstances where your position is made redundant by your Employer (if you are employed outside of the United States) prior to the date that your Cash Award becomes fully vested, you or your estate will become fully vested in your Cash Award, and you, your legal representative or your estate will receive the Cash Award as soon as administratively practicable following your termination event. Notwithstanding the foregoing, if your termination by reason of Disability or your Severance-Eligible Termination or your termination by reason of redundancy (if you are employed outside of the United States) would otherwise qualify as a Retirement, your Cash Award shall be treated in accordance with Section 2(e) rather than the provisions provided hereunder.

(e) Retirement . If you cease to be an Employee by reason of Retirement prior to the date that your Cash Award becomes fully vested, you will continue to vest in the unvested portion of the Cash Award pursuant to Section 2(b) above, and once vested, you will receive the portion of the Cash Award that becomes vested hereunder as soon as administratively practicable following the originally contemplated Vesting Date(s) as reflected in Section 2(b) above. However, if you cease to be Retired from the Industry (as determined by the Committee in its sole discretion), the Cash Award (whether vested but unsettled or unvested) immediately shall terminate and be forfeited.

(f) Other Termination Events . If you cease to be an Employee prior to the date that your Cash Award becomes fully vested for any reason other than those provided above, you shall cease vesting in your Cash Award effective as of your Termination Date and any unvested portion of the Cash Award immediately shall terminate and be forfeited.

(g) Form of Settlement . Except as may be otherwise determined by the Corporation, your Employer will settle your Cash Award in local currency through your local payroll.

3. Treatment Upon Change in Control .

(a) General . Except as may be otherwise provided in an agreement executed by the Corporation and, where applicable, approved by the Corporation's shareholders addressing a Change in Control, your Cash Award shall be treated in accordance with the following provisions in the event of a Change in Control.

(b) Conversion of Cash Award by Acquirer . In the event of a Change in Control, the Cash Award, whether vested but unsettled or unvested (the "Northern Trust Cash Award") shall be converted into a cash award of the acquirer (the "Acquirer Cash Award") where (i) the value of the Acquirer Cash Award shall be the same as the value of the Northern Trust Cash Award as of the date of the Change in Control, (ii) the terms and conditions of the Acquirer Cash Award shall be the same in all material respects as the terms and conditions of the Northern Trust Cash Award, and (iii) upon a Qualifying Termination, the Acquirer Cash Award shall become fully vested and the acquirer shall make a payment to you of the Cash Award as soon as administratively practicable following such Qualifying Termination. For purposes of the foregoing and to the extent possible, the conversion of Northern Trust Cash Award into Acquirer Cash Award shall be effectuated in accordance with the applicable provisions of the Code (and the related Treasury Regulations) and the applicable provisions of the laws of your country of residence and/or employment such that the conversion is tax neutral and itself does not trigger a taxable event to you, the Corporation, your Employer or the acquirer.

(c) Immediate Vesting and Payment . In the event of a Change in Control where the acquirer does not convert the Northern Trust Cash Award into the Acquirer Cash Award, the Corporation shall fully vest the Northern Trust Cash Award immediately prior to the Change in Control, and make a payment to you of the Cash Award as soon as administratively practicable following the Change in Control in such manner and in accordance with such procedures as the Committee may determine in its sole discretion.

4. Legal and Tax Compliance; Cooperation . If you are resident or employed outside of the United States, you agree, as a condition of the grant of the Cash Award, to repatriate all payments of cash acquired under the Plan if required by and in accordance with local foreign exchange rules and regulations in your country of residence (and country of employment, if different). In addition, you also agree to take any and all actions, and consent to any and all actions taken by the Corporation and its Subsidiaries, as may be required to allow the Corporation and its Subsidiaries to comply with local laws, rules and regulations in your country of residence (and country of employment, if different). Finally, you agree to take any and all actions as may be required to comply with your personal legal and tax obligations under local laws, rules and regulations in your country of residence (and country of employment, if different).

5. Age Discrimination Rules . If you are resident and/or employed in a country that is a member of the European Union, the grant of the Cash Award and these Terms and Conditions are intended to comply with the Age Discrimination Rules. To the extent that a court or tribunal of competent jurisdiction determines that any provision of the Terms and Conditions are invalid or unenforceable, in whole or in part, under the Age Discrimination Rules, the Corporation, in its sole discretion, shall have the power and authority to revise or strike such provision to the minimum extent necessary to make it valid and enforceable to the full extent permitted under local law.

6. Withholding of Tax-Related Items . Regardless of any action the Corporation and/or your Employer take with respect to any or all Tax-Related Items, you acknowledge that the ultimate liability for all Tax-Related Items legally due by you is and remains your responsibility and that the Corporation and your Employer (i) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the Cash Award, including the grant of the Cash Award, the vesting of the Cash Award, the subsequent payment of the Cash Award made pursuant to the Cash Award and (ii) do not commit to structure the terms of the grant or any aspect of the Cash Award to reduce or eliminate your liability for Tax-Related Items.

Prior to the payment of the Cash Award upon the vesting of your Cash Award, if your country of residence (and/or the country of employment, if different) requires withholding of Tax-Related Items, the Corporation shall withhold from the payment of cash, a sufficient amount to pay the Tax-Related Items required to be withheld with respect to the Cash Award. The amount withheld will be used to settle the obligation to withhold the Tax-Related Items. Your employer may also withhold the Tax-Related Items required to be withheld with respect to your Cash Award in cash from your regular salary and/or wages or any other amounts payable to you. In the event the withholding requirements are not satisfied, no payment of cash will be made to you (or your estate) upon vesting of the Cash Award unless and until satisfactory arrangements (as determined by the Corporation) have been made by you with respect to the payment of any Tax-Related Items that the Corporation or your Employer determines, in its sole discretion, must be withheld or collected with respect to the Cash Award.

By accepting the Cash Award, you expressly consent to the foregoing method of withholding as provided for hereunder. All other Tax-Related Items related to the Cash Award thereof are your sole responsibility.

7. Code Section 409A .

(a) The Cash Award is intended to comply with or be exempt from the requirements of Code Section 409A. The Plan and these Terms and Conditions shall be administered and interpreted in a manner consistent with this intent. If the Corporation determines that these Terms and Conditions are subject to Code Section 409A and they do not comply with or are inconsistent with the applicable requirements, the Corporation may, in its sole discretion, and without your consent, amend these Terms and Conditions to cause them to comply with Code Section 409A or be exempt from Code Section 409A.

(b) Notwithstanding any provision of these Terms and Conditions to the contrary, in the event that any settlement or payment of the Cash Award occurs as a result of your termination of employment and the Corporation determines that you are a “specified employee” (within the meaning of Code Section 409A) subject to Code Section 409A at the time of your termination of employment, and provided further that such payment or settlement does not otherwise qualify for an applicable exemption from Code Section 409A, then no such settlement or payment shall be paid to you until the date that is the earlier to occur of: (i) your death, or (ii) six (6) months and one (1) day following your termination of employment. If the Cash Award does not otherwise qualify for an applicable exemption from Code Section 409A, the terms “Retirement,” “terminate,” “termination,” “termination of employment,” and variations thereof as used in these Terms and Conditions are intended to mean a “separation from service” as such term is defined under Code Section 409A.

(c) Although these Terms and Conditions and the payments provided hereunder are intended to be exempt from or to otherwise comply with the requirements of Code Section 409A, the Corporation does not represent or warrant that these Terms and Conditions or the payments provided hereunder will comply with Code Section 409A or any other provisions of federal, state, local, or non-U.S. law. Neither the Corporation, its Subsidiaries, your Employer or their respective directors, officers, employees or advisers shall be liable to you (or any other individual claiming a benefit through you) for any tax, interest, or penalties you may owe as a result of compensation paid under these Terms and Conditions, and the Corporation, its Subsidiaries and your Employer shall have no obligation to indemnify or otherwise protect you from the obligation to pay any taxes pursuant to Code Section 409A.

8. Recoupment Policy. In addition to these Terms and Conditions, your Cash Award and any payment of the Cash Award made to you pursuant to the Cash Award shall be subject to the provisions of the Northern Trust Corporation Policy on Recoupment, as may be subsequently amended from time to time (the “Policy”).

9. Nontransferability. The Cash Award shall be transferable only by will or the laws of descent and distribution. If you purport to make any transfer of the Cash Award, except as aforesaid, the Cash Award and all rights thereunder shall terminate immediately.

10. No Right of Continued Employment. The grant of the Cash Award shall not confer upon you any right to continue in the employ of your Employer nor limit in any way the right of your Employer to terminate your employment at any time.

11. Discretionary Nature; No Vested Rights. You acknowledge and agree that the Plan is discretionary in nature and may be amended, cancelled, or terminated by the Corporation, in its sole discretion, at any time. The grant of the Cash Award under the Plan is a one-time benefit and does not create any contractual or other right to receive a grant of the Cash Award or any other award under the Plan or other benefits in lieu thereof in the future. Future grants, if any, will be at the sole discretion of the Corporation, including, but not limited to, the form and timing of any grant and the vesting provisions. Any amendment, modification or termination of the Plan shall not constitute a change or impairment of the terms and conditions of your employment with your Employer.

12. Extraordinary Benefit. Your participation in the Plan is voluntary. The value of the Cash Award and any other awards granted under the Plan is an extraordinary item of compensation outside the scope of your employment (and your employment contract, if any). Any grant under the Plan, including the grant of the Cash Award, is not part of normal or expected compensation for purposes of calculating any severance, resignation, redundancy, end of service payments, bonuses, long-service awards, pension, or retirement benefits or similar payments.

13. Heirs. These Terms and Conditions shall bind and inure to the benefit of the Corporation, its successors and assigns, and you and your estate in the event of your death.

14. Personal Data. The Corporation and your Employer hereby notify you of the following in relation to your personal data and the collection, processing and transfer of such data in relation to the grant of the Cash Award and your participation in the Plan pursuant to applicable personal data protection laws. The collection, processing and transfer of your personal data is necessary for the Corporation’s administration of the Plan and your participation in the Plan, and your denial and/or objection to the collection, processing and transfer of personal data may affect your ability to participate in the Plan. As such, you voluntarily acknowledge, consent and agree (where required under applicable law) to the collection, use, processing and transfer of personal data as described herein.

The Corporation and your Employer hold certain personal information about you, including (but not limited to) your name, home address, email address and telephone number, date of birth, social security number or other employee identification number, salary, nationality, job title, directorships held in the Corporation, details of the Cash Award or any other entitlement to a cash payment, canceled, vested, unvested or outstanding in your favor for the purpose of managing and administering the Plan (the "Data"). The Data may be provided by you or collected, where lawful, from third parties, and the Corporation and your Employer will process the Data for the exclusive purpose of implementing, administering and managing your participation in the Plan. The data processing will take place through electronic and non-electronic means according to logics and procedures strictly correlated to the purposes for which the Data is collected and with confidentiality and security provisions as set forth by applicable laws and regulations in your country of residence. Data processing operations will be performed minimizing the use of personal and identification data when such information is unnecessary for the processing purposes sought. The Data will be accessible within the Corporation's organization only by those persons requiring access for purposes of the implementation, administration and operation of the Plan and for your participation in the Plan.

The Corporation and your Employer will transfer the Data as necessary for the purpose of implementation, administration and management of your participation in the Plan, and the Corporation and your Employer may each further transfer the Data to any third parties assisting the Corporation in the implementation, administration and management of the Plan. These recipients may be located in the European Economic Area, the United States or elsewhere throughout the world. You hereby authorize (where required under applicable law) the recipients to receive, possess, use, retain and transfer the Data, in electronic or other form, for purposes of implementing, administering and managing your participation in the Plan, including any requisite transfer of such Data as may be required for the administration of the Plan to a broker or other third party with whom you may elect to deposit the cash payment made pursuant to the Cash Award under the Plan.

You may, at any time, exercise your rights provided under applicable personal data protection laws, which may include the right to (a) obtain confirmation as to the existence of the Data, (b) verify the content, origin and accuracy of the Data, (c) request the integration, update, amendment, deletion or blockage (for breach of applicable laws) of the Data and (d) oppose, for legal reasons, the collection, processing or transfer of the Data that is not necessary or required for the implementation, administration and/or operation of the Plan and your participation in the Plan. You may seek to exercise these rights by contacting your local HR manager.

15. Governing Law. All questions concerning the construction, validity and interpretation of the Cash Award and the Plan shall be governed and construed according to the laws of the state of Delaware, without regard to the application of the conflicts of laws provisions thereof. Any disputes regarding the Cash Award or the Plan shall be brought only in the state or federal courts of the state of Delaware.

16. Electronic Delivery. The Corporation may, in its sole discretion, decide to deliver any documents related to the Cash Award or other awards granted to you under the Plan by electronic means. You hereby consent to receive such documents by electronic delivery and agree to participate in the Plan through an on-line or electronic system established and maintained by the Corporation or a third party designated by the Corporation.

17. Severability. The invalidity or unenforceability of any provision of the Plan or these Terms and Conditions shall not affect the validity or enforceability of any other provision of the Plan or these Terms and Conditions.

18. English Language. If you are resident outside of the United States, you acknowledge and agree that it is your express intent that these Terms and Conditions, the Plan and all other documents, notices and legal proceedings entered into, given or instituted pursuant to the Cash Award be drawn up in English. If you have received these Terms and Conditions, the Plan or any other documents related to the Cash Award translated into a language other than English and the meaning of the translated version is different than the English version, the English version will control.

19. Addendum. Notwithstanding any provisions of these Terms and Conditions to the contrary, the Cash Award shall be subject to any special terms and conditions for your country of residence (and country of employment, if different) set forth in an addendum to these Terms and Conditions (an "Addendum"). Further, if you transfer your residence and/or employment to another country reflected in an Addendum to these Terms and Conditions at the time of transfer, the special terms and conditions for such country will apply to you to the extent the Corporation determines, in its sole discretion, that the application of such special terms and conditions is necessary or advisable in order to comply with local law, rules and regulations or to facilitate the operation and administration of the Cash Award and the Plan (or the Corporation may establish alternative terms and conditions as may be necessary or advisable to accommodate your transfer). In all circumstances, any applicable Addendum shall constitute part of these Terms and Conditions.

20. Exclusion of Claim. You acknowledge and agree that you will have no entitlement to compensation or damages in consequence of the termination of your employment with the Corporation and your Employer for any reason whatsoever and whether or not in breach of contract, insofar as any purported claim to such entitlement arises or may arise from your ceasing to have rights under or to be entitled to vest in the Cash Award as a result of such termination of employment (whether the termination is in breach of contract or otherwise), or from the loss or diminution in value of the Cash Award. Upon the grant of the Cash Award, you shall be deemed irrevocably to have waived any such entitlement.

21. Additional Requirements. The Corporation reserves the right to impose other requirements on the Cash Award, any cash payment made pursuant to the Cash Award and your participation in the Plan to the extent the Corporation determines, in its sole discretion, that such other requirements are necessary or advisable in order to comply with local law, rules and regulations or to facilitate the operation and administration of the Cash Award and the Plan. Such requirements may include (but are not limited to) requiring you to sign any agreements or undertakings that may be necessary to accomplish the foregoing.

22. Definitions. For purposes of these Terms and Conditions:

(a) "Age Discrimination Rules" means the age discrimination provisions of the EU Equal Treatment Framework Directive, as implemented into local law.

(b) "Cause" means (i) a material breach or your willful and substantial non-performance of your assigned duties and responsibilities (other than as a result of incapacity due to physical or mental illness), (ii) a conviction of or no contest plea with respect to bribery, extortion, embezzlement, fraud, grand larceny, or any felony or similar conviction under local law involving abuse or misuse of your position to seek or obtain an illegal or personal gain at the expense of the Corporation, your Employer or any Subsidiary, or similar crimes, or conspiracy to commit any such crimes or attempt to commit any such crimes, (iii) your violation of any policy of the Corporation, your Employer or any of its Subsidiaries to which you may be subject or your willful engagement in any misconduct in the performance of your duties that materially injures the Corporation, your Employer or any of its Subsidiaries, (iv) your performance of any act which, if known to the customers, clients, stockholders or regulators of the Corporation, your Employer or any of its Subsidiaries, would materially and adversely impact the business of the Corporation, your Employer or any of its Subsidiaries, or (v) any act or omission by you that causes a regulatory body with jurisdiction over the Corporation, your Employer or any of its Subsidiaries, to demand, request, or recommend that you be suspended or removed from any position in which you serve with the Corporation, your Employer or any of its Subsidiaries.

(c) "Continuous Years of Service" means the period of your continuous and uninterrupted employment with your Employer commencing on your most recent hire date with your Employer through your Termination Date. For the sake of clarity, if your employment with the Corporation or a Subsidiary terminated and you have been rehired by your Employer, your Continuous Years of Service shall not be determined by aggregating your periods of employment with the Corporation or a Subsidiary.

(d) "Disability" means (i) if you are covered under the Northern Trust Corporation Managed Disability Program, a covered disability that continues for a period of at least six (6) months, or (ii) if you are not covered under the Northern Trust Corporation Managed Disability Program, a disability as determined by the Committee in its sole discretion.

(e) "Employer" means the Corporation or any Subsidiary that employs you on the applicable date.

(f) "Grant Date" means the date of grant reflected in your Award Notice.

(g) "Qualifying Termination" means a termination of employment with the Corporation, its Subsidiaries and its successors after the date of the Change in Control and, at any time before the second anniversary of such Change in Control, that is either involuntary on your part and does not otherwise qualify as a Retirement, result from your death or Disability and is not for "Cause".

(h) " Retired from the Industry " means a termination of employment under circumstances that constitute Retirement, and you (i) do not thereafter perform services as an employee, officer, director or consultant for, or in any other capacity assist, any entity (other than the Corporation or a Subsidiary), whether existing or in formation, that provides or plans to provide services the same as, substantially similar to, or in direct or indirect competition with those offered by the Corporation or any Subsidiary and which you rendered on behalf of the Corporation or any Subsidiary during your tenure of employment, including but not limited to, those relating to trust, investment management, financial and family business consulting, guardianship and estate administration, brokerage services, private and commercial banking, asset management, custody, fund administration, investment operations outsourcing, investment risk and analytical services, employee benefit services, securities lending, foreign exchange, treasury and cash management, and transition management services, and (ii) certify to the Corporation, at such times and in such manner as the Committee may require, that since your Retirement, you have not performed any such services. The foregoing notwithstanding, service as a director of an entity described above which has been approved in writing by the Committee prior to the commencement of such service shall not, in and of itself, constitute the cessation of being Retired from the Industry.

(i) " Retirement " means a termination of employment without Cause occurring on or after the date (i) you have attained age 55, and (ii) the sum of your age (in whole years, rounded down to the nearest year) and Continuous Years of Service (in whole years, rounded down to the nearest year) equals or exceeds 65. For purposes of these Terms and Conditions, any Retirement shall become effective on the first day of the month following the month in which you satisfy the provisions hereunder.

(j) " Severance-Eligible Termination " means (i) if you are covered under the Northern Trust Corporation Severance Plan, a covered termination where you have executed on or prior to your Termination Date, an effective settlement agreement, waiver and release, or (ii) if you are not covered under the Northern Trust Corporation Severance Plan, a covered termination pursuant to a redundancy/termination indemnity program established or otherwise contributed to by your Employer where you have executed on or prior to your Termination Date, but in effect as of your Termination Date, a settlement agreement and release.

(k) " Tax-Related Items " means any income tax (including U.S. federal, state and local taxes or non-U.S. taxes), social insurance, payroll tax, payment on account or other tax-related withholding amounts.

(l) " Termination Date " means (i) if you are a resident of or employed in the United States, the effective date of termination of your employment with your Employer, or (ii) if you are resident or employed outside of the United States, the earliest of (a) the date on which notice of termination is provided to you, (b) the last day of your active service with your Employer or (c) the last day on which you are an Employee of your Employer, as determined in each case without including any required advance notice period and irrespective of the status of the termination under local labor or employment laws.

(m) " Vesting Date " means each date on which you acquire a non-forfeitable right in a portion of the Cash Award as reflected in **Section 2(b)** .

23. **Acceptance . By accepting the grant of the Cash Award, you affirmatively and expressly acknowledge that you have read these Terms and Conditions, the Award Notice, the Addendum to these Terms and Conditions (as applicable) and the Plan, and specifically accept and agree to the provisions therein.**

* * * * *

Exhibit I

Alternative Vesting Schedule

Vesting Date	Percentage of Cash Award Vesting

Exhibit 10.7(x)

NORTHERN TRUST CORPORATION

**AMENDMENT TO
TERMS AND CONDITIONS
RELATING TO STOCK OPTIONS GRANTED
PURSUANT TO THE 2012 STOCK PLAN**

1. Section 3(c) is hereby revised by adding the following provision at the end thereof, effective as of the original Grant Date reflected in the Award Notice:

"Notwithstanding the foregoing, you will continue to vest in your unvested Stock Options pursuant to this Section 3(c) regardless of whether you cease to be Retired from the Industry if (i) the Corporation, in its sole discretion, characterizes your termination as a Severance-Eligible Termination, (ii) your termination is subject to mutual agreement and you have executed an effective settlement agreement, waiver and release that is satisfactory to the Corporation, in its sole discretion, (iii) you cease to be an employee by reason of Disability, or (iv) a forfeiture upon your ceasing to be Retired from the Industry would violate applicable law."

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NORTHERN TRUST CORPORATION

TERMS AND CONDITIONS
RELATING TO STOCK OPTIONS GRANTED
PURSUANT TO THE 2012 STOCK PLAN

1. Grant of Stock Options . The Stock Options to purchase shares of Common Stock of Northern Trust Corporation (the "Corporation") granted to you pursuant to your Award Notice are subject to these Terms and Conditions Relating to Stock Options Granted Pursuant to the 2012 Stock Plan (the "Terms and Conditions"), the Stock Option Award Notice (the "Award Notice") and all of the terms and conditions of the Northern Trust Corporation 2012 Stock Plan (the "2012 Stock Plan"), which is incorporated herein by reference. In the case of a conflict between these Terms and Conditions, the Award Notice and the terms of the 2012 Stock Plan, the provisions of the 2012 Stock Plan will govern. Capitalized terms used but not defined herein have the meaning provided therefor in the 2012 Stock Plan.

2. Exercise Price, Vesting and Expiration .

(a) Exercise Price . The price at which you may purchase the shares of Common Stock covered by the Stock Options is the Exercise Price.

(b) Vesting . If you remain continuously employed with your Employer, the Stock Options shall become vested and exercisable on each Vesting Date pursuant to the following vesting schedule (unless otherwise specified in **Exhibit I**):

Vesting Date	Percentage of Stock Options Vesting
First Anniversary of Grant Date	25%
Second Anniversary of Grant Date	25%
Third Anniversary of Grant Date	25%
Fourth Anniversary of Grant Date	25%

(c) Expiration of Stock Options . Subject to earlier termination and forfeiture as described in Section 3, the Stock Options will expire and will cease to be exercisable on the Expiration Date.

3. Termination of Employment . Upon the termination of your employment with your Employer, your right to exercise the Stock Options shall be only as follows:

(a) Cause . Notwithstanding anything to the contrary contained in these Terms and Conditions, if your Employer terminates your employment for Cause, your Stock Options, whether vested but unexercised or unvested, immediately shall terminate and be forfeited.

(b) Death and Disability. If you cease to be an Employee by reason of Disability or death prior to the date that your Stock Options become fully vested, you, your estate, legal representative or beneficiary, if applicable, will become fully vested in the unvested Stock Options and you shall have the right to exercise the vested Stock Options at any time until and including the earlier of: (i) the fifth (5th) anniversary of your Termination Date; and (ii) the Expiration Date.

(c) Retirement. If you cease to be an Employee by reason of Retirement prior to the date that your Stock Options become fully vested, you will continue to vest in your unvested Stock Options pursuant to Section 2(b) above and once vested, and you shall have the right to exercise the vested Stock Options at any time until and including the earlier of: (i) the fifth (5th) anniversary of your Termination Date; and (ii) the Expiration Date. However, if you cease to be Retired from the Industry (as determined by the Committee in its sole discretion), any Stock Options (whether vested or unvested) immediately shall terminate and be forfeited.

(d) Severance-Eligible Termination and Redundancy. If you cease to be an Employee and your termination (i) qualifies as a Severance-Eligible Termination and/or (ii) is under circumstances where your position is made redundant by your Employer (if you are employed outside of the United States), you will become fully vested in your unvested Stock Options and you shall have the right to exercise the vested Stock Options at any time until and including the earlier of: (i) one-hundred and eighty (180) days following your Termination Date; and (ii) the Expiration Date.

(e) Other Termination Events. If you cease to be an Employee for any reason other than those provided above, you, your estate, legal representative or beneficiary, if applicable (in the event of your death after such termination) may, within the three (3) month period following such termination, exercise any vested Stock Options with respect to only such number of shares of Common Stock as to which the right of exercise had vested on or before the Termination Date and any unvested Stock Options immediately shall terminate and be forfeited.

4. Treatment Upon Change in Control.

(a) General. Except as may be otherwise provided in an agreement executed by the Corporation and, where applicable, approved by the Corporation's shareholders, your Stock Options shall be treated in accordance with the following provisions in the event of a Change in Control.

(b) Conversion of Stock Options by Acquirer. In the event of a Change in Control, each outstanding Stock Option, whether vested but unexercised or unvested (a "Northern Trust Stock Option") shall be converted into a stock option to purchase a share of the acquirer's common stock (an "Acquirer Stock Option") where (i) the intrinsic value of the Acquirer Stock Option shall be the same as the intrinsic value of the Northern Trust Stock Option as of the date of the Change in Control, (ii) the terms and conditions of the Acquirer Stock Option shall be the same in all material respects as the terms and conditions of the Northern Trust Stock Option, and (iii) upon a Qualifying Termination, the Acquirer Stock Option shall become fully vested and exercisable at any time up to and including the Expiration Date. For purposes of the foregoing and to the extent possible, the conversion of Northern Trust Stock Options into Acquirer Stock Options shall be effectuated in accordance with the applicable provisions of the Code (and the related Treasury Regulations) and the applicable provisions of the laws of your country of residence and/or employment such that the conversion is tax neutral and itself does not trigger a taxable event to you, the Corporation, your Employer or the acquirer.

(c) Cashout of Stock Options . In the event of a Change in Control where the acquirer does not convert Northern Trust Stock Options into Acquirer Stock Options, the Corporation shall fully vest each Northern Trust Stock Option immediately prior to the Change in Control, and then shall cancel such vested Northern Trust Stock Option in exchange for a cash payment equal to the difference between (i) the aggregate consideration paid to each shareholder of one (1) share of Common Stock upon the Change in Control, and (ii) the Exercise Price of the Northern Trust Stock Option. Such cash payment shall be made as soon as administratively practicable following the Change in Control in such manner and in accordance with such procedures as the Committee may determine in its sole discretion.

5. Manner of Exercise . To exercise the vested portion of your Stock Options, you must follow such procedures as may be established by the Committee from time to time. As part of such procedures, you shall be required to specify the number of shares of Common Stock that you elect to purchase and the date on which such purchase is to be made, and you shall be required to make full payment of the Exercise Price. A Stock Option shall not be deemed to have been exercised (i.e., the exercise date shall not be deemed to have occurred) until the notice of such exercise and payment in full of the Exercise Price are provided. The exercise date will be defined by the NASDAQ Stock Market trading hours. If an exercise is completed after the market close or on a weekend, the exercise will be dated the next following trading day.

Except as the Committee may otherwise provide in its sole discretion, you may exercise a vested Stock Option by paying the Exercise Price pursuant one of the following methods of exercise:

(a) cash payment;

(b) by delivery of a sufficient number of whole shares of Common Stock you already owned for a period of at least six (6) months having a Fair Market Value equal to the Exercise Price;

(c) by authorizing the sale of a sufficient number of whole shares of Common Stock that otherwise would be deliverable upon the exercise of the Stock Option having a Fair Market Value equal to the Exercise Price; or

(d) via a broker-assisted cashless exercise procedure through a broker-dealer approved for such purposes of the Corporation.

In cases where you utilize the "sell to cover" arrangement set forth in Section 5(c) and the Fair Market Value of the number of whole shares of Common Stock sold is greater than the aggregate Exercise Price, the Corporation shall make a cash payment to you equal to the difference as soon as administratively practicable.

6. Withholding of Tax-Related Items . Regardless of any action the Corporation and/or your Employer take with respect to any or all Tax-Related Items, you acknowledge that the ultimate liability for all Tax-Related Items legally due by you is and remains your responsibility

and that the Corporation and your Employer (i) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the Stock Options, including the grant of the Stock Options, the vesting of the Stock Options, the exercise of the Stock Options, the subsequent sale of any shares of Common Stock acquired pursuant to the Stock Options and the receipt of any dividends and (ii) do not commit to structure the terms of the grant or any aspect of the Stock Options to reduce or eliminate your liability for Tax-Related Items.

Prior to the delivery of shares of Common Stock upon exercise of your Stock Options, if your country of residence (and/or your country of employment, if different) requires withholding of Tax-Related Items, the Corporation shall withhold a sufficient number of whole shares of Common Stock otherwise issuable upon exercise of the Stock Options that have an aggregate Fair Market Value sufficient to pay the Tax-Related Items required to be withheld with respect to the shares of Common Stock. The cash equivalent of the shares of Common Stock withheld will be used to settle the obligation to withhold the Tax-Related Items. In the event that withholding in shares of Common Stock is prohibited or problematic under applicable law or otherwise may trigger adverse consequences to the Corporation or your Employer, your Employer may withhold the minimum Tax-Related Items required to be withheld with respect to the shares of Common Stock in cash from your regular salary and/or wages, or other amounts payable to you. In the event the withholding requirements are not satisfied through the withholding of shares of Common Stock or through your regular salary and/or wages or any other amounts payable to you by your Employer, no shares of Common Stock will be issued to you (or your estate) upon exercise of the Stock Options unless and until satisfactory arrangements (as determined by the Corporation) have been made by you with respect to the payment of any Tax-Related Items that the Corporation or your Employer determines, in its sole discretion, must be withheld or collected with respect to such Options.

By accepting these Stock Options, you expressly consent to the foregoing methods of withholding as provided for hereunder. All other Tax-Related Items related to the Stock Options and any shares of Common Stock delivered in settlement thereof are your sole responsibility.

7. Code Section 409A. The Stock Options are intended to be exempt from the requirements of Code Section 409A. The 2012 Stock Plan and these Terms and Conditions shall be administered and interpreted in a manner consistent with this intent. If the Corporation determines that these Terms and Conditions are subject to Code Section 409A and that it has failed to comply with the requirements of that Section, the Corporation may, at the Corporation's sole discretion and without your consent, amend these Terms and Conditions to cause them to comply with Code Section 409A or be exempt from Code Section 409A.

8. Forfeitures and Recoupment

(a) Recoupment Policy. In addition to these Terms and Conditions, your Stock Options and any shares of Common Stock issued to you pursuant to your Stock Options shall be subject to the provisions of the Northern Trust Corporation Policy on Recoupment Policy, as may be subsequently amended from time to time (the "Policy").

(b) Delegation of Authority to Corporation. For purposes of the foregoing, you expressly and explicitly authorize the Corporation to issue instructions, on your behalf, to any brokerage firm and/or third party administrator engaged by the Corporation to hold your shares of Common Stock and other amounts acquired pursuant to your Stock Options to re-convey, transfer or otherwise return such shares of Common Stock and/or other amounts to the Corporation upon the Corporation's enforcement of the Policy. To the extent that these Terms and Conditions and the Policy conflict, the terms of the Policy shall prevail.

9. Nontransferability .

(a) General . The Stock Options shall be transferable only by will or the laws of descent and distribution and shall be exercisable during your lifetime only by you. If you purport to make any transfer of the Stock Options, except as aforesaid, the Stock Options and all rights thereunder shall terminate immediately.

(b) Beneficiary Designation . In conjunction with the foregoing, the Corporation may permit you, in its sole discretion, to designate a beneficiary of the Stock Options upon your death in accordance with such procedures as the Corporation may prescribe from time to time, or as otherwise may be approved by the Committee.

10. Legal and Tax Compliance; Cooperation . If you reside or are employed outside of the United States, you agree, as a condition of the grant of the Stock Options, to repatriate all payments attributable to the shares of Common Stock and/or cash acquired under the 2012 Stock Plan (including, but not limited to, dividends and any proceeds derived from the sale of the shares of Common Stock acquired pursuant to the Stock Options) if required by and in accordance with local foreign exchange rules and regulations in your country of residence (and country of employment, if different). In addition, you also agree to take any and all actions, and consent to any and all actions taken by the Corporation and its Subsidiaries, as may be required to allow the Corporation and its Subsidiaries to comply with local laws, rules and regulations in your country of residence (and country of employment, if different). Finally, you agree to take any and all actions as may be required to comply with your personal legal and tax obligations under local laws, rules and regulations in your country of residence (and country of employment, if different).

11. Age Discrimination Rules . If you are resident or employed in a country that is a member of the European Union, the grant of the Stock Options and these Terms and Conditions are intended to comply with the Age Discrimination Rules. To the extent that a court or tribunal of competent jurisdiction determines that any provision of these Terms and Conditions is invalid or unenforceable, in whole or in part, under the Age Discrimination Rules, the Corporation, in its sole discretion, shall have the power and authority to revise or strike such provision to the minimum extent necessary to make it valid and enforceable to the full extent permitted under local law.

12. Securities Laws . The Stock Options shall not be exercisable in whole or in part, and the Corporation shall not be obligated to issue any shares of Common Stock subject to the Stock Options, if such exercise and sale would, in the opinion of counsel for the Corporation, violate the Securities Act of 1933 or any other U.S. federal, state or non-U.S. laws having similar requirements as it may be in effect at the time. The Stock Options are subject to the further requirement that, if at any time the Board of Directors of the Corporation shall determine in its discretion that the listing or qualification of the shares of Common Stock subject to the Stock Options under any securities

exchange requirements or under any applicable law, or the consent or approval of any governmental regulatory body, is necessary or desirable as a condition of or in connection with the issuance of shares of Common Stock pursuant to the Stock Options, the Stock Options may not be exercised in whole or in part unless such listing, qualification, consent or approval shall have been effected or obtained free of any conditions not acceptable to the Corporation.

13. No Right to Continued Employment . The grant of the Stock Options shall not confer upon you any right to continue in the employ of your Employer nor limit in any way the right of your Employer to terminate your employment at any time. You shall have no rights as a shareholder of the Corporation with respect to any shares of Common Stock issuable upon the exercise of the Stock Options until the date of issuance of such shares of Common Stock.

14. Discretionary Nature; No Vested Rights . You acknowledge and agree that the 2012 Stock Plan is discretionary in nature and may be amended, cancelled or terminated by the Corporation, in its sole discretion, at any time. The grant of the Stock Options under the 2012 Stock Plan is a one-time benefit and does not create any contractual or other right to receive a grant of stock options or benefits in lieu of stock options in the future. Future grants, if any, will be at the sole discretion of the Corporation, including, but not limited to, the form and timing of any grant, the number of shares of Common Stock subject to the grant, the vesting provisions and the Exercise Price. Any amendment, modification or termination of the 2012 Stock Plan shall not constitute a change or impairment of the terms and conditions of your employment with your Employer.

15. Extraordinary Benefit . Your participation in the 2012 Stock Plan is voluntary. The value of the Stock Options and any other awards granted under the 2012 Stock Plan is an extraordinary item of compensation outside the scope of your employment (and your employment contract, if any). Any grant under the 2012 Stock Plan, including the grant of the Stock Options, is not part of normal or expected compensation for purposes of calculating any severance, resignation, redundancy, end of service payments, bonuses, long-service awards, pension, or retirement benefits or similar payments.

16. Heirs . These Terms and Conditions shall bind and inure to the benefit of the Corporation, its successors and assigns, and you, your estate, legal representative or beneficiary, if applicable, in the event of your death.

17. Nature of Stock Options . The Stock Options are Nonstatutory Stock Options and shall not be treated as Incentive Stock Options.

18. Personal Data . The Corporation and your Employer hereby notify you of the following in relation to your personal data and the collection, processing and transfer of such data in relation to the grant of the Stock Options and your participation in the 2012 Stock Plan pursuant to applicable personal data protection laws. The collection, processing and transfer of your personal data is necessary for the Corporation's administration of the 2012 Stock Plan and your participation in the 2012 Stock Plan, and your denial and/or objection to the collection, processing and transfer of personal data may affect your ability to participate in the 2012 Stock Plan. As such, you voluntarily acknowledge, consent and agree (where required under applicable law) to the collection, use, processing and transfer of personal data as described herein.

The Corporation and your Employer hold certain personal information about you, including (but not limited to) your name, home address, email address and telephone number, date of birth, social security number or other employee identification number, salary, nationality, job title, any shares of Common Stock or directorships held in the Corporation, details of all Options or any other entitlement to shares of Common Stock awarded, canceled, purchased, vested, unvested or outstanding in your favor for the purpose of managing and administering the 2012 Stock Plan (the "Data"). The Data may be provided by you or collected, where lawful, from third parties, and the Corporation and your Employer will process the Data for the exclusive purpose of implementing, administering and managing your participation in the 2012 Stock Plan. The data processing will take place through electronic and non-electronic means according to logics and procedures strictly correlated to the purposes for which the Data is collected and with confidentiality and security provisions as set forth by applicable laws and regulations in your country of residence. Data processing operations will be performed minimizing the use of personal and identification data when such information is unnecessary for the processing purposes sought. The Data will be accessible within the Corporation's organization only by those persons requiring access for purposes of the implementation, administration and operation of the 2012 Stock Plan and for your participation in the 2012 Stock Plan.

The Corporation and your Employer will transfer the Data as necessary for the purpose of implementation, administration and management of your participation in the 2012 Stock Plan, and the Corporation and your Employer may each further transfer the Data to any third parties assisting the Corporation in the implementation, administration and management of the 2012 Stock Plan. These recipients may be located in the European Economic Area, the United States or elsewhere throughout the world. You hereby authorize (where required under applicable law) the recipients to receive, possess, use, retain and transfer the Data, in electronic or other form, for purposes of implementing, administering and managing your participation in the 2012 Stock Plan, including any requisite transfer of such Data as may be required for the administration of the 2012 Stock Plan and/or the subsequent holding of shares of Common Stock on your behalf to a broker or other third party with whom you may elect to deposit any shares of Common Stock acquired pursuant to the 2012 Stock Plan.

You may, at any time, exercise your rights provided under applicable personal data protection laws, which may include the right to (a) obtain confirmation as to the existence of the Data, (b) verify the content, origin and accuracy of the Data, (c) request the integration, update, amendment, deletion, or blockage (for breach of applicable laws) of the Data, and (d) oppose, for legal reasons, the collection, processing or transfer of the Data that is not necessary or required for the implementation, administration and/or operation of the 2012 Stock Plan and your participation in the 2012 Stock Plan. You may seek to exercise these rights by contacting your local HR manager.

19. Private Offering . The grant of the Stock Options is not intended to be a public offering of securities in your country of residence (and country of employment, if different). The Corporation has not submitted any registration statement, prospectus or other filing with the local securities authorities with respect to the grant of the Stock Options (unless otherwise required under local law). **No employee of the Corporation is permitted to advise you on whether you should purchase shares of Common Stock under the 2012 Stock Plan or provide you with any legal,**

tax or financial advice with respect to the grant of your Stock Options. Investment in shares of Common Stock involves a degree of risk. Before deciding to purchase shares of Common Stock pursuant to the Stock Options, you should carefully consider all risk factors and tax considerations relevant to the acquisition of shares of Common Stock under the 2012 Stock Plan or the disposition of them. Further, you should carefully review all of the materials related to the Stock Options and the 2012 Stock Plan, and you should consult with your personal legal, tax and financial advisors for professional advice in relation to your personal circumstances.

20. Governing Law . All questions concerning the construction, validity and interpretation of the Stock Options and the 2012 Stock Plan shall be governed and construed according to the laws of the state of Delaware, without regard to the application of the conflicts of laws provisions thereof. Any disputes regarding the Stock Options or the 2012 Stock Plan shall be brought only in the state or federal courts of the state of Delaware.

21. Electronic Delivery . The Corporation may, in its sole discretion, decide to deliver any documents related to the Stock Options or other awards granted to you under the 2012 Stock Plan by electronic means. You hereby consent to receive such documents by electronic delivery and agree to participate in the 2012 Stock Plan through an on-line or electronic system established and maintained by the Corporation or a third party designated by the Corporation.

22. Severability . The invalidity or unenforceability of any provision of the 2012 Stock Plan or these Terms and Conditions shall not affect the validity or enforceability of any other provision of the 2012 Stock Plan or these Terms and Conditions.

23. English Language . If you are resident outside of the United States, you acknowledge and agree that it is your express intent that these Terms and Conditions, the 2012 Stock Plan and all other documents, notices and legal proceedings entered into, given or instituted pursuant to the Stock Options be drawn up in English. If you have received these Terms and Conditions, the 2012 Stock Plan or any other documents related to the Stock Options translated into a language other than English and the meaning of the translated version is different than the English version, the English version will control.

24. Addendum . Notwithstanding any provisions of these Terms and Conditions to the contrary, the Stock Options shall be subject to any special terms and conditions for your country of residence (and country of employment, if different) set forth in an addendum to these Terms and Conditions (an "Addendum"). Further, if you transfer your residence and/or employment to another country reflected in an Addendum to these Terms and Conditions at the time of transfer, the special terms and conditions for such country will apply to you to the extent the Corporation determines, in its sole discretion, that the application of such special terms and conditions is necessary or advisable in order to comply with local law, rules and regulations or to facilitate the operation and administration of the Stock Options and the 2012 Stock Plan (or the Corporation may establish alternative terms and conditions as may be necessary or advisable to accommodate your transfer). In all circumstances, any applicable Addendum shall constitute part of these Terms and Conditions.

25. Additional Requirements . The Corporation reserves the right to impose other requirements on the Stock Options, any shares of Common Stock acquired pursuant to the Stock Options and your participation in the 2012 Stock Plan to the extent the Corporation determines, in its sole discretion, that such other requirements are necessary or advisable in order to comply with local law, rules and regulations or to facilitate the operation and administration of the Stock Options and the 2012 Stock Plan. Such requirements may include (but are not limited to) requiring you to sign any agreements or undertakings that may be necessary to accomplish the foregoing.

26. Definitions . For purposes of these Terms and Conditions:

(a) " Age Discrimination Rules " means the age discrimination provisions of the EU Equal Treatment Framework Directive, as implemented into local law.

(b) " Cause " means (i) a material breach or your willful and substantial non-performance of your assigned duties and responsibilities (other than as a result of incapacity due to physical or mental illness), (ii) a conviction of or no contest plea with respect to bribery, extortion, embezzlement, fraud, grand larceny, or any felony or similar conviction under local law involving abuse or misuse of your position to seek or obtain an illegal or personal gain at the expense of the Corporation, your Employer or any Subsidiary, or similar crimes, or conspiracy to commit any such crimes or attempt to commit any such crimes, (iii) your violation of any policy of the Corporation, your Employer or any of its Subsidiaries to which you may be subject or your willful engagement in any misconduct in the performance of your duties that materially injures the Corporation, your Employer or any of its Subsidiaries, (iv) your performance of any act which, if known to the customers, clients, stockholders or regulators of the Corporation, your Employer or any of its Subsidiaries, would materially and adversely impact the business of the Corporation, your Employer or any of its Subsidiaries, or (v) any act or omission by you that causes a regulatory body with jurisdiction over the Corporation, your Employer or any of its Subsidiaries, to demand, request, or recommend that you be suspended or removed from any position in which you serve with the Corporation, your Employer or any of its Subsidiaries.

(c) " Continuous Years of Service " means the period of your continuous and uninterrupted employment with your Employer commencing on your most recent hire date with your Employer through your Termination Date. For the sake of clarity, if your employment with the Corporation or a Subsidiary terminated and you have been rehired by your Employer, your Continuous Years of Service shall not be determined by aggregating your periods of employment with the Corporation or a Subsidiary.

(d) " Disability " means (i) if you are covered under the Northern Trust Corporation Managed Disability Program, a covered disability that continues for a period of at least six (6) months, or (ii) if you are not covered under the Northern Trust Corporation Managed Disability Program, a disability as determined by the Committee in its sole discretion.

(e) " Employer " means the Corporation or any Subsidiary that employs you on the applicable date.

(f) "Exercise Price" means the price at which you may purchase one (1) share of Common Stock pursuant to the Stock Options as reflected in your Award Notice.

(g) "Expiration Date" means the tenth (10th) anniversary of the Grant Date.

(h) "Grant Date" means the date of grant reflected in your Award Notice.

(i) "Qualifying Termination" means a termination of employment with the Corporation, its Subsidiaries and its successors after the date of the Change in Control and, at any time before the second anniversary of such Change in Control, that is either involuntary on your part and does not result from your death or Disability and is not for Cause.

(j) "Retired from the Industry" means a termination of employment under circumstances that constitute Retirement, and you (i) do not thereafter perform services as an employee, officer, director or consultant for, or in any other capacity assist, any entity (other than the Corporation or a Subsidiary), whether existing or in formation, that provides or plans to provide services the same as, substantially similar to, or in direct or indirect competition with those offered by the Corporation or any Subsidiary and which you rendered on behalf of the Corporation or any Subsidiary during your tenure of employment, including but not limited to, those relating to trust, investment management, financial and family business consulting, guardianship and estate administration, brokerage services, private and commercial banking, asset management, custody, fund administration, investment operations outsourcing, investment risk and analytical services, employee benefit services, securities lending, foreign exchange, treasury and cash management, and transition management services, and (ii) certify to the Corporation, at such times and in such manner as the Committee may require, that since your Retirement, you have not performed any such services. The foregoing notwithstanding, service as a director of an entity described above which has been approved in writing by the Committee prior to the commencement of such service shall not, in and of itself, constitute the cessation of being Retired from the Industry.

(k) "Retirement" means a termination of employment without Cause occurring on or after the date (i) you have attained age 55, and (ii) the sum of your age (in whole years, rounded down to the nearest year) and Continuous Years of Service (in whole years, rounded down to the nearest year) equals or exceeds 65. For purposes of these Terms and Conditions, any Retirement shall become effective on the first day of the month following the month in which you satisfy the provisions hereunder.

(l) "Severance-Eligible Termination" means (i) if you are covered under the Northern Trust Corporation Severance Plan, a covered termination where you have executed on or prior to your Termination Date, an effective settlement agreement, waiver and release, or (ii) if you are not covered under the Northern Trust Corporation Severance Plan, a covered termination pursuant to a redundancy/termination indemnity program established or otherwise contributed to by your Employer where you have executed on or prior to your Termination Date, but in effect as of your Termination Date, a settlement agreement and release.

(m) "Tax-Related Items" means any income tax (including U.S. federal, state and local taxes or non-U.S. taxes), social insurance, payroll tax, payment on account or other tax-related withholding amounts.

(n) " Termination Date " means (i) if you are a resident of or employed in the United States, the effective date of termination of your employment with your Employer, or (ii) if you are resident or employed outside of the United States, the earliest of (A) the date on which notice of termination is provided to you, (B) the last day of your active service with your Employer or (C) the last day on which you are an Employee of your Employer, as determined in each case without including any required advance notice period and irrespective of the status of the termination under local labor or employment laws.

(o) " Vesting Date(s) " means each date on which your Stock Options become vested and exercisable as reflected in **Section 2(b)** .

27. Acceptance . **By accepting the grant of the Stock Options, you affirmatively and expressly acknowledge that you have read these Terms and Conditions, the Award Notice, the Addendum to these Terms and Conditions (as applicable) and the 2012 Stock Plan, and specifically accept and agree to the provisions therein.**

* * * * *

Exhibit I

Alternative Vesting Schedule

Vesting Date	Percentage of Stock Options Vesting

NORTHERN TRUST CORPORATION

**AMENDMENT TO
TERMS AND CONDITIONS
RELATING TO STOCK UNITS GRANTED
PURSUANT TO THE 2012 STOCK PLAN**

1. Section 2(d) is hereby revised by adding the following provision at the end thereof, effective as of the original Grant Date reflected in the Award Notice:

"Notwithstanding the foregoing, you will continue to vest in your unvested Stock Units pursuant to this Section 2(d) regardless of whether you cease to be Retired from the Industry if (i) the Corporation, in its sole discretion, characterizes your termination as a Severance-Eligible Termination, (ii) your termination is subject to mutual agreement and you have executed an effective settlement agreement, waiver and release that is satisfactory to the Corporation, in its sole discretion, (iii) you cease to be an employee by reason of Disability, or (iv) a forfeiture upon your ceasing to be Retired from the Industry would violate applicable law."

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NORTHERN TRUST CORPORATION

TERMS AND CONDITIONS
RELATING TO STOCK UNITS GRANTED
PURSUANT TO THE 2012 STOCK PLAN

1. Grant of Stock Units . The Stock Units ("Stock Units") with respect to shares of Common Stock of Northern Trust Corporation (the "Corporation") granted to you pursuant to your Award Notice are subject to these Terms and Conditions Relating to Stock Units Granted Pursuant to the 2012 Stock Plan (the "Terms and Conditions"), the Stock Unit Award Notice (the "Award Notice") and all of the terms and conditions of the Northern Trust Corporation 2012 Stock Plan (the "2012 Stock Plan"), which is incorporated herein by reference. In the case of a conflict between these Terms and Conditions, the Award Notice and the terms of the 2012 Stock Plan, the provisions of the 2012 Stock Plan will govern. Capitalized terms used but not defined herein have the meaning provided therefor in the 2012 Stock Plan.

2. Vesting and Settlement; Dividend Equivalents . Your right to receive the shares of Common Stock issuable pursuant to the Stock Units shall be only as follows:

(a) Normal Vesting . If you continue to be an Employee, you will receive the shares of Common Stock underlying the Stock Units that have become vested as soon as administratively practicable following each Vesting Date pursuant to the following vesting schedule (unless otherwise specified in **Exhibit I**):

Vesting Date	Percentage of Stock Units Vesting
First Anniversary of Grant Date	0%
Second Anniversary of Grant Date	0%
Third Anniversary of Grant Date	50%
Fourth Anniversary of Grant Date	50%

(b) Cause . Notwithstanding anything to the contrary contained in these Terms and Conditions, if your Employer terminates your employment for Cause, your Stock Units, whether vested but unsettled or unvested, immediately shall terminate and be forfeited.

(c) Death and Disability . If you cease to be an Employee by reason of Disability or death prior to the date that your Stock Units become fully vested, you or your estate will become fully vested in your Stock Units, and you, your legal representative or your estate will receive all of the underlying shares of Common Stock as soon as administratively practicable following your termination by reason of Disability or death. Notwithstanding the foregoing, if your termination otherwise would qualify as a Retirement, your Stock Units shall be treated in accordance with Section 2(d) rather than the provisions provided hereunder.

(d) Retirement . If you cease to be an Employee by reason of Retirement prior to the date that your Stock Units become fully vested, you will continue to vest in your unvested Stock Units pursuant to Section 2(a) above and once vested, you will receive the underlying shares of Common Stock pursuant to the Stock Units that become vested hereunder as soon as administratively practicable following the originally contemplated Vesting Date(s) as reflected in Section 2(a) above. However, if you cease to be Retired from the Industry (as determined by the Committee in its sole discretion), any Stock Units (whether vested but unsettled or unvested) immediately shall terminate and be forfeited.

(e) Severance Eligible Termination and Redundancy . If you cease to be an Employee and your termination (i) qualifies as a Severance-Eligible Termination and/or (ii) is under circumstances where your position is made redundant by your Employer (if you are employed outside of the United States), you will become vested in a pro-rata portion of your unvested Stock Units equal to the aggregate number of unvested Stock Units multiplied by a fraction, (i) the numerator of which will equal the total number of your completed full months of continuous service with your Employer between the Grant Date and your Termination Date, plus 12 additional months, and (ii) the denominator of which will equal the total number of months during the Vesting Period (provided, the total number of months in the numerator shall in no event exceed the total number of months in the Vesting Period). You will receive the underlying shares of Common Stock pursuant to the Stock Units that become vested hereunder as soon as administratively practicable following your Termination Date. Notwithstanding the foregoing, if your termination otherwise would qualify as a Retirement, your Stock Units shall be treated in accordance with Section 2(d) rather than the provisions provided hereunder.

(f) Other Termination Events . If you cease to be an Employee prior to the date that your Stock Units become fully vested for any reason other than those provided above, you shall cease vesting in your Stock Units effective as of your Termination Date and any unvested Stock Units immediately shall terminate and be forfeited.

(g) Form of Settlement . Notwithstanding the foregoing, the Corporation may, in its sole discretion, settle your Stock Units in the form of: (i) a cash payment to the extent settlement in shares of Common Stock (1) is prohibited under local law, (2) would require you or the Corporation to obtain the approval of any governmental and/or regulatory body in your country of residence (and country of employment, if different) or (3) is administratively burdensome or (ii) shares of Common Stock, but require you to immediately sell such shares of Common Stock (in which case, the Corporation shall have the authority to issue sales instructions in relation to such shares of Common Stock on your behalf).

(h) Dividend Equivalents . Upon the payment of any dividend on the shares of Common Stock occurring during the period preceding the settlement of your Stock Units pursuant to these Terms and Conditions, the Corporation shall credit to you an amount in cash equal in value to the dividends that you would have received had you been the actual owner of the number of shares of Common Stock represented by the Stock Units. The payment of any dividend equivalents as provided herein shall be made as soon as administratively practicable following the originally contemplated Vesting Date(s) as reflected in Section 2(a) above (or such other date(s) on which the Stock Units may become vested pursuant to these Terms and Conditions), and shall be credited with simple interest at the applicable federal interest rate as in effect on the Grant Date.

3. Treatment Upon Change in Control.

(a) General. Except as may be otherwise provided in an agreement executed by the Corporation and, where applicable, approved by the Corporation's shareholders addressing a Change in Control, your Stock Units shall be treated in accordance with the following provisions in the event of a Change in Control.

(b) Conversion of Stock Units by Acquirer. In the event of a Change in Control, each outstanding Stock Unit, whether vested but unsettled or unvested (a "Northern Trust Stock Unit"), shall be converted into a restricted stock unit over a share of the acquirer's common stock (an "Acquirer Stock Unit") where (i) the intrinsic value of the Acquirer Stock Unit shall be the same as the intrinsic value of the Northern Trust Stock Unit as of the date of the Change in Control, (ii) the terms and conditions of the Acquirer Stock Unit shall be the same in all material respects as the terms and conditions of the Northern Trust Stock Unit, and (iii) upon a Qualifying Termination, the Acquirer Stock Unit shall become fully vested and the acquirer shall issue you one (1) share of acquirer's common stock in settlement of such Acquirer Stock Unit as soon as administratively practicable following such Qualifying Termination. For purposes of the foregoing and to the extent possible, the conversion of Northern Trust Stock Units into Acquirer Stock Units shall be effectuated in accordance with the applicable provisions of the Code (and the related Treasury Regulations) and the applicable provisions of the laws of your country of residence and/or employment such that the conversion is tax neutral and itself does not trigger a taxable event to you, the Corporation, your Employer or the acquirer.

(c) Cashout of Stock Units. In the event of a Change in Control where the acquirer does not convert Northern Trust Stock Units into Acquirer Stock Units, the Corporation shall fully vest each Northern Trust Stock Unit immediately prior to the Change in Control, and then shall cancel such vested Northern Trust Stock Unit in exchange for a cash payment equal to the aggregate consideration paid to each shareholder of one (1) share of Common Stock upon the Change in Control. Such cash payment shall be made as soon as administratively practicable following the Change in Control in such manner and in accordance with such procedures as the Committee may determine in its sole discretion.

4. Legal and Tax Compliance; Cooperation. If you are resident or employed outside of the United States, you agree, as a condition of the grant of the Stock Units, to repatriate all payments attributable to the shares of Common Stock and/or cash acquired under the 2012 Stock Plan (including, but not limited to, dividends, dividend equivalents and any proceeds derived from the sale of the shares of Common Stock acquired pursuant to the Stock Units) if required by and in accordance with local foreign exchange rules and regulations in your country of residence (and country of employment, if different). In addition, you also agree to take any and all actions, and consent to any and all actions taken by the Corporation and its Subsidiaries, as may be required to allow the Corporation and its Subsidiaries to comply with local laws, rules and regulations in your

country of residence (and country of employment, if different). Finally, you agree to take any and all actions as may be required to comply with your personal legal and tax obligations under local laws, rules and regulations in your country of residence (and country of employment, if different).

5. Age Discrimination Rules . If you are resident and/or employed in a country that is a member of the European Union, the grant of the Stock Units and these Terms and Conditions are intended to comply with the Age Discrimination Rules. To the extent that a court or tribunal of competent jurisdiction determines that any provision of the Terms and Conditions are invalid or unenforceable, in whole or in part, under the Age Discrimination Rules, the Corporation, in its sole discretion, shall have the power and authority to revise or strike such provision to the minimum extent necessary to make it valid and enforceable to the full extent permitted under local law.

6. Withholding of Tax-Related Items . Regardless of any action the Corporation and/or your Employer take with respect to any or all Tax-Related Items, you acknowledge that the ultimate liability for all Tax-Related Items legally due by you is and remains your responsibility and that the Corporation and your Employer (i) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the Stock Units, including the grant of the Stock Units, the vesting of the Stock Units, the subsequent sale of any shares of Common Stock acquired pursuant to the Stock Units and the receipt of any dividends or dividend equivalents and (ii) do not commit to structure the terms of the grant or any aspect of the Stock Units to reduce or eliminate your liability for Tax-Related Items.

Prior to the delivery of shares of Common Stock upon the vesting of your Stock Units, if your country of residence (and/or the country of employment, if different) requires withholding of Tax-Related Items, the Corporation shall withhold a sufficient number of whole shares of Common Stock otherwise issuable upon the vesting of the Stock Units that have an aggregate Fair Market Value sufficient to pay the Tax-Related Items required to be withheld with respect to the shares of Common Stock. The cash equivalent of the shares of Common Stock withheld will be used to settle the obligation to withhold the Tax-Related Items. In the event that withholding in shares of Common Stock is prohibited or problematic under applicable law or otherwise may trigger adverse consequences to the Corporation or your Employer, your Employer may withhold the minimum Tax-Related Items required to be withheld with respect to the shares of Common Stock in cash from your regular salary and/or wages or any other amounts payable to you. In the event the withholding requirements are not satisfied through the withholding of shares of Common Stock by the Corporation or through your regular salary and/or wages or other amounts payable to you by your Employer, no shares of Common Stock will be issued to you (or your estate) upon vesting of the Stock Units unless and until satisfactory arrangements (as determined by the Corporation) have been made by you with respect to the payment of any Tax-Related Items that the Corporation or your Employer determines, in its sole discretion, must be withheld or collected with respect to such Stock Units.

By accepting these Stock Units, you expressly consent to the foregoing methods of withholding as provided for hereunder. All other Tax-Related Items related to the Stock Units and any shares of Common Stock delivered in settlement thereof are your sole responsibility.

7. Code Section 409A .

(a) The Stock Units are intended to comply with or be exempt from the requirements of Code Section 409A. The 2012 Stock Plan and these Terms and Conditions shall be administered and interpreted in a manner consistent with this intent. If the Corporation determines that these Terms and Conditions are subject to Code Section 409A and that they do not comply with or are inconsistent with the applicable requirements, the Corporation may, in its sole discretion, and without your consent, amend these Terms and Conditions to cause them to comply with Code Section 409A or be exempt from Code Section 409A.

(b) Notwithstanding any provision of these Terms and Conditions to the contrary, in the event that any settlement or payment of the Stock Units occurs as a result of your termination of employment and the Corporation determines that you are a “specified employee” (within the meaning of Code Section 409A) subject to Code Section 409A at the time of your termination of employment, and provided further that such payment or settlement does not otherwise qualify for an applicable exemption from Code Section 409A, then no such settlement or payment shall be paid to you until the date that is the earlier to occur of: (i) your death, or (ii) six (6) months and one (1) day following your termination of employment. Any portion of the Stock Units where settlement is delayed as a result of the foregoing, which is (i) in whole or in part, settled in cash and (ii) based on the value of a share of Common Stock, shall be based on the value of the Common Stock at the time the Stock Units otherwise would have been settled or paid without application of the delay described in the foregoing sentence. If the Stock Units do not otherwise qualify for an applicable exemption from Code Section 409A, the terms “Retirement,” “terminate,” “termination,” “termination of employment,” and variations thereof as used in these Terms and Conditions are intended to mean a “separation from service” as such term is defined under Code Section 409A.

(c) Although these Terms and Conditions and the payments provided hereunder are intended to be exempt from or to otherwise comply with the requirements of Code Section 409A, the Corporation does not represent or warrant that these Terms and Conditions or the payments provided hereunder will comply with Code Section 409A or any other provisions of federal, state, local, or non-U.S. law. Neither the Corporation, its Subsidiaries, your Employer or their respective directors, officers, employees or advisers shall be liable to you (or any other individual claiming a benefit through you) for any tax, interest, or penalties you may owe as a result of compensation paid under these Terms and Conditions, and the Corporation, its Subsidiaries and your Employer shall have no obligation to indemnify or otherwise protect you from the obligation to pay any taxes pursuant to Code Section 409A.

8. Forfeitures and Recoupment

(a) Recoupment Policy . In addition to these Terms and Conditions, your Stock Units and any shares of Common Stock issued to you pursuant to the Stock Units shall be subject to the provisions of the Northern Trust Corporation Policy on Recoupment, as may be subsequently amended from time to time (the "Policy").

(b) Delegation of Authority to Corporation . For purposes of the foregoing, you expressly and explicitly authorize the Corporation to issue instructions, on your behalf, to any brokerage firm and/or third party administrator engaged by the Corporation to hold your shares of Common Stock and other amounts acquired pursuant to your Stock Units to re-convey, transfer or otherwise return such shares of Common Stock and/or other amounts to the Corporation upon the Corporation's enforcement of the Policy. To the extent that these Terms and Conditions and the Policy conflict, the terms of the Policy shall prevail.

9. Nontransferability . The Stock Units shall be transferable only by will or the laws of descent and distribution. If you purport to make any transfer of the Stock Units, except as aforesaid, the Stock Units and all rights thereunder shall terminate immediately.

10. Securities Laws . The Stock Units shall not be vested in whole or in part, and the Corporation shall not be obligated to issue any shares of Common Stock subject to the Stock Units, if such issuance would, in the opinion of counsel for the Corporation, violate the Securities Act of 1933 or any other U.S. federal, state or non-U.S. laws having similar requirements as it may be in effect at the time. The Stock Units are subject to the further requirement that, if at any time the Board of Directors of the Corporation shall determine in its discretion that the listing or qualification of the shares of Common Stock subject to the Stock Units under any securities exchange requirements or under any applicable law, or the consent or approval of any governmental regulatory body, is necessary or desirable as a condition of or in connection with the issuance of shares of Common Stock pursuant to the Stock Units, the Stock Units may not be vested in whole or in part unless such listing, qualification, consent or approval shall have been effected or obtained free of any conditions not acceptable to the Corporation.

11. No Right of Continued Employment . The grant of the Stock Units shall not confer upon you any right to continue in the employ of your Employer nor limit in any way the right of your Employer to terminate your employment at any time. You shall have no rights as a shareholder of the Corporation with respect to any shares of Common Stock issuable upon the vesting of the Stock Units until the date of issuance of such shares of Common Stock.

12. Discretionary Nature; No Vested Rights . You acknowledge and agree that the 2012 Stock Plan is discretionary in nature and may be amended, cancelled, or terminated by the Corporation, in its sole discretion, at any time. The grant of the Stock Units under the 2012 Stock Plan is a one-time benefit and does not create any contractual or other right to receive a grant of Stock Units or any other award under the 2012 Stock Plan or other benefits in lieu thereof in the future. Future grants, if any, will be at the sole discretion of the Corporation, including, but not limited to, the form and timing of any grant, the number of shares of Common Stock subject to the grant, and the vesting provisions. Any amendment, modification or termination of the 2012 Stock Plan shall not constitute a change or impairment of the terms and conditions of your employment with your Employer.

13. Extraordinary Benefit . Your participation in the 2012 Stock Plan is voluntary. The value of the Stock Units and any other awards granted under the 2012 Stock Plan is an extraordinary item of compensation outside the scope of your employment (and your employment contract, if any). Any grant under the 2012 Stock Plan, including the grant of the Stock Units, is not part of

normal or expected compensation for purposes of calculating any severance, resignation, redundancy, end of service payments, bonuses, long-service awards, pension, or retirement benefits or similar payments.

14. Heirs. These Terms and Conditions shall bind and inure to the benefit of the Corporation, its successors and assigns, and you and your estate in the event of your death.

15. Personal Data. The Corporation and your Employer hereby notify you of the following in relation to your personal data and the collection, processing and transfer of such data in relation to the grant of the Stock Units and your participation in the 2012 Stock Plan pursuant to applicable personal data protection laws. The collection, processing and transfer of your personal data is necessary for the Corporation's administration of the 2012 Stock Plan and your participation in the 2012 Stock Plan, and your denial and/or objection to the collection, processing and transfer of personal data may affect your ability to participate in the 2012 Stock Plan. As such, you voluntarily acknowledge, consent and agree (where required under applicable law) to the collection, use, processing and transfer of personal data as described herein.

The Corporation and your Employer hold certain personal information about you, including (but not limited to) your name, home address, email address and telephone number, date of birth, social security number or other employee identification number, salary, nationality, job title, any shares of Common Stock or directorships held in the Corporation, details of all Stock Units or any other entitlement to shares of Common Stock awarded, canceled, purchased, vested, unvested or outstanding in your favor for the purpose of managing and administering the 2012 Stock Plan (the "Data"). The Data may be provided by you or collected, where lawful, from third parties, and the Corporation and your Employer will process the Data for the exclusive purpose of implementing, administering and managing your participation in the 2012 Stock Plan. The data processing will take place through electronic and non-electronic means according to logics and procedures strictly correlated to the purposes for which the Data is collected and with confidentiality and security provisions as set forth by applicable laws and regulations in your country of residence. Data processing operations will be performed minimizing the use of personal and identification data when such information is unnecessary for the processing purposes sought. The Data will be accessible within the Corporation's organization only by those persons requiring access for purposes of the implementation, administration and operation of the 2012 Stock Plan and for your participation in the 2012 Stock Plan.

The Corporation and your Employer will transfer the Data as necessary for the purpose of implementation, administration and management of your participation in the 2012 Stock Plan, and the Corporation and your Employer may each further transfer the Data to any third parties assisting the Corporation in the implementation, administration and management of the 2012 Stock Plan. These recipients may be located in the European Economic Area, the United States or elsewhere throughout the world. You hereby authorize (where required under applicable law) the recipients to receive, possess, use, retain and transfer the Data, in electronic or other form, for purposes of implementing, administering and managing your participation in the 2012 Stock Plan, including any requisite transfer of such Data as may be required for the administration of the 2012 Stock Plan and/or the subsequent holding of shares of Common Stock on your behalf to a broker or other third party with whom you may elect to deposit any shares of Common Stock acquired pursuant to the 2012 Stock Plan.

You may, at any time, exercise your rights provided under applicable personal data protection laws, which may include the right to (a) obtain confirmation as to the existence of the Data, (b) verify the content, origin and accuracy of the Data, (c) request the integration, update, amendment, deletion or blockage (for breach of applicable laws) of the Data and (d) oppose, for legal reasons, the collection, processing or transfer of the Data that is not necessary or required for the implementation, administration and/or operation of the 2012 Stock Plan and your participation in the 2012 Stock Plan. You may seek to exercise these rights by contacting your local HR manager.

16. Private Placement. The grant of the Stock Units is not intended to be a public offering of securities in your country of residence (and country of employment, if different). The Corporation has not submitted any registration statement, prospectus or other filing with the local securities authorities with respect to the grant of Stock Units (unless otherwise required under local law). **No employee of the Corporation is permitted to advise you on whether you should acquire shares of Common Stock under the 2012 Stock Plan or provide you with any legal, tax or financial advice with respect to the grant of the Stock Units. The acquisition of shares of Common Stock involves certain risks, and you should carefully consider all risk factors and tax considerations relevant to the acquisition of shares of Common Stock under the 2012 Stock Plan and the disposition of them. Further, you should carefully review all of the materials related to the Stock Units and the 2012 Stock Plan, and you should consult with your personal legal, tax and financial advisors for professional advice in relation to your personal circumstances.**

17. Governing Law. All questions concerning the construction, validity and interpretation of the Stock Units and the 2012 Stock Plan shall be governed and construed according to the laws of the state of Delaware, without regard to the application of the conflicts of laws provisions thereof. Any disputes regarding the Stock Units or the 2012 Stock Plan shall be brought only in the state or federal courts of the state of Delaware.

18. Electronic Delivery. The Corporation may, in its sole discretion, decide to deliver any documents related to the Stock Units or other awards granted to you under the 2012 Stock Plan by electronic means. You hereby consent to receive such documents by electronic delivery and agree to participate in the 2012 Stock Plan through an on-line or electronic system established and maintained by the Corporation or a third party designated by the Corporation.

19. Severability. The invalidity or unenforceability of any provision of the 2012 Stock Plan or these Terms and Conditions shall not affect the validity or enforceability of any other provision of the 2012 Stock Plan or these Terms and Conditions.

20. English Language. If you are resident outside of the United States, you acknowledge and agree that it is your express intent that these Terms and Conditions, the 2012 Stock Plan and all other documents, notices and legal proceedings entered into, given or instituted pursuant to the Stock Units be drawn up in English. If you have received these Terms and Conditions, the 2012

Stock Plan or any other documents related to the Stock Units translated into a language other than English and the meaning of the translated version is different than the English version, the English version will control.

21. Addendum . Notwithstanding any provisions of these Terms and Conditions to the contrary, the Stock Units shall be subject to any special terms and conditions for your country of residence (and country of employment, if different) set forth in an addendum to these Terms and Conditions (an "Addendum"). Further, if you transfer your residence and/or employment to another country reflected in an Addendum to these Terms and Conditions at the time of transfer, the special terms and conditions for such country will apply to you to the extent the Corporation determines, in its sole discretion, that the application of such special terms and conditions is necessary or advisable in order to comply with local law, rules and regulations or to facilitate the operation and administration of the Stock Units and the 2012 Stock Plan (or the Corporation may establish alternative terms and conditions as may be necessary or advisable to accommodate your transfer). In all circumstances, any applicable Addendum shall constitute part of these Terms and Conditions.

22. Additional Requirements . The Corporation reserves the right to impose other requirements on the Stock Units, any shares of Common Stock acquired pursuant to the Stock Units and your participation in the 2012 Stock Plan to the extent the Corporation determines, in its sole discretion, that such other requirements are necessary or advisable in order to comply with local law, rules and regulations or to facilitate the operation and administration of the Stock Units and the 2012 Stock Plan. Such requirements may include (but are not limited to) requiring you to sign any agreements or undertakings that may be necessary to accomplish the foregoing.

23. Definitions . For purposes of these Terms and Conditions:

(a) " Age Discrimination Rules " means the age discrimination provisions of the EU Equal Treatment Framework Directive, as implemented into local law.

(b) " Cause " means (i) a material breach or your willful and substantial non-performance of your assigned duties and responsibilities (other than as a result of incapacity due to physical or mental illness), (ii) a conviction of or no contest plea with respect to bribery, extortion, embezzlement, fraud, grand larceny, or any felony or similar conviction under local law involving abuse or misuse of your position to seek or obtain an illegal or personal gain at the expense of the Corporation, your Employer or any Subsidiary, or similar crimes, or conspiracy to commit any such crimes or attempt to commit any such crimes, (iii) your violation of any policy of the Corporation, your Employer or any of its Subsidiaries to which you may be subject or your willful engagement in any misconduct in the performance of your duties that materially injures the Corporation, your Employer or any of its Subsidiaries, (iv) your performance of any act which, if known to the customers, clients, stockholders or regulators of the Corporation, your Employer or any of its Subsidiaries, would materially and adversely impact the business of the Corporation, your Employer or any of its Subsidiaries, or (v) any act or omission by you that causes a regulatory body with jurisdiction over the Corporation, your Employer or any of its Subsidiaries, to demand, request, or recommend that you be suspended or removed from any position in which you serve with the Corporation, your Employer or any of its Subsidiaries.

(c) " Continuous Years of Service " means the period of your continuous and uninterrupted employment with your Employer commencing on your most recent hire date with your Employer through your Termination Date. For the sake of clarity, if your employment with the Corporation or a Subsidiary terminated and you have been rehired by your Employer, your Continuous Years of Service shall not be determined by aggregating your periods of employment with the Corporation or a Subsidiary.

(d) " Disability " means (i) if you are covered under the Northern Trust Corporation Managed Disability Program, a covered disability that continues for a period of at least six (6) months, or (ii) if you are not covered under the Northern Trust Corporation Managed Disability Program, a disability as determined by the Committee in its sole discretion.

(e) " Employer " means the Corporation or any Subsidiary that employs you on the applicable date.

(f) " Grant Date " means the date of grant reflected in your Award Notice.

(g) " Qualifying Termination " means a termination of employment with the Corporation, its Subsidiaries and its successors after the date of the Change in Control and, at any time before the second anniversary of such Change in Control, that is either involuntary on your part and does not otherwise qualify as a Retirement, result from your death or Disability and is not for Cause.

(h) " Retired from the Industry " means a termination of employment under circumstances that constitute Retirement, and you (i) do not thereafter perform services as an employee, officer, director or consultant for, or in any other capacity assist, any entity (other than the Corporation or a Subsidiary), whether existing or in formation, that provides or plans to provide services the same as, substantially similar to, or in direct or indirect competition with those offered by the Corporation or any Subsidiary and which you rendered on behalf of the Corporation or any Subsidiary during your tenure of employment, including but not limited to, those relating to trust, investment management, financial and family business consulting, guardianship and estate administration, brokerage services, private and commercial banking, asset management, custody, fund administration, investment operations outsourcing, investment risk and analytical services, employee benefit services, securities lending, foreign exchange, treasury and cash management, and transition management services, and (ii) certify to the Corporation, at such times and in such manner as the Committee may require, that since your Retirement, you have not performed any such services. The foregoing notwithstanding, service as a director of an entity described above which has been approved in writing by the Committee prior to the commencement of such service shall not, in and of itself, constitute the cessation of being Retired from the Industry.

(i) " Retirement " means a termination of employment without Cause occurring on or after the date (i) you have attained age 55, and (ii) the sum of your age (in whole years, rounded down to the nearest year) and Continuous Years of Service (in whole years, rounded down to the nearest year) equals or exceeds 65. For purposes of these Terms and Conditions, any Retirement shall become effective on the first day of the month following the month in which you satisfy the provisions hereunder.

(j) "Severance-Eligible Termination" means (i) if you are covered under the Northern Trust Corporation Severance Plan, a covered termination where you have executed on or prior to your Termination Date, an effective settlement agreement, waiver and release, or (ii) if you are not covered under the Northern Trust Corporation Severance Plan, a covered termination pursuant to a redundancy/termination indemnity program established or otherwise contributed to by your Employer where you have executed on or prior to your Termination Date, but in effect as of your Termination Date, a settlement agreement and release.

(k) "Tax-Related Items" means any income tax (including U.S. federal, state and local taxes or non-U.S. taxes), social insurance, payroll tax, payment on account or other tax-related withholding amounts.

(l) "Termination Date" means (i) if you are a resident of or employed in the United States, the effective date of termination of your employment with your Employer, or (ii) if you are resident or employed outside of the United States, the earliest of (a) the date on which notice of termination is provided to you, (b) the last day of your active service with your Employer or (c) the last day on which you are an Employee of your Employer, as determined in each case without including any required advance notice period and irrespective of the status of the termination under local labor or employment laws.

(m) "Vesting Date" means each date on which you acquire a non-forfeitable right in a Stock Unit as reflected in **Section 2(a)**.

(n) "Vesting Period" means the period commencing on the Grant Date and ending on the last Vesting Date as reflected in **Section 2(a)**.

24. Acceptance. **By accepting the grant of the Stock Units, you affirmatively and expressly acknowledge that you have read these Terms and Conditions, the Award Notice, the Addendum to these Terms and Conditions (as applicable) and the 2012 Stock Plan, and specifically accept and agree to the provisions therein.**

* * * * *

<u>Exhibit I</u>

Alternative Vesting Schedule

Vesting Date	Percentage of Stock Units Vesting

NORTHERN TRUST CORPORATION

**AMENDMENT TO
TERMS AND CONDITIONS
RELATING TO PERFORMANCE STOCK UNITS GRANTED
PURSUANT TO THE 2012 STOCK PLAN**

1. Section 6(c) is hereby revised by adding the following provision at the end thereof, effective as of the original Grant Date reflected in the Award Notice:

"Notwithstanding the foregoing, you will continue to vest in your PSUs pursuant to this Section 6(c) regardless of whether you cease to be Retired from the Industry if (i) the Corporation, in its sole discretion, characterizes your termination as a Severance-Eligible Termination, (ii) your termination is subject to mutual agreement and you have executed an effective settlement agreement, waiver and release that is satisfactory to the Corporation, in its sole discretion, (iii) you cease to be an employee by reason of Disability, or (iv) a forfeiture upon your ceasing to be Retired from the Industry would violate applicable law."

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NORTHERN TRUST CORPORATION

TERMS AND CONDITIONS
RELATING TO PERFORMANCE STOCK UNITS GRANTED
PURSUANT TO THE 2012 STOCK PLAN

1. Grant of PSUs . The performance stock units ("PSUs") with respect to shares of Common Stock of Northern Trust Corporation (the "Corporation") granted to you pursuant to your Award Notice are subject to the terms and conditions set forth herein (the "Terms and Conditions"), the PSU Award Notice (the "Award Notice") and all of the terms and conditions of the Northern Trust Corporation 2012 Stock Plan (the "2012 Stock Plan"), which is incorporated herein by reference. In the case of a conflict between these Terms and Conditions, the Award Notice and the terms of the 2012 Stock Plan, the provisions of the 2012 Stock Plan will govern. Capitalized terms used but not defined herein have the meaning provided therefor in the 2012 Stock Plan.

2. Vesting Conditions . Except as provided in Section 8, the vesting of your PSUs is dependent upon (a) the average annual rate of return on equity that the Corporation achieves during the Performance Period, and (b) your continuous employment with your Employer through the Vesting Date.

3. Average Annual Rate of Return on Equity .

(a) If you have remained in the continuous and uninterrupted employment of your Employer through the Vesting Date (except as otherwise provided in Section 8), you shall become vested in the percentage of the PSUs determined based on the Corporation's average annual rate of return on equity for the Performance Period using the following table (applying straight line interpolation rounded to the nearest whole number of PSUs for average annual rates of return on equity falling between the applicable thresholds):

Average Annual Rate of Return on Equity	Less than 7.5%	7.5%	9.0%	12.0%	≥ 15%
PSU Multiplier	0%	25%	50%	100%	150%

Any PSUs that do not become vested in accordance with the foregoing table shall be forfeited.

(b) As soon as administratively practicable following the Vesting Date (but in no event later than March 15 of the calendar year following the calendar year in which the Performance Period ends), the Corporation will issue you one (1) share of Common Stock in settlement of each vested PSU.

(c) For purposes of these Terms and Conditions:

(i) The average annual rate of return on equity for the Performance Period attained by the Corporation is the return on average common equity, based on the Corporation's net income, and shall be determined by the Committee in its sole and absolute discretion in accordance with generally accepted accounting principles (subject to the adjustments set forth below). For purposes of the foregoing, the average annual rate of return on equity shall be calculated as the simple average annual rate of return on equity for the three-year Performance Period measured across the Corporation as a whole.

(ii) Notwithstanding anything herein to the contrary, for purposes of determining the average annual rate of return on equity for any individual fiscal year of the Corporation within the Performance Period, if any of the following items, individually or aggregated with other items as reflected herein, would produce a change to net income in excess of $100 million, net income shall be determined for such fiscal year by excluding such item(s) as aggregated:

(A) the gains or losses resulting from, and the expenses incurred in connection with, the acquisition or disposition of a business, a merger, or a similar transaction, and integration in connection therewith;

(B) the impact of securities issuances in connection with events described in item (A), above, and expenses incurred in connection therewith;

(C) any gain, loss, income or expense resulting from changes in accounting principles, tax laws, or other laws or provisions affecting reported results, that become effective during the Performance Period;

(D) any gain or loss resulting from, and expenses incurred in connection with, any litigation or regulatory investigations;

(E) any charges and expenses incurred in connection with restructuring activity, including but not limited to, reductions in force;

(F) the impact of discontinued operations;

(G) asset write-downs;

(H) the impact on goodwill impairment; or

(I) any other gain, loss, income or expense with respect to the Performance Period that is extraordinary, unusual and/or infrequent.

All amounts referenced in the foregoing list shall be determined in accordance with GAAP and shall be consistent with the Corporation’s financial disclosures. Further, the Committee’s determination of the average annual rate of return on equity for a Performance Period shall be final.

4. Section 162(m) . All payments under these Terms and Conditions are intended to constitute "qualified performance-based compensation" within the meaning of Section 162(m) of the Code.

5. Dividend Equivalents . With respect to the payment of any dividends on the shares of Common Stock occurring during the period preceding the settlement of your PSUs pursuant to these Terms and Conditions, the Corporation shall credit to you an amount in cash equal in value to the dividends that you would have received had you been the actual owner of the number of shares of Common Stock represented by the number of PSUs earned as of the end of the Performance Period. The payment of any dividend equivalents as provided herein shall be made as soon as practical following the Vesting Date (or such other date on which the PSUs may become vested pursuant to these Terms and Conditions), and shall be credited with simple interest at the applicable federal interest rate as in effect on the Grant Date.

6. Treatment of PSUs Upon Termination Events . In the event you cease to remain in the continuous employment of your Employer through the Vesting Date, your right to receive the shares of Common Stock issuable pursuant to the PSUs shall be only as follows:

(a) Cause . Notwithstanding anything to the contrary contained in these Terms and Conditions, if your Employer terminates your employment for Cause, your PSUs, whether vested but unsettled or unvested, immediately shall terminate and be forfeited.

(b) Death and Disability . If you cease to be an Employee by reason of Disability or death prior to the Vesting Date, you or your estate will become vested in the Actual PSUs as of the Vesting Date. You, your legal representative or your estate will receive the underlying shares of Common Stock pursuant to the vested PSUs as soon as administratively practicable following the Vesting Date (but in no event later than March 15 of the calendar year following the calendar year in which the Performance Period ends).

(c) Retirement . If (i) you cease to be an Employee by reason of Retirement, (ii) you provide Written Retirement Notice, and (iii) you remain continuously employed with your Employer for at least the initial six (6) months of the Performance Period, you will continue to vest in your PSUs as provided in these Terms and Conditions, and you will receive the underlying shares of Common Stock pursuant to any PSUs that vest pursuant to Section 3 as soon as administratively practicable following the Vesting Date (but in no event later than March 15 of the calendar year following the calendar year in which the Performance Period ends). However, if you cease to be Retired from the Industry (as determined by the Committee in its sole discretion), any PSUs immediately shall terminate and be forfeited.

(d) Severance Eligible Termination and Redundancy. If you cease to be an Employee and your termination (i) qualifies as a Severance-Eligible Termination and/or (ii) is under circumstances in which your position has been made redundant by your Employer (if you are employed outside of the United States), you will become vested in a pro-rata portion of the PSUs equal to the Actual PSUs multiplied by a fraction, (i) the numerator of which will equal the total number of your completed full months of continuous service with your Employer between the Grant Date and your Termination Date, plus 12 additional months, and (ii) the denominator of which will equal the total number of months during the Performance Period (provided, the total number of months in the numerator shall in no event exceed the total number of months in the Performance Period). You will receive the underlying shares of Common Stock pursuant to the vested Actual PSUs as soon as administratively practicable following the end of the Performance Period (but in no event later than March 15 of the calendar year following the calendar year in which the Performance Period ends).

(e) Other Termination Events. If you cease to be an Employee prior to the date that your PSUs become vested for any reason other than those provided above, your PSUs shall terminate and be forfeited as of your Termination Date.

(f) Age Discrimination Rules. If you are resident and/or employed in a country that is a member of the European Union, the grant of the PSUs and these Terms and Conditions are intended to comply with the Age Discrimination Rules. To the extent that a court or tribunal of competent jurisdiction determines that any provision of the Terms and Conditions are invalid or unenforceable, in whole or in part, under the Age Discrimination Rules, the Corporation, in its sole discretion, shall have the power and authority to revise or strike such provision to the minimum extent necessary to make it valid and enforceable to the full extent permitted under local law.

7. Form of Settlement. Notwithstanding the foregoing, the Corporation may, in its sole discretion, settle the PSUs in the form of: (a) a cash payment to the extent settlement in shares of Common Stock (i) is prohibited under local law, (ii) would require you or the Corporation and/or your Employer to obtain the approval of any governmental and/or regulatory body in your country of residence (and country of employment, if different), or (iii) is administratively burdensome; or (b) shares of Common Stock, but require you to immediately sell such shares of Common Stock (in which case, the Corporation shall have the authority to issue sales instructions in relation to such shares of Common Stock on your behalf).

8. Treatment Upon Change in Control.

(a) General. Except as may be otherwise provided in an agreement executed by the Corporation and, where applicable, approved by the Corporation's shareholders addressing a Change in Control, your PSUs shall be treated in accordance with the following provisions in the event of a Change in Control.

(b) Conversion of PSUs by Acquirer. In the event of a Change in Control, the PSUs shall be converted to unvested restricted stock units settled in shares of the acquirer's common stock (an "Acquirer Stock Unit") as follows:

(i) **Acquirer Unvested Stock Units Based Upon Corporation Performance** : A pro-rata number of the PSUs shall be converted into a time-based, unvested restricted stock unit over one (1) share of the acquirer's common stock based upon the Corporation's average annual rate of return on equity as computed for the Abbreviated Performance Period (an "Acquirer Unvested Performance-Related Stock Unit") where: (1) the Corporation's average annual rate of return on equity shall be computed on the basis of the Abbreviated Performance Period; (2) the PSU Multiplier shall be determined based upon the Corporation's average annual rate of return on equity for the Abbreviated Performance Period; (3) the pro-ration shall be done on the basis of the Pre-Change in Control Pro-Ration Factor; and (4) the terms and conditions of each Acquirer Unvested Performance-Related Stock Unit shall be the same in all material respects as the terms and conditions of the original PSU, with the exception that you shall vest in each Acquirer Unvested Performance-Related Stock Unit on the basis of your continuous employment from the date of the Change in Control through the end of the original Performance Period plus one (1) day (the "Post-Change Vesting Date"). Upon vesting, each vested Acquirer Unvested Performance-Related Stock Unit will be settled in one (1) share of the acquirer's common stock as soon as administratively practicable following the Post-Change Vesting Date. Upon a Qualifying Termination prior to the Post-Change Vesting Date, you shall become fully vested in each Acquirer Unvested Performance-Related Stock Unit and each vested Acquirer Unvested Performance-Related Stock Unit shall be settled (in one share (1) of the acquirer's common stock) as soon as administratively practicable following such Qualifying Termination.

(ii) **Acquirer Unvested Stock Units** : A pro-rata number of the PSUs shall be converted into a time-based, unvested restricted stock unit over one (1) share of the acquirer's common stock (an "Acquirer Unvested Stock Unit") where: (1) the number of PSUs subject to conversion to Acquirer Unvested Stock Units shall be computed on the basis of a PSU Multiplier equal to 100%, (2) the pro-ration shall be done on the basis of the Post-Change in Control Pro-Ration Factor, and (3) the terms and conditions of each Acquirer Unvested Stock Unit shall be the same in all material respects as the terms and conditions of the original PSU, with the exception that you shall vest in each Acquirer Unvested Stock Unit on the basis of your continuous employment from the date of the Change in Control through the Post-Change Vesting Date. Upon vesting, each vested Acquirer Unvested Stock Unit will be settled in one (1) share of the acquirer's common stock as soon as administratively practicable following the Post-Change Vesting Date. Upon a Qualifying Termination prior to the Post-Change Vesting Date, you shall become fully vested in each Acquirer Unvested Stock Unit and each vested Acquirer Unvested Stock Unit shall be settled (in one share (1) of the acquirer's common stock) as soon as administratively practicable following such Qualifying Termination. For purposes of the foregoing and to the extent possible, the conversion of PSUs into Acquirer Unvested Stock Units shall be effectuated in accordance with the applicable provisions of the Code (and the related Treasury Regulations) and the applicable provisions of the laws of your country of residence and/or employment such that the conversion is tax neutral and itself does not trigger a taxable event to you, the Corporation, your Employer or the acquirer.

(c) <u>Cashout of PSUs</u> . In the event of a Change in Control where the acquirer does not convert the PSUs in accordance with the provisions of Section 8(b), you shall become vested in the PSUs as follows:

(i) **Cashout of Vested PSUs Based Upon Corporation Performance** : A pro-rata number of the PSUs shall become vested based upon the Corporation's average annual rate of return on equity as computed for the Abbreviated Performance Period where: (1) the Corporation's average annual rate of return on equity shall be computed on the basis of the Abbreviated Performance Period, (2) the PSU Multiplier shall be determined based upon the Corporation's average annual rate of return on equity for the Abbreviated Performance Period, and (3) the pro-ration shall be done on the basis of the Pre-Change in Control Pro-Ration Factor. Upon vesting, each vested PSU shall be cancelled by the Corporation in exchange for a cash payment equal to the aggregate consideration paid to each shareholder of one (1) share of Common Stock upon the Change in Control. Such cash payment shall be made as soon as administratively practicable following the Change in Control in such manner and in accordance with such procedures as the Committee may determine in its sole discretion.

(ii) **Cashout of Vested PSUs Based on Target** : Another pro-rata number of the PSUs shall become vested where: (1) the number of PSUs subject to vesting shall be computed on the basis of a PSU Multiplier equal to 100%, and (2) the PSUs will be subject to the Post-Change Pro-Ration Factor. Upon vesting, each vested PSU shall be cancelled by the Corporation in exchange for a cash payment equal to the aggregate consideration paid to each shareholder of one (1) share of Common Stock upon the Change in Control. Such cash payment shall be made as soon as administratively practicable following the Change in Control in such manner and in accordance with such procedures as the Committee may determine in its sole discretion.

9. Legal and Tax Compliance; Cooperation . If you are resident or employed outside of the United States, you agree, as a condition of the grant of the PSUs, to repatriate all payments attributable to the shares of Common Stock and/or cash acquired under the 2012 Stock Plan (including, but not limited to, dividends, dividend equivalents and any proceeds derived from the sale of the shares of Common Stock acquired pursuant to the PSUs) in accordance with local foreign exchange rules and regulations in your country of residence (and country of employment, if different). In addition, you also agree to take any and all actions, and consent to any and all actions taken by the Corporation and its Subsidiaries, as may be required to allow the Corporation and its Subsidiaries to comply with local laws, rules and regulations in your country of residence (and country of employment, if different). Finally, you agree to take any and all actions as may be required to comply with your personal legal and tax obligations under local laws, rules and regulations in your country of residence (and country of employment, if different).

10. Withholding of Tax-Related Items . Regardless of any action the Corporation and/or your Employer take with respect to any or all Tax-Related Items, you acknowledge that the ultimate liability for all Tax-Related Items legally due by you is and remains your responsibility and that the Corporation and your Employer (i) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the PSUs, including the grant of the PSUs, the vesting of the PSUs, the subsequent sale of any shares of Common Stock acquired pursuant to the PSUs and the receipt of any dividends or dividend equivalents and (ii) do not commit to structure the terms of the grant or any aspect of the PSUs to reduce or eliminate your liability for Tax-Related Items.

Prior to the delivery of shares of Common Stock upon the vesting of your PSUs, if your country of residence (and/or the country of employment, if different) requires withholding of Tax-Related Items, the Corporation shall withhold a sufficient number of whole shares of Common Stock otherwise issuable upon the vesting of the PSUs that have an aggregate Fair Market Value sufficient to pay the Tax-Related Items required to be withheld with respect to the shares of Common Stock. The cash equivalent of the shares of Common Stock withheld will be used to settle the obligation to withhold the Tax-Related Items. In the event that withholding in shares of Common Stock is prohibited or problematic under applicable law or otherwise may trigger adverse consequences to the Corporation or your Employer, your Employer may withhold the minimum Tax-Related Items required to be withheld with respect to the shares of Common Stock in cash from your regular salary and/or wages, or any other amounts payable to you. In the event the withholding requirements are not satisfied through the withholding of shares of Common Stock by the Corporation or through your regular salary and/or wages or other amounts payable to you by your Employer, no shares of Common Stock will be issued to you (or your estate) upon vesting of the PSUs unless and until satisfactory arrangements (as determined by the Corporation) have been made by you with respect to the payment of any Tax-Related Items that the Corporation or your Employer determines, in its sole discretion, must be withheld or collected with respect to such PSUs.

By accepting these PSUs, you expressly consent to the foregoing methods of withholding as provided for hereunder. All other Tax-Related Items related to the PSUs and any shares of Common Stock delivered in settlement thereof are your sole responsibility.

11. Code Section 409A .

(a) The PSUs are intended to comply with or be exempt from the requirements of Code Section 409A. The 2012 Stock Plan and these Terms and Conditions shall be administered and interpreted in a manner consistent with this intent. If the Corporation determines that these Terms and Conditions are subject to Code Section 409A and that they do not comply with or are inconsistent with the applicable requirements, the Corporation may, in its sole discretion, and without your consent, amend these Terms and Conditions to cause them to comply with Code Section 409A or be exempt from Code Section 409A.

(b) Notwithstanding any provision of these Terms and Conditions to the contrary, in the event that any settlement or payment of the PSUs occurs as a result of your termination of employment and the Corporation determines that you are a “specified employee” (within the meaning of Code Section 409A) subject to Code Section 409A at the time of your termination of employment, and provided further that such payment or settlement does not otherwise qualify for an applicable exemption from Code Section 409A, then no such settlement or payment shall be paid to you until the date that is the earlier to occur of: (i) your death, or (ii) six (6) months and one (1) day following your termination of employment. Any portion of the PSUs where settlement is delayed as a result of the foregoing, which is (i) in whole or in part, settled in cash and (ii) based on the value of a share of Common Stock, shall be based on the value of the Common Stock at the time the PSUs otherwise would have been settled or paid without application of the delay described in the foregoing sentence. If the PSUs do not otherwise qualify for an applicable exemption from Code Section 409A, the terms “Retirement,” “terminate,” “termination,” “termination of employment," and variations thereof as used in these Terms and Conditions are intended to mean a "separation from service" as such term is defined under Code Section 409A.

(c) Although these Terms and Conditions and the payments provided hereunder are intended to be exempt from or to otherwise comply with the requirements of Code Section 409A, the Corporation does not represent or warrant that these Terms and Conditions or the payments provided hereunder will comply with Code Section 409A or any other provisions of federal, state, local, or non-U.S. law. Neither the Corporation, its Subsidiaries, your Employer or their respective directors, officers, employees or advisers shall be liable to you (or any other individual claiming a benefit through you) for any tax, interest, or penalties you may owe as a result of compensation paid under these Terms and Conditions, and the Corporation, its Subsidiaries and your Employer shall have no obligation to indemnify or otherwise protect you from the obligation to pay any taxes pursuant to Code Section 409A.

12. Forfeitures and Recoupment

(a) Recoupment Policy. In addition to these Terms and Conditions, your PSUs and any shares of Common Stock issued to you pursuant to the PSUs shall be subject to the provisions of the Northern Trust Corporation Policy on Recoupment, as may be subsequently amended from time to time (the "Policy").

(b) Delegation of Authority to Corporation. For purposes of the foregoing, you expressly and explicitly authorize the Corporation to issue instructions, on your behalf, to any brokerage firm and/or third party administrator engaged by the Corporation to hold your shares of Common Stock and other amounts acquired pursuant to your PSUs to re-convey, transfer or otherwise return such shares of Common Stock and/or other amounts to the Corporation upon the Corporation's enforcement of the Policy. To the extent that these Terms and Conditions and the Policy conflict, the terms of the Policy shall prevail.

13. Nontransferability. The PSUs shall be transferable only by will or the laws of descent and distribution. If you shall purport to make any transfer of the PSUs, except as aforesaid, the PSUs and all rights thereunder shall terminate immediately.

14. Securities Laws. The PSUs shall not be vested in whole or in part, and the Corporation shall not be obligated to issue any shares of Common Stock subject to the PSUs, if such issuance would, in the opinion of counsel for the Corporation, violate the Securities Act of 1933 or any other U.S. federal, state or non-U.S. laws having similar requirements as it may be in effect at the time. The PSUs are subject to the further requirement that, if at any time the Board of Directors of the Corporation shall determine in its discretion that the listing or qualification of the shares of Common Stock subject to the PSUs under any securities exchange requirements or under any applicable law, or the consent or approval of any governmental regulatory body, is necessary or desirable as a condition of or in connection with the issuance of shares of Common Stock pursuant to the PSUs, the PSUs may not be vested in whole or in part unless such listing, qualification, consent or approval shall have been effected or obtained free of any conditions not acceptable to the Corporation.

15. No Right of Continued Employment. The grant of the PSUs shall not confer upon you any right to continue in the employ of your Employer nor limit in any way the right of your Employer to terminate your employment at any time. You shall have no rights as a shareholder of the Corporation with respect to any shares of Common Stock issuable upon the vesting of the PSUs until the date of issuance of such shares of Common Stock.

16. Discretionary Nature; No Vested Rights. You acknowledge and agree that the 2012 Stock Plan is discretionary in nature and may be amended, cancelled or terminated by the Corporation, in its sole discretion, at any time. The grant of the PSUs under the 2012 Stock Plan is a one-time benefit and does not create any contractual or other right to receive a grant of PSUs or any other award under the 2012 Stock Plan or other benefits in lieu thereof in the future. Future grants, if any, will be at the sole discretion of the Corporation, including, but not limited to, the form and timing of any grant, the number of shares of Common Stock subject to the grant and the vesting provisions. Any amendment, modification or termination of the 2012 Stock Plan shall not constitute a change or impairment of the terms and conditions of your employment with your Employer.

17. Extraordinary Benefit. Your participation in the 2012 Stock Plan is voluntary. The value of the PSUs and any other awards granted under the 2012 Stock Plan is an extraordinary item of compensation outside the scope of your employment (and your employment contract, if any). Any grant under the 2012 Stock Plan, including the grant of the PSUs, is not part of normal or expected compensation for purposes of calculating any severance, resignation, redundancy, end of service payments, bonuses, long-service awards, pension, or retirement benefits or similar payments.

18. Heirs. These Terms and Conditions shall bind and inure to the benefit of the Corporation, its successors and assigns, and you and your estate in the event of your death.

19. Personal Data. The Corporation and your Employer hereby notify you of the following in relation to your personal data and the collection, processing and transfer of such data in relation to the grant of the PSUs and your participation in the 2012 Stock Plan pursuant to applicable personal data protection laws. The collection, processing and transfer of your personal data is necessary for the Corporation’s administration of the 2012 Stock Plan and your participation in the 2012 Stock Plan, and your denial and/or objection to the collection, processing and transfer of personal data may affect your ability to participate in the 2012 Stock Plan. As such, you voluntarily acknowledge, consent and agree (where required under applicable law) to the collection, use, processing and transfer of personal data as described herein.

The Corporation and your Employer hold certain personal information about you, including (but not limited to) your name, home address, email address and telephone number, date of birth, social security number or other employee identification number, salary, nationality, job title, any shares of Common Stock or directorships held in the Corporation, details of all PSUs or any other entitlement to shares of Common Stock awarded, canceled, purchased, vested, unvested or outstanding in your favor for the purpose of managing and administering the 2012 Stock Plan (the “Data”). The Data may be provided by you or collected, where lawful, from third parties, and the Corporation and your Employer will process the Data for the exclusive purpose of implementing, administering and managing your participation in the 2012 Stock Plan. The data processing will take place through electronic and non-electronic means according to logics and procedures strictly correlated to the purposes for which the Data is collected and with confidentiality and security provisions as set forth by applicable laws and regulations in your country of residence. Data processing operations will be performed minimizing the use of personal and identification data when such operations are unnecessary for the processing purposes sought. The Data will be accessible within the Corporation's organization only by those persons requiring access for purposes of the implementation, administration and operation of the 2012 Stock Plan and for your participation in the 2012 Stock Plan.

The Corporation and your Employer will transfer the Data as necessary for the purpose of implementation, administration and management of your participation in the 2012 Stock Plan, and the Corporation and your Employer may each further transfer the Data to any third parties assisting the Corporation in the implementation, administration and management of the 2012 Stock Plan. These recipients may be located in the European Economic Area, the United States or elsewhere throughout the world. You hereby authorize (where required under applicable law) the recipients to receive, possess, use, retain and transfer the Data, in electronic or other form, for purposes of implementing, administering and managing your participation in the 2012 Stock Plan, including any requisite transfer of such Data as may be required for the administration of the 2012 Stock Plan and/or the subsequent holding of shares of Common Stock on your behalf to a broker or other third party with whom you may elect to deposit any shares of Common Stock acquired pursuant to the 2012 Stock Plan.

You may, at any time, exercise your rights provided under applicable personal data protection laws, which may include the right to (a) obtain confirmation as to the existence of the Data, (b) verify the content, origin and accuracy of the Data, (c) request the integration, update, amendment, deletion or blockage (for breach of applicable laws) of the Data and (d) oppose, for legal reasons, the collection, processing or transfer of the Data that is not necessary or required for the implementation, administration and/or operation of the 2012 Stock Plan and your participation in the 2012 Stock Plan. You may seek to exercise these rights by contacting your local HR manager.

20. Private Placement. The grant of the PSUs is not intended to be a public offering of securities in your country of residence (and country of employment, if different). The Corporation has not submitted any registration statement, prospectus or other filing(s) with the local securities authorities with respect to the grant of PSUs (unless otherwise required under local law). **No employee of the Corporation is permitted to advise you on whether you should acquire shares of Common Stock under the 2012 Stock Plan or provide you with any legal, tax or financial advice with respect to the grant of the PSUs. The acquisition of shares of Common Stock involves certain risks, and you should carefully consider all risk factors and tax considerations relevant to the acquisition of shares of Common Stock under the 2012 Stock Plan or the disposition of them. Further, you should carefully review all of the materials related to the PSUs and the 2012 Stock Plan, and you should consult with your personal legal, tax and financial advisors for professional advice in relation to your personal circumstances.**

21. Governing Law. All questions concerning the construction, validity and interpretation of the PSUs and the 2012 Stock Plan shall be governed and construed according to the laws of the state of Delaware, without regard to the application of the conflicts of laws provisions thereof. Any disputes regarding the PSUs or the 2012 Stock Plan shall be brought only in the state or federal courts of the state of Delaware.

22. Electronic Delivery. The Corporation may, in its sole discretion, decide to deliver any documents related to the PSUs or other awards granted to you under the 2012 Stock Plan by electronic means. You hereby consent to receive such documents by electronic delivery and agree to participate in the 2012 Stock Plan through an on-line or electronic system established and maintained by the Corporation or a third party designated by the Corporation.

23. Severability. The invalidity or unenforceability of any provision of the 2012 Stock Plan or these Terms and Conditions shall not affect the validity or enforceability of any other provision of the 2012 Stock Plan or these Terms and Conditions.

24. English Language. If you are resident outside of the United States, you acknowledge and agree that it is your express intent that these Terms and Conditions, the 2012 Stock Plan and all other documents, notices and legal proceedings entered into, given or instituted pursuant to the PSUs be drawn up in English. If you have received these Terms and Conditions, the 2012 Stock Plan or any other documents related to the PSUs translated into a language other than English and the meaning of the translated version is different than the English version, the English version will control.

25. Addendum. Notwithstanding any provisions of these Terms and Conditions to the contrary, the PSUs shall be subject to any special terms and conditions for your country of residence (and country of employment, if different) set forth in an addendum to these Terms and Conditions (an "Addendum"). Further, if you transfer your residence and/or employment to another country reflected in an Addendum to these Terms and Conditions at the time of transfer, the special terms and conditions for such country will apply to you to the extent the Corporation determines, in its sole discretion, that the application of such special terms and conditions is necessary or advisable in order to comply with local law, rules and regulations, or to facilitate the operation and administration of the PSU and the 2012 Stock Plan (or the Corporation may establish alternative terms and conditions as may be necessary or advisable to accommodate your transfer). In all circumstances, any applicable Addendum shall constitute part of these Terms and Conditions.

26. Additional Requirements. The Corporation reserves the right to impose other requirements on the PSUs, any shares of Common Stock acquired pursuant to the PSUs and your participation in the 2012 Stock Plan to the extent the Corporation determines, in its sole discretion, that such other requirements are necessary or advisable in order to comply with local law, rules and regulations, or to facilitate the operation and administration of the award and the 2012 Stock Plan. Such requirements may include (but are not limited to) requiring you to sign any agreements or undertakings that may be necessary to accomplish the foregoing.

27. **Definitions**. For purpose of these Terms and Conditions:

(a) "Abbreviated Performance Period" means the period commencing on January 1, 2017 and ending on the last day of the month preceding the month in which a Change in Control occurs.

(b) "Actual PSUs" means the number of PSUs, if any, as determined based on the average annual rate of return on equity actually attained by the Corporation (as determined by the Committee in its sole and absolute discretion) for the Performance Period.

(c) "Age Discrimination Rules" means the age discrimination provisions of the EU Equal Treatment Framework Directive, as implemented into local law.

(d) "Cause" means (i) a material breach or your willful and substantial non-performance of your assigned duties and responsibilities (other than as a result of incapacity due to physical or mental illness), (ii) a conviction of or no contest plea with respect to bribery, extortion, embezzlement, fraud, grand larceny, or any felony or similar conviction under local law involving abuse or misuse of your position to seek or obtain an illegal or personal gain at the expense of the Corporation, your Employer or any Subsidiary, or similar crimes, or conspiracy to commit any such crimes or attempt to commit any such crimes, (iii) your violation of any policy of the Corporation, your Employer or any of its Subsidiaries to which you may be subject or your willful engagement in any misconduct in the performance of your duties that materially injures the Corporation, your Employer or any of its Subsidiaries, (iv) your performance of any act which, if known to the customers, clients, stockholders or regulators of the Corporation, your Employer or any of its Subsidiaries, would materially and adversely impact the business of the Corporation, your Employer or any of its Subsidiaries, or (v) any act or omission by you that causes a regulatory body with jurisdiction over the Corporation, your Employer or any of its Subsidiaries, to demand, request, or recommend that you be suspended or removed from any position in which you serve with the Corporation, your Employer or any of its Subsidiaries.

(e) "Continuous Years of Service" means the period of your continuous and uninterrupted employment with your Employer commencing on your most recent hire date with your Employer through your Termination Date. For the sake of clarity, if your employment with the Corporation or a Subsidiary terminated and you have been rehired by your Employer, your Continuous Years of Service shall not be determined by aggregating your periods of employment with the Corporation or a Subsidiary.

(f) "Disability" means (i) if you are covered under the Northern Trust Corporation Managed Disability Program, a covered disability that continues for a period of at least six (6) months, or (ii) if you are not covered under the Northern Trust Corporation Managed Disability Program, a disability as determined by the Committee in its sole discretion.

(g) "Employer" means the Corporation or any Subsidiary that employs you on the applicable date.

(h) " Grant Date " means the date of grant reflected in your Award Notice.

(i) " Performance Period " means the three-year period commencing on January 1, 2017 and ending on December 31, 2019.

(j) " Pre-Change in Control Pro-Ration Factor " means a fraction, the numerator of which is the number of full months in the Abbreviated Performance Period, and the denominator of which is the number of full months in the Performance Period.

(k) " Post-Change in Control Pro-Ration Factor " means a fraction, the numerator of which is the number of full months from the date of a Change in Control through the last day of the Performance Period, and the denominator of which is the number of full months in the Performance Period

(l) " Qualifying Termination " means a termination of employment with the Corporation, its Subsidiaries and its successors after the date of the Change in Control and, at any time before the second anniversary of such Change in Control, that is either involuntary on your part and does not otherwise qualify as a Retirement, result from your death or Disability and is not for Cause.

(m) " Retired from the Industry " means a termination of employment under circumstances that constitute Retirement, and you (i) do not thereafter perform services as an employee, officer, director or consultant for, or in any other capacity assist, any entity (other than the Corporation or a Subsidiary), whether existing or in formation, that provides or plans to provide services the same as, substantially similar to, or in direct or indirect competition with those offered by the Corporation or any Subsidiary and which you rendered on behalf of the Corporation or any Subsidiary during your tenure of employment, including but not limited to, those relating to trust, investment management, financial and family business consulting, guardianship and estate administration, brokerage services, private and commercial banking, asset management, custody, fund administration, investment operations outsourcing, investment risk and analytical services, employee benefit services, securities lending, foreign exchange, treasury and cash management, and transition management services, and (ii) certify to the Corporation, at such times and in such manner as the Committee may require, that since your Retirement, you have not performed any such services. The foregoing notwithstanding, service as a director of an entity described above which has been approved in writing by the Committee prior to the commencement of such service shall not, in and of itself, constitute the cessation of being Retired from the Industry.

(n) " Retirement " means a termination of employment without Cause occurring on or after the date (i) you have attained age 55, and (ii) the sum of your age (in whole years, rounded down to the nearest year) and Continuous Years of Service (in whole years, rounded down to the nearest year) equals or exceeds 65. For purposes of these Terms and Conditions, any Retirement shall become effective on the first day of the month following the month in which you satisfy the provisions hereunder.

(o) “ Severance-Eligible Termination ” means (i) if you are covered under the Northern Trust Corporation Severance Plan, a covered termination where you have executed on or prior to your Termination Date an effective settlement agreement, waiver and release, or (ii) if you are not covered under the Northern Trust Corporation Severance Plan, a covered termination pursuant to a redundancy/termination indemnity program established or otherwise contributed to by your Employer where you have executed on or prior to your Termination Date, but in effect as of your Termination Date a settlement agreement and release.

(p) “ Tax-Related Items ” means any income tax (including U.S. federal, state and local taxes or non-U.S. taxes), social insurance, payroll tax, payment on account or other tax-related withholding amounts.

(q) “ Termination Date ” means (i) if you are a resident of or employed in the United States, the effective date of termination of your employment with your Employer, or (ii) if you are resident or employed outside of the United States, the earliest of (a) the date on which notice of termination is provided to you, (b) the last day of your active service with your Employer or (c) the last day on which you are an Employee of your Employer, as determined in each case without including any required advance notice period and irrespective of the status of the termination under local labor or employment laws.

(r) " Vesting Date " means the date on which the Committee certifies the Corporation's attainment of its average annual rate of return on equity for the Performance Period.

(s) “ Written Retirement Notice ” means a written notice of your Retirement provided at least three (3) months in advance of such Retirement to the Corporation’s chief human resources officer (or in the case of the Retirement of the Corporation’s chief human resources officer, to the Corporation’s chief executive officer).

31. Acceptance . **By accepting the grant of the PSUs, you affirmatively and expressly acknowledge that you have read these Terms and Conditions, the Award Notice, the Addendum to these Terms and Conditions (as applicable) and the 2012 Stock Plan, and specifically accept and agree to the provisions therein.**

* * * * *

Exhibit 21

NORTHERN TRUST CORPORATION SUBSIDIARIES AS OF FEBRUARY 27, 2018

	Percent Owned	Jurisdiction of Incorporation
The Northern Trust Company	100%	Illinois
MFC Company, Inc.	100%	Delaware
Norlease, Inc.	100%	Delaware
Clenston Ltd.*	100%	Bermuda
NL-Camillus NMTC Fund, LLC	100%	Delaware
Northern CDE Corporation	100%	Illinois
Northern Trust Company of California	100%	California
Northern Trust Guernsey Holdings Limited	100%	Guernsey
Northern Trust (Guernsey) Limited	100%	Guernsey
Northern Trust Hedge Fund Services LLC	100%	Delaware
Northern Trust Holdings Limited	100%	England
Northern Trust Global Services Limited	100%	England
1889 Holdings, S.A.	100%	Luxembourg
Northern Trust Switzerland AG	100%	Switzerland
NT Property Nominees 1A Limited	100%	England
NT Property Nominees 1B Limited	100%	England
Northern Trust Investments, Inc.	100%	Illinois
Nortrust Nominees Limited	100%	England
NTC-Dormae NMTC Fund, LLC	100%	Delaware
The Northern Trust Company of Delaware	100%	Delaware
The Northern Trust Company of Nevada	100%	Nevada
The Northern Trust Company UK Pension Plan Limited	100%	England
The Northern Trust Company, Canada	100%	Ontario, Canada
The Northern Trust International Banking Corporation	100%	Edge Act
Northern Operating Services Private Limited	100%	India
Northern Trust Cayman International, Ltd.	100%	Cayman Islands, BWI
Northern Trust Convertibles LLP	100%	England
Northern Trust Equities Limited	100%	England
Aviate Equities Pty Ltd.	100%	Australia
Northern Trust Fund Managers (Ireland) Limited	100%	Ireland
Northern Trust Global Fund Services Cayman Limited	100%	Cayman Islands, BWI
Northern Trust Management Services Asia Pte. Ltd.	100%	Singapore
Northern Operating Services Asia Inc.	99.99%	Philippines
The Northern Trust Company of Hong Kong Limited	100%	Hong Kong
NT Securities Asia Ltd.	100%	Hong Kong
Northern Trust Management Services Limited	100%	England
Northern Trust Global Investments Limited	100%	England
Northern Trust Partners Scotland Limited	100%	Scotland
Northern Trust Securities LLP	100%	England
NT Global Advisors, Inc.	100%	Ontario, Canada
The Northern Trust Scottish Limited Partnership	100%	Scotland
Northern Trust (Ireland) Limited	100%	Ireland
Northern Trust Fiduciary Services (Ireland) Limited	100%	Ireland
Northern Trust Fund Services (Ireland) Limited	100%	Ireland
Northern Trust International Fund Administration Services (Ireland) Limited	100%	Ireland

* Indirectly owned by Norlease, Inc. through Delaware business trusts.

	Percent Owned	Jurisdiction of Incorporation
Northern Trust Management Services (Ireland) Limited	100%	Ireland
Northern Trust Nominees (Ireland) Limited	100%	Ireland
Northern Trust Pension Trustees (Ireland) Limited	100%	Ireland
NTRS Nominees Limited	100%	Ireland
Northern Trust GFS Holdings Limited	100%	Guernsey
Northern Trust Fiduciary Services (Guernsey) Limited	100%	Guernsey
Arnold Limited	100%	Guernsey
Doyle Administration Limited	100%	Guernsey
Barfield Nominees Limited	100%	Guernsey
Truchot Limited	100%	Guernsey
Vivian Limited	100%	Guernsey
Northern Trust International Fund Administration Services (Guernsey) Limited	100%	Guernsey
Admiral Nominees Limited	100%	Guernsey
Nelson Representatives Limited	100%	Guernsey
Northern Trust Luxembourg Capital S.A.R.L.	100%	Luxembourg
Northern Trust Management Services (Deutschland) GmbH	100%	Germany
NT EBT Limited	100%	England
The Northern Trust Company of Saudi Arabia (a closed joint stock company)	100%	Kingdom of Saudi Arabia
TNT-CASFV NMTC Fund, LLC	100%	Illinois
Northern CDE 7, LLC	100%	Illinois
TNT-DHA NMTC Fund, LLC	100%	Illinois
Northern CDE 2, LLC	100%	Illinois
TNT-Eastside NMTC Fund, LLC	100%	Illinois
Northern CDE 1, LLC	100%	Illinois
TNT-HHO NMTC Fund, LLC	100%	Illinois
Northern CDE 5, LLC	100%	Illinois
TNT-PBSA NMTC Fund, LLC	100%	Illinois
Northern CDE 3, LLC	100%	Illinois
TNT-Student U NMTC Fund, LLC	100%	Illinois
Northern CDE 4, LLC	100%	Illinois
50 South Capital Advisors, LLC	100%	Delaware
Equilend Holdings LLC	10%	Delaware
Northern Trust European Holdings Limited	100%	England
Northern Trust Luxembourg Management Company S.A.	100%	Luxembourg
Northern Trust Global Investments Japan, K.K.	100%	Japan
Northern Trust Holdings L.L.C.	100%	Delaware
Northern Trust Securities, Inc.	100%	Delaware
Northern Trust Services, Inc.	100%	Illinois
Nortrust Realty Management, Inc.	100%	Illinois
NTC Capital I	100%	Delaware
NTC Capital II	100%	Delaware

Exhibit 23

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Northern Trust Corporation:

We consent to the incorporation by reference in the registration statements (Nos. 333-180827, 333-144848, 333-86418, 333-212602, and 333-217477) on Form S-8 and the registration statement (No. 333-219591) on Form S-3 of Northern Trust Corporation of our reports dated February 27, 2018 , with respect to the consolidated balance sheets of Northern Trust Corporation and subsidiaries as of December 31, 2017 and 2016 , and the related consolidated statements of income, comprehensive income, changes in stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2017 , and the related notes (collectively, the consolidated financial statements), and the effectiveness of internal control over financial reporting as of December 31, 2017 , which reports appear in the December 31, 2017 annual report on Form 10-K of Northern Trust Corporation.

/s/ KPMG LLP

Chicago, Illinois
February 27, 2018

Exhibit 31.1

Certification of CEO Pursuant to
Section 302 of the Sarbanes-Oxley Act of 2002

I, Michael G. O'Grady, certify that:

1. I have reviewed this report on Form 10-K for the year ended December 31, 2017 of Northern Trust Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 27, 2018

/s/ Michael G. O'Grady

Michael G. O'Grady
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

Certification of CFO Pursuant to
Section 302 of the Sarbanes-Oxley Act of 2002

I, S. Biff Bowman, certify that:

1. I have reviewed this report on Form 10-K for the year ended December 31, 2017 of Northern Trust Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 27, 2018

/s/ S. Biff Bowman

S. Biff Bowman

Chief Financial Officer

(Principal Financial Officer)

Exhibit 32

**Certifications of CEO and CFO Pursuant to
18 U.S.C. Section 1350, as Adopted Pursuant to
Section 906 of the Sarbanes-Oxley Act of 2002**

In connection with the Annual Report of Northern Trust Corporation (the “Corporation”) on Form 10-K for the period ended December 31, 2017 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), Michael G. O’Grady, as Chief Executive Officer of the Corporation, and S. Biff Bowman, as Chief Financial Officer of the Corporation, each hereby certifies, pursuant to 18 U.S.C. section 1350, as adopted pursuant to section 906 of the Sarbanes-Oxley Act of 2002, to the best of his knowledge, that:

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

/s/ Michael G. O’Grady

Michael G. O’Grady
Chief Executive Officer
(Principal Executive Officer)
February 27, 2018

/s/ S. Biff Bowman

S. Biff Bowman
Chief Financial Officer
(Principal Financial Officer)
February 27, 2018

This certification accompanies the Report pursuant to section 906 of the Sarbanes-Oxley Act of 2002 and shall not be deemed filed by Northern Trust Corporation for purposes of section 18 of the Securities Exchange Act of 1934, as amended.