



NORTHERN TRUST  
2016 ANNUAL REPORT  
TO SHAREHOLDERS

## CONSOLIDATED FINANCIAL HIGHLIGHTS

	2016	2015	PERCENT CHANGE <sup>(1)</sup>
<b>For the Year Ended December 31 (\$ in millions)</b>			
Revenues (Fully Taxable Equivalent Basis)	\$ 4,986.9	\$ 4,727.9	5 %
Net Income	1,032.5	973.8	6
Dividends Declared on Common Stock	343.5	333.0	3
Dividends Declared on Preferred Stock	23.4	23.4	-
<b>Per Common Share</b>			
Net Income — Basic	\$ 4.35	\$ 4.03	8 %
Net Income — Diluted	4.32	3.99	8
Cash Dividends Declared per Common Share	1.48	1.41	5
Book Value — End of Period	38.88	36.27	7
Market Price — End of Period	89.05	72.09	24
<b>At Year-End (\$ in millions)</b>			
Earning Assets	\$ 115,446.4	\$ 106,848.9	8 %
Total Assets	123,926.9	116,749.6	6
Deposits	101,651.7	96,868.9	5
Stockholders' Equity	9,770.4	8,705.9	12
<b>Average Balances (\$ in millions)</b>			
Earning Assets	\$ 107,037.6	\$ 102,249.8	5 %
Total Assets	115,570.3	110,715.1	4
Deposits	93,613.9	90,768.0	3
Stockholders' Equity	9,085.3	8,624.5	5
<b>Client Assets at Year-End (\$ in billions)</b>			
Assets Under Custody	\$ 6,720.5	\$ 6,072.1	11 %
Global Custody Assets	3,966.0	3,529.9	12
Assets Under Management	942.4	875.3	8
<b>Financial Ratios and Metrics</b>			
Return on Average Common Equity	11.9 %	11.5 %	
Return on Average Assets	0.89	0.88	
Dividend Payout Ratio	34.3	35.3	
Net Interest Margin (Fully Taxable Equivalent Basis)	1.18	1.07	

CAPITAL RATIOS	DECEMBER 31, 2016		DECEMBER 31, 2015	
	Advanced Approach	Standardized Approach	Advanced Approach	Standardized Approach
Common Equity Tier 1	12.4 %	11.8 %	11.9 %	10.8 %
Tier 1	13.7	12.9	12.5	11.4
Total	15.1	14.5	14.2	13.2
Tier 1 Leverage	8.0	8.0	7.5	7.5
Supplementary Leverage <sup>(2)</sup>	6.8	N/A	6.2	N/A

<sup>1</sup> Percentage change calculations are based on actual balances rather than the rounded amounts presented.

<sup>2</sup> Effective January 1, 2018, Northern Trust will be subject to a minimum supplementary leverage ratio of 3 percent.

## DEAR SHAREHOLDERS:

I am pleased to report that in 2016 Northern Trust successfully maintained our long history of creating value for our shareholders, clients, partners and the communities in which we live and work. Our consistent investments in talent, technology and innovation provided exceptional advice and meaningful solutions to our institutional and private clients. Fueled by the growth in our client franchise, we made substantial progress toward our financial goals. With the U.S. economy strengthening, we are poised to capture additional opportunities to deliver even greater value going forward.



**Frederick H. Waddell**  
Chairman and Chief Executive Officer

## STRATEGY OVERVIEW

Northern Trust's strategic plan, which is reviewed and approved annually by the Board of Directors, is based on a focused business model aimed at two attractive – and growing – client markets: global institutional investors and affluent individuals and families. Each segment represents an equal amount of our profitability. Both businesses generate returns on equity well above their cost of capital. Our primarily fee-based business model provides a stable and reliable source of top-line growth, with fees representing 63 percent of revenues.

Our clients benefit from highly personalized expertise supported by technology and global operating processes that create large economies of scale. Strengthened by a prestigious brand built over 127 years, we deliver every day on our promise to “Achieve Greater.”

## FINANCIAL PERFORMANCE

Northern Trust delivered a solid financial performance in 2016. Our revenues grew by \$259 million or 5 percent, to \$5.0 billion,<sup>†</sup> which compares favorably to our direct peers. Trust fees, our largest source of revenues, totaled \$3.1 billion, up 4 percent. Fueled by the increase in interest rates that began in late 2015, net interest income grew by 15 percent to \$1.3 billion.<sup>†</sup> Expenses totaled \$3.5 billion and grew to support our businesses. We continue to focus on tightly managing expenses. Net income was up 6 percent to \$1.0 billion, and resulted in a return on equity of 11.9 percent, our highest since 2009.

Northern Trust's balance sheet, which supports our clients' credit and liquidity needs, remained strong in terms of liquidity and capital. We issued \$500 million of preferred stock at favorable rates to lock in long-term capital to support our growth. Our capital strategy focuses on retaining the right level of capital to sustain growth and weather stress scenarios, maintaining our top-tier credit ratings and preserving our competitive capital strength. During the year, the U.S. Federal Reserve did not object to our capital plan, allowing us to increase our dividend and to continue to repurchase stock. In total, we returned \$755 million of capital to our shareholders in 2016.

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## BEST BANKS IN AMERICA

FORBES, 2016

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## ONE OF THE "WORLD'S MOST ADMIRABLE COMPANIES"

FORTUNE MAGAZINE, 2016  
TENTH CONSECUTIVE YEAR

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## ONE OF THE "WORLD'S MOST ETHICAL COMPANIES"

ETHISPHERE INSTITUTE, 2016  
THIRD CONSECUTIVE YEAR

LEADING PROVIDER



Our focus on providing holistic advice has been instrumental to our continued success.

# WEALTH MANAGEMENT

Throughout 2016, we continued to build on the past success of our Wealth Management business and evolve our approach to helping clients achieve their financial goals. The year ended on a solid note, with Wealth Management revenue increasing by 6 percent.<sup>†</sup>

Our focus on providing holistic advice has been instrumental to our continued success. By focusing on the purpose of our clients' assets – which is to fund lifetime goals efficiently – we provide a comprehensive and differentiated approach to

helping clients manage their financial affairs. Clients have responded positively, and assets under management (AUM) using our unique Goals Driven Investing approach increased by 79 percent in 2016 to approximately \$21 billion.

Our new mobile app enhances how we provide our wealth management services by using real-time information to identify and prioritize clients' goals, convert them to specific strategies and make changes based on life events. The app garnered the Best Initiative of the Year for Relationship

Management Technology award from the Financial Times Group, and is just one example of how we are using innovative technology to improve the client experience.

While staying focused on our core business, we also work continually to expand the solutions we offer clients. For instance, recognizing that the busiest professionals need an easier way to find trusted providers, we continued to increase our

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**BEST PRIVATE BANK IN  
THE UNITED STATES**

FINANCIAL TIMES GROUP, 2016

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**BEST U.S. PRIVATE BANK**

GLOBAL FINANCE, 2016

services to professional service firms by bringing our solutions to their doorsteps. And in an effort to expand our alternative investing capabilities, we collaborated with Blackstone, a leading alternative asset manager, to provide access to private equity opportunities that offer flexibility across asset classes, sectors and geographies.



As Northern Trust's client base has grown, we have expanded our C&IS presence and cemented our leadership standing around the globe.

# CORPORATE & INSTITUTIONAL SERVICES

Our client-centric approach, underpinned by our expertise and financial strength, continues to attract new clients and expand existing relationships within our Corporate & Institutional Services (C&IS) business. In 2016, C&IS assets under custody/administration grew 10 percent to \$8.0 trillion, while trust, investment and other servicing fees rose 5 percent and total revenue grew 8 percent for the year.<sup>†</sup>

As Northern Trust's client base has grown, we have expanded our C&IS presence and cemented our leadership standing around the globe. We now provide services to six of the 10 largest U.K. pension funds, service 33 of the top 100 U.S. public funds and are one of the top three fund administrators and custodians in Ireland. We have doubled our Asia-Pacific investment manager client base since 2014, with

particularly strong growth in Australia, and we continued to build our client servicing capabilities and business development opportunities in South Korea with regulatory approval for our Seoul office's branch license. The strength of our mutual fund servicing led Ariel Investments to appoint us administrator of its \$4.1 billion mutual fund family, while the British Columbia Investment Management Corporation hired us for our longstanding expertise in managing and safeguarding pensions.

As the line between asset owners and asset managers continues to blur, our ability to seamlessly combine asset servicing and asset management strategies has contributed to holistic solutions that offer leading-edge approaches to changing investor needs – including managing outsourced investment operations,



managing and administering global retirement plans and providing governance and oversight capabilities. For example, we became the first global provider in Saudi Arabia to deliver a local defined contribution (DC) solution and a unique book of record capability. Through our acquisition of the equity brokerage firm Aviate Global and our new partnership with software solution provider BEx, we now offer deeper global equity expertise, distinctive research offerings and enhanced trading efficiency.

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## BEST GLOBAL CUSTODIAN

GLOBAL FINANCE MAGAZINE, 2016

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## BEST INVESTOR SERVICES PROVIDER

R&M SURVEY OF TOP 200 ASSET MANAGERS, 2016

We are expanding the use of our Omnium platform beyond our Hedge Fund Services business to provide middle-office solutions for asset managers and asset owners. And our expanded capital markets and DC offerings now support some of our most sophisticated clients globally. For instance, we now provide DC solutions to the \$60 billion Universities Superannuation Scheme, one of the largest pension funds in the United Kingdom.

Our technology is a significant factor behind our global growth. By enhancing our flexible, scalable and resilient infrastructure and innovating with cloud, mobile and robotics, we are helping clients manage risk, reduce cost, improve efficiency and boost performance.



Our multi-asset class expertise is core to our investment management practice and used by sophisticated clients, including high-net-worth individuals and institutional investors, worldwide.

# ASSET MANAGEMENT

As a leading global asset manager, Northern Trust continued to deliver robust performance across our range of funds and products in 2016. We experienced strong growth, with total AUM reaching \$942 billion by year end.

Our multi-asset-class expertise is core to our investment management practice and used by sophisticated clients, including high-net-worth individuals and institutional investors, worldwide. Deep capital markets analysis powers our asset allocation process, which is accessible across an array of capabilities – including outsourced chief investment officer solutions, target date funds and

tactical asset allocation mutual funds. Since the inception of our current asset allocation process, our tactical recommendations have outperformed a traditional 60/40 stock/bond portfolio with lower risk.\*

During 2016 we continued to drive and accelerate the growth of our FlexShares® ETF business, which reached more than \$11.5 billion in AUM by year end – making it among the faster-growing ETF providers in the last five years. We will keep building on this momentum in the years ahead by advancing our investment pace in ETF product innovation and distribution.

Investor demand for improving portfolio efficacy continued to fuel the growth of our outcome-focused equity solutions and proprietary factor-based Engineered Equity® strategies. By the end of 2016, this product set had amassed more than \$50 billion in AUM. Combining our active and passive management, our Engineered Equity approach efficiently captures targeted factor exposures such as quality, size and momentum. With the launch of our Life Engineered™ target date funds, we broadened our product reach by providing DC plan sponsors a new way to access the strategy.

Our expansion across geographies has helped us secure significant new business; we expect that to increase as we hire talented professionals in major markets around the world. As we expand our innovative product offerings we will leverage our strengths and global, scalable investment platforms – including proprietary quantitative strategies, alternative investments and fixed income expertise. We remain committed to providing a range of bespoke solutions – active, passive, multi-manager – to meet varied investment needs.

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## WORLD'S 13TH LARGEST ASSET MANAGER

PENSIONS & INVESTMENTS, 2016\*\*

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## 2ND LARGEST OUTSOURCING MANAGER WORLDWIDE

PENSIONS & INVESTMENTS, 2016\*\*

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# \$942<sup>B</sup>

ASSETS UNDER  
MANAGEMENT

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\*Source: Northern Trust, Bloomberg. Performance data from 12/31/2007 through 12/31/2016. The 60/40 portfolio comprises the MSCI ACWI total return and Bloomberg Barclays U.S. Aggregate indices, respectively.

\*\*Pensions & Investments 2016 Special Report on Money Managers and Special Report on Outsourcing Managers appeared in the publication's May 30, 2016, and June 12, 2016, issues, respectively. They also can be found online at [www.pionline.com/researchcenter](http://www.pionline.com/researchcenter). P&I rankings based on total worldwide assets under management of \$875.3 billion as of December 31, 2015, and total worldwide assets in outsourced investment programs of \$110 billion as of March 31, 2016. Ranking information reprinted with permission, Pensions & Investments, copyright Crain Communications, Inc.

## ENTERPRISE ENABLEMENT

In 2016, we kept our focus on establishing new capabilities to inspire innovative business solutions while investing in our core capabilities to enable sustainable, profitable business growth. Data security remains our overarching priority and we remain at the forefront of secure transactions and reporting. Throughout all of our business units globally, we are employing emerging technologies and methods to enhance our systems, capabilities and data.

On the innovation front, we continue exploring and piloting new ways to use robotics, natural language and artificial intelligence to deliver increased productivity, higher-value service and enhanced advisory expertise. Just as our relationship approach is key to how we help clients “Achieve Greater,” the same applies to how we innovate. We are leveraging longstanding relationships with clients, service providers, academic institutions and private equity and venture capital firms to chart new territory for how emerging applications can be used in a financial services context.

We are also taking leadership roles with industry organizations and consortia, such as the Association for Financial Markets in Europe, the Society for Worldwide Interbank Financial Telecommunication and R3, to promote collaborative market solutions that address client and market needs. One of those solutions in particular – blockchain – shows great promise. We are exploring multiple ways we can unleash its potential power as a distributed ledger technology on behalf of clients.

Our overall success using emerging technologies has resulted in high-profile industry awards for our cloud infrastructure, mobile experience, fund administration data analytics, client reporting and foreign exchange services. By focusing on creating exceptional experiences, delivering leading capabilities and providing maximum protection, we will continue to help our clients achieve their goals.

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## CIO 100 AWARDS: BUSINESS ANALYTICS

CIO MAGAZINE, 2016

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## MOBILE EXPERIENCE LEADERSHIP – WEALTH MANAGEMENT

BRAND NEW MEDIA, 2016  
THIRD CONSECUTIVE YEAR

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## AMERICAN FINANCIAL TECHNOLOGY AWARDS: BEST INFRASTRUCTURE INITIATIVE & BEST GLOBAL DEPLOYMENT

WATERS TECHNOLOGY, 2016

## GLOBAL REACH

Founded in Chicago in 1889, Northern Trust has offices in the United States in 19 states and Washington, D.C., and 22 international locations in Canada, Europe, the Middle East and the Asia-Pacific region.



**NORTH AMERICA**  
65 CITIES

**EUROPE, MIDDLE EAST  
AND AFRICA**  
10 CITIES

**ASIA PACIFIC**  
11 CITIES

## OUTLOOK

With the political and regulatory environments changing rapidly, much is uncertain in our current economic landscape. The U.S. Federal Reserve has forecasted a gradual rise in interest rates in 2017, and we predict this will take the form of two interest rate hikes over the course of the year. Early indications are that moderate fiscal stimulus should be forthcoming from the new U.S. presidential administration. The prospects for increased infrastructure spending, if targeted properly to highly productive projects, will provide additional momentum to the growing U.S. economy. Overall, we predict real economic growth of a little over 2 percent for the year, although the length of the expansion and the lack of capacity in the labor markets will likely limit progress. However, the prospects for corporate tax reform, including the repatriation of funds invested offshore, have positive upside potential.

The fabric of the European Union (EU) will be stretched further in 2017, with Brexit negotiations in the second quarter elevating uncertainty. While there is a good deal of uncertainty on the terms of a U.K. exit from the EU, we are actively engaged in Brexit planning and have formulated plans to establish a full subsidiary in the EU. We have a meaningful presence in Luxembourg and Ireland and several other locations and are in the process of evaluating the optimal location for us.

With so much uncertainty in 2017, it is important to remember potential global risks, including the threat of inflation to market valuations, China's trade imbalance and potential regional imbalances due to U.S. fiscal conditions. In this environment, Northern Trust will continue to look for creative ways to gain capital efficiencies, improve service delivery and control expenses, even as we continue to invest in people, technology and regulatory initiatives.

*† Revenues and net interest income are presented on a fully taxable equivalent basis, a non-generally accepted accounting principle financial measure that facilitates the analysis of asset yields.*

## THANK YOU

This year, we were pleased to make the appointment of Michael G. O'Grady to President of Northern Trust Corporation. With his deep industry experience, keen understanding of Northern Trust and strong track record of translating vision and strategy into execution, we are confident Mike will contribute greatly to our future success.

Our Board of Directors continued to provide valued guidance and oversight during Northern Trust's 127th year of solid growth and progress. In addition to Mike O'Grady's appointment as a director commencing January 2017, we were pleased to welcome new director Jay L. Henderson, Retired Vice Chairman, Client Service, PricewaterhouseCoopers LLP, and we are already benefitting from his commitment to our future success.

Additionally, after 20 years with Northern Trust, William L. Morrison was elected Vice Chairman of the corporation. Bill's long tenure offers a wealth of insight that will help us grow in targeted markets, attract and retain our key talent and develop deeper and more meaningful client relationships. Bill's leadership in a variety of roles has been an important part of our success, and we thank him for his many contributions.

We are fortunate for the incredible leadership talent and dedication of our Management Group members, all of whom continue to bring their valuable expertise to Northern Trust.

Northern Trust's more than 17,000 employees around the world bring enthusiasm and expertise to serving our clients, partners and communities on a daily basis.

I thank them for their contributions to our past success and look forward to our future collective achievements.

Throughout the years, Northern Trust's business model has been based on serving the world's most prestigious clients. I extend a warm thank you to our clients for the lasting trust you place in our relationship. We look forward to continuing to meet your financial needs in the years ahead.

### **FREDERICK H. WADDELL**

CHAIRMAN AND CHIEF EXECUTIVE OFFICER  
FEBRUARY 27, 2017

## MANAGEMENT GROUP



**Frederick H. Waddell**  
CHAIRMAN AND CHIEF  
EXECUTIVE OFFICER



**Michael G. O'Grady**  
PRESIDENT



**Jana R. Schreuder**  
CHIEF OPERATING  
OFFICER



**S. Biff Bowman**  
EXECUTIVE  
VICE PRESIDENT  
CHIEF FINANCIAL OFFICER



**Robert P. Browne**  
EXECUTIVE  
VICE PRESIDENT  
CHIEF INVESTMENT  
OFFICER



**Peter B. Cherecwich**  
PRESIDENT  
CORPORATE &  
INSTITUTIONAL SERVICES



**Jeffrey D. Cohodes**  
EXECUTIVE  
VICE PRESIDENT  
CORPORATE & INSTITUTIONAL  
SERVICES AMERICAS



**Steven L. Fradkin**  
PRESIDENT  
WEALTH MANAGEMENT



**Wilson Leech**  
EXECUTIVE  
VICE PRESIDENT  
CHIEF RISK OFFICER



**Susan C. Levy**  
EXECUTIVE  
VICE PRESIDENT  
GENERAL COUNSEL



**S. Gillian Pembleton**  
EXECUTIVE  
VICE PRESIDENT  
HUMAN RESOURCES



**Stephen N. Potter**  
PRESIDENT  
ASSET MANAGEMENT



**Joyce M. St.Clair**  
EXECUTIVE  
VICE PRESIDENT  
CHIEF CAPITAL  
MANAGEMENT OFFICER







NORTHERN  
TRUST

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, 2016

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

(State or other jurisdiction of incorporation or organization)

36-2723087

(I.R.S. Employer Identification No.)

50 South La Salle Street

Chicago, Illinois

(Address of principal executive offices)

60603

(Zip Code)

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

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

<u>Title of Each Class</u>	<u>Name of Each Exchange On Which Registered</u>
Common Stock, \$1.66 <sup>2</sup> / <sub>3</sub> Par Value	The NASDAQ Stock Market LLC
Depository Shares, each representing 1/1000 <sup>th</sup> 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 (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes  No

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	<input checked="" type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/> (Do not check if a smaller reporting company)	Smaller reporting company	<input type="checkbox"/>

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, 2016 (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, 2016 as reported by The NASDAQ Stock Market LLC, held by non-affiliates was approximately \$14.9 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, 2017, 228,791,961 shares of common stock, \$1.66 <sup>2</sup>/<sub>3</sub> par value, were outstanding.

Portions of the registrant's Proxy Statement for its 2017 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**

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## **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 22 international locations in Canada, Europe, the Middle East, and the Asia-Pacific region. At December 31, 2016, the Corporation had consolidated total assets of \$123.9 billion and stockholders' equity of \$9.8 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, 2016, the Bank had consolidated assets of \$123.5 billion and common bank equity capital of \$8.6 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 also makes use of a third reporting segment, Treasury and Other, under which it reports certain income and expense items not allocated to C&IS and Wealth Management.

#### ***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, 2016, total C&IS assets under custody were \$6.2 trillion and assets under management were \$694.0 billion.

#### ***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 \$543.6 billion in assets under custody and \$248.4 billion in assets under management at December 31, 2016. 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 \$942.4 billion in assets as of December 31, 2016, including \$694.0 billion for C&IS clients and \$248.4 billion for Wealth Management clients.

## **Competition**

Northern Trust faces intense competition in all aspects and areas of its business. Competition is provided by both unregulated and regulated 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, and investment counseling 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 hence 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 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 registered as a government securities dealer in accordance with the Government Securities Act of 1986. As a government securities dealer, its activities are subject to the rules and regulations of the Department of the Treasury. 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 new 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 a report within 120 days and periodically thereafter that identifies 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. The Corporation cannot predict what changes may occur to the Dodd-Frank Act as a result of the executive order 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.

**Resolution Planning.** As required by Section 165(d) of the Dodd-Frank Act, the Federal Reserve Board and 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. If the Federal Reserve Board and the FDIC jointly determine that the resolution plan submitted by the Corporation in December 2015 pursuant to Section 165(d) of the Dodd-Frank Act is not credible and the Corporation fails to address the deficiencies in a timely manner, 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 August 2, 2016, the Federal Reserve Board and the FDIC announced that they will provide feedback and guidance to the Corporation regarding the December 2015 resolution plan, and that, accordingly, the Corporation is not required to submit an updated resolution plan until December 31, 2017. To date, no formal written feedback or guidance has been received regarding the December 2015 resolution plan. 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 UK incorporated indirect subsidiary of the Bank, has been prepared and will be reviewed at least annually. PRA guidance also requires institutions to produce resolution planning information in two phases. In accordance with such guidance, a phase 1 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 responsible for the Corporation's failure and to appoint new directors and officers; (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, but the Federal Reserve Board has (i) extended the conformance period for compliance with certain portions of the prohibition against sponsoring or investing in certain legacy covered funds until July 21, 2017 and (ii) announced a process through which banking entities may request an additional transition period of up to five years to conform investments in certain legacy illiquid funds that predate May 2010. 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 and SEC have finalized rules further defining these registrant categories, and the CFTC, SEC, Federal Reserve Board and other U.S. regulators are in the process of adopting rules and regulations to implement Title VII. The CFTC has finalized many rules and regulations applicable to swap dealers, including the Bank, such as internal and external business conduct standards, reporting and recordkeeping, mandatory clearing for certain swaps, the mandatory posting and collection of margin by certain swap entities, exchange-trading rules, and trade documentation and confirmation requirements, and applied certain regulatory requirements to cross-border swap activities. The SEC has finalized rules that, among other things, enhance the oversight of clearing and trading entities; require regulatory reporting of security-based swap information and the public dissemination of security-based swap transaction, volume, and pricing information by swap data repositories; and define the scope of swap data repository registration requirements, the scope of security-based swap dealer and major-security-based swap participant registration, business conduct, and trade acknowledgment and verification requirements, and certain regulatory requirements for cross-border swap activities. 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. Additionally, the U.S. banking agencies have separately finalized rules requiring the posting and collection of margin by swap dealers, including the Corporation and the Bank, for certain uncleared swaps. As noted above, the CFTC and SEC have yet to complete the

implementation of Title VII, and the complete regulatory framework for swaps and security-based swaps continues to develop.

***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. 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 for the 2017 CCAR cycle. Under the final rules, the qualitative assessment of CCAR has been 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 will no longer be subject to objection from the Federal Reserve Board on qualitative grounds and the Corporation will be subject to certain reduced regulatory reporting requirements. In lieu of the qualitative assessment of CCAR, the Corporation will be subject to a targeted horizontal review of specific areas of capital planning conducted as part of the Federal Reserve Board's normal supervisory process. Any supervisory findings resulting from the targeted horizontal review will be 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 2016 as part of the Federal Reserve Board's 2016 CCAR exercise, and the Federal Reserve Board did not object to the Corporation's plan. The Corporation will submit its 2017 capital plan to the Federal Reserve Board by April 5, 2017. The Federal Reserve Board has indicated that it expects to publish either its objection or non-objection to the 2017 capital plan and proposed capital actions, such as dividend payments and share repurchases, by June 30, 2017.

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 23, 2016, and the results of its company-run mid-cycle stress tests on October 27, 2016.

#### ***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, 2016, 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, 2016**

	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	12.4%	11.8%	13.7%	12.9%	15.1%	14.5%	8.0%	8.0%	6.8%
The Northern Trust Company	12.4%	11.5%	12.4%	11.5%	14.0%	13.3%	7.0%	7.0%	6.0%
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, beginning in 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 will be subject to a minimum supplementary leverage ratio of 3.0%. Insured depository institutions that are advanced approaches institutions, such as the Bank, also will be 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 in an amount ranging from at least 1.25% in 2017 to at least 2.5% in 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 phased in, with full implementation beginning on 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 will be phased in from April 2017 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, 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 to date.

#### ***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 transactions 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 name or jurisdiction on any transaction, account or wire transfer that is on an OFAC list, or is subject to OFAC sanctions, 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 those 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.

#### ***FIDUCIARY RULE***

In April 2016, the U.S. Department of Labor adopted new rules that, when implemented, will broaden the scope of persons who are considered fiduciaries as a result of providing “investment advice” to employee benefits plans, plan participants, and individual retirement account (IRA) owners under ERISA and the Internal Revenue Code. If an entity or individual is a fiduciary adviser under ERISA, then that person will be subject to heightened disclosure, reporting, procedural and other requirements related to (i) the services it performs for ERISA employee benefits plans and IRAs and (ii) compensation or other benefits the person receives in connection with those services. The implementation of the new rules is currently scheduled to occur in phases, beginning on April 10, 2017; however, in February 2017, the new Presidential administration instructed the U.S. Secretary of Labor to prepare an updated economic and legal analysis concerning the likely impact of the new rules and potentially to rescind or revise the new rules. Subsequently, the U.S. Department of Labor has indicated that it intends to delay the applicability date of the new rules. The Corporation is monitoring regulatory developments and reviewing its business practices, and believes that it will be able to conform its business practices as necessary to meet the requirements of the new rules within the currently allotted 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. The Corporation has adopted and disseminated its privacy policies pursuant to law. Regulations adopted under the federal law set standards for protecting the security, confidentiality and integrity of client information, and require notice to regulators, and in some cases, to clients, in the event of security breaches. A number of states and the EU have adopted their own statutes concerning financial privacy and security and requiring notification of security breaches.

In October 2016, the federal banking regulators announced that they will propose enhanced cyber risk management standards that would apply to certain large and interconnected financial institutions, including the Corporation and the Bank. The regulators expect that the proposal will include standards related to: (i) cyber risk governance; (ii) cyber risk management; (iii) internal dependency management; (iv) external dependency management; and (v) incident response, cyber resilience and situational awareness. Certain “sector-critical” systems operated by financial institutions would be subject to more stringent standards. As of December 31, 2016, the regulators have not released additional information on the prospective proposal.

#### ***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 and strengthened enforcement of consumer financial protection laws.

#### ***NON-U.S. REGULATION***

Northern Trust’s non-U.S. branches and subsidiaries are subject to the laws and regulatory authorities of the jurisdictions in which they 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 European Economic Area (EEA). Moreover, Northern Trust's non-European branches and subsidiaries conducting financial services activities also may be within the scope of these laws, given the increasing extraterritorial effect of European legislation.

A legislative proposal for a regulation on money market mutual funds was published by the European Union (EU) on April 9, 2013, although the legislative process with respect to the proposed regulation is continuing and the timing of its completion remains unclear. On November 25, 2015, the EU adopted a regulation on securities financing transactions and reuse of collateral as part of its approach to addressing shadow banking. The regulation includes provisions for enhanced transparency and reporting of securities financing transactions, and began to be phased in January 12, 2016. Further regulation containing the technical detail of the regulation has yet to be published, which will delay the effective date of certain provisions.

A number of other regulations that may affect Northern Trust's operations have been or currently are being implemented in Europe, including the Alternative Investment Fund Managers Directive (AIFMD), amendments to the Undertakings for Collective Investment in Transferable Securities Directive (UCITS V), the European Market Infrastructure Regulation (EMIR), the Market Abuse Regulation (MAR), the Capital Requirements Directive IV (CRD IV), the FCA's Client Assets Sourcebook rules (CASS), revisions to the Markets in Financial Instruments Directive (MiFID II) and the BRRD. The EU and some member states also are considering bank structural reform. On November 23, 2016, the EU published a proposal that would require large, non-EU banking organizations to establish EU intermediate holding companies to hold their EU operations. The legislative process is continuing and the timing and content of final legislative acts remains unclear. Northern Trust works diligently to comply with applicable EU rules and regulations, and also monitors the development of EU proposals that might create challenges or opportunities for it.

Additionally, 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, 2016, each of our non-U.S. banking subsidiaries had capital ratios above their specified minimum requirements.

## **Staff**

Northern Trust employed approximately 17,100 full-time equivalent staff members as of December 31, 2016.

## **Available Information**

Through the Corporation's website at [www.northerntrust.com](http://www.northerntrust.com), it 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, 2016, 2015 and 2014.
- Changes in Net Interest Income for the years ended December 31, 2016 and 2015.
- Remaining Maturity and Average Yield of Securities Held to Maturity and Available for Sale as of December 31, 2016.
- Remaining Maturity of Selected Loans and Leases as of December 31, 2016.
- Distribution of Non-U.S. Loans by Type as of December 31, 2016, 2015, 2014, 2013 and 2012.
- Allowance for Credit Losses Relating to Non-U.S. Operations for the years ended December 31, 2016, 2015, 2014, 2013 and 2012.
- Analysis of Allowance for Credit Losses for the years ended December 31, 2016, 2015, 2014, 2013 and 2012.
- Average Deposits by Type as of December 31, 2016, 2015 and 2014.
- Distribution of Non-U.S. Deposits by Type as of December 31, 2016, 2015 and 2014.
- Remaining Maturity of Time Deposits \$100,000 or More as of December 31, 2016.
- Average Rates Paid on Interest-Related Deposits by Type for the years ended December 31, 2016, 2015 and 2014.
- Selected Average Assets and Liabilities Attributable to Non-U.S. Operations for the years ended December 31, 2016, 2015, 2014, 2013, and 2012.



- Percent of Non-U.S.-Related Average Assets and Liabilities to Total Consolidated Average Assets for the years ended December 31, 2016, 2015, 2014, 2013, and 2012.
- Non-U.S. Outstandings as of December 31, 2016, 2015 and 2014.
- Purchased Funds as of December 31, 2016, 2015 and 2014.

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, 2016, 2015 and 2014.
- The “Composition of Loan Portfolio” table (Item 7) provides loans and leases by type as of December 31, 2016, 2015, 2014, 2013, and 2012.
- The “Nonperforming Assets” table (Item 7) provides information about the Corporation’s nonaccrual, past due and restructured loans receivable as of December 31, 2016, 2015, 2014, 2013, and 2012.
- The “Commercial Real Estate Loans” table (Item 7) provides details of loan concentrations as of December 31, 2016 and 2015.
- 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, 2016 and 2015.
- 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

#### ***Market volatility and/or a downturn in economic conditions may affect our earnings negatively.***

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 and/or a downturn in economic conditions. For example, downturns in equity markets and decreases in the value of debt-related investments resulting from market disruption, illiquidity or other factors have historically 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. Such conditions also may affect the ability of borrowers to repay loans, causing credit quality to deteriorate and resulting in increased cost of credit, a higher level of charge-offs and higher provision for credit losses, all of which would reduce our earnings.

#### ***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, thus far such increases have been measured and interest rates generally remain near historical lows. The low interest rate environment that has persisted since the 2007-2008 global financial crisis 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, we have waived in recent years, and may waive in the future, certain fees associated with money market mutual funds due to short-term interest rate levels. Low net interest margins and fee waivers each negatively impact our earnings.

A rise in interest rates also may affect us negatively if, for example, such a rise causes: 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 or continuing pressure on oil prices, 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, the United Kingdom ("UK") held a referendum in which voters approved a departure from the European Union (the "EU"), commonly referred to as "Brexit." 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 that the UK will negotiate with the EU and other non-EU nations. Increased market volatility and further global economic deterioration resulting from Brexit, or concern about Brexit, could have significant adverse effects on our businesses, financial condition and results of operations. The volatility in the exchange rate for the British pound has increased since the announcement of Brexit, which has had, and may continue to have, a negative effect on our results of operations. Additionally, certain of our EU operations are conducted through a UK branch of the Bank and other of our subsidiaries located in the UK. If our UK subsidiaries are not able to retain their EU financial services "passport," which permits cross-border services and activities throughout the single EU market without needing to obtain local authorizations, we may incur costs to establish one or more subsidiaries in other EU member states and move operations and personnel accordingly. Further, during any such transition we may be faced with 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 to our role as a major financial institution. Nonetheless, if we fail to create 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 organized crime, hackers, terrorists 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, 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 frequently update 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 25% of our revenue in 2016. 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. Further, 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.

***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.

***Weakened 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 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 weakened economic conditions could impact the borrowers' abilities to repay outstanding loans, which could in turn impact our financial condition and results of earnings 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. In recent years the consolidation of financial service firms and the failures of other financial institutions have increased 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 asset growth and 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. New 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 new Presidential administration and U.S. Congress have indicated that the Dodd-Frank Act may be subject to further 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 new 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 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. Further changes to or resulting from the Dodd-Frank Act or the recent executive order 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.

***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.

***Money market mutual fund reform could lower the desirability of money market mutual funds for investors and reduce the profitability of money market mutual funds for sponsors.***

On July 23, 2014, the SEC approved final rules implementing money market mutual fund reform, which, among other things, require institutional prime money market funds to maintain a floating net asset value and implement procedures that may restrict redemption in certain circumstances through the imposition of liquidity fees and gates against investor redemptions. The implementation of these rules was completed in October 2016. The effects of these rules could lead to lower investor demand for money market mutual funds, reduce the profitability of our money market mutual fund products or otherwise affect our business, earnings, or financial condition adversely.

***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. The new Presidential administration has called for substantial reform to financial services regulation, which may include comprehensive changes to existing laws and regulations and their application by regulators. We cannot currently predict the impact, if any, of these changes to our business. Additionally, other 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 enhanced 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. Furthermore, pricing pressures, as a result of the willingness of competitors to offer comparable or improved products or services at a lower price, 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 undermines the confidence of clients and prospects in our ability to serve them and therefore could 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. This 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. This 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. tax authorities 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 results in lower earnings.

In the course of our business, we are sometimes subject to challenges from U.S. and non-U.S. tax authorities 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 22 international locations. The majority of those offices are leased. The Bank's primary U.S. operations are located in six 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; 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, Pune and Tempe, Arizona, 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 63, joined Northern Trust in 1975 and has served as Chairman of the Board since 2009 and Chief Executive Officer since 2008. Mr. Waddell served as President from 2006 to 2011 and from October to 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.

**S. Biff Bowman** – Mr. Bowman, age 53, joined Northern Trust in 1985 and has served as Executive Vice President and Chief Financial Officer since September 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 51, 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 52, 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 56, joined Northern Trust in 1993 and has served as Executive Vice President and President of Corporate & Institutional Services for the Americas since February 2017. Prior to that, Mr. Cohodes served as Executive Vice President and Chief Risk Officer since 2011. 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 55, 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.

**Jane B. Karpinski** – Ms. Karpinski, age 54, joined Northern Trust in 2006 and has served as an Executive Vice President since April 2016 and as Corporate Controller since 2013. Ms. Karpinski served as International Chief Financial Officer from 2012 to 2013. Prior to that, she served as Chief Financial Officer for Europe, Middle East and Africa from 2007 to 2012.

**Wilson Leech** – Mr. Leech, age 55, joined Northern Trust in 2004 and has served as Executive Vice President, Corporate & Institutional Services for Europe, Middle East and Africa since 2010 and as Chief Risk Officer since February 2017. Prior to that, Mr. Leech served as Head of Global Fund Services from 2005 to 2010. He served as Chief Financial Officer for Europe, Middle East and Africa and Asia Pacific from 2004 to 2005. 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 59, 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 66, joined Northern Trust in 1996 and has served as Vice Chairman since October 2016. Prior to that, Mr. Morrison served as President from 2011 through 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.

**Michael G. O’Grady** – Mr. O’Grady, age 51, joined Northern Trust in 2011 and has served as President since January 2017. Prior to that, Mr. O’Grady served as Executive Vice President and President of Corporate & Institutional Services



from September 2014 through December 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.

**S. Gillian Pembleton** – Ms. Pembleton, age 58, joined Northern Trust in 1991 and has served as Executive Vice President, Human Resources since September 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 60, joined Northern Trust in 1982 and has served as Executive Vice President and President of Asset Management since 2008. Prior to that, Mr. Potter served as Executive Vice President, Corporate & Institutional Services for Europe, Middle East and Africa from 2001 to 2008.

**Joyce M. St. Clair** – Ms. St. Clair, age 57, joined Northern Trust in 1992 and has served as Executive Vice President and Chief Capital Management Officer since July 2015. Prior to that, Ms. St. Clair served as Executive Vice President and President of Enterprise Operations from September 2014 to July 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 58, joined Northern Trust in 1980 and has served as Executive Vice President and Chief Operating Officer since September 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.

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 2,056 shareholders of record as of January 31, 2017. 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, 2016.

**TABLE 2: PURCHASES OF COMMON STOCK IN THE FOURTH QUARTER OF 2016**

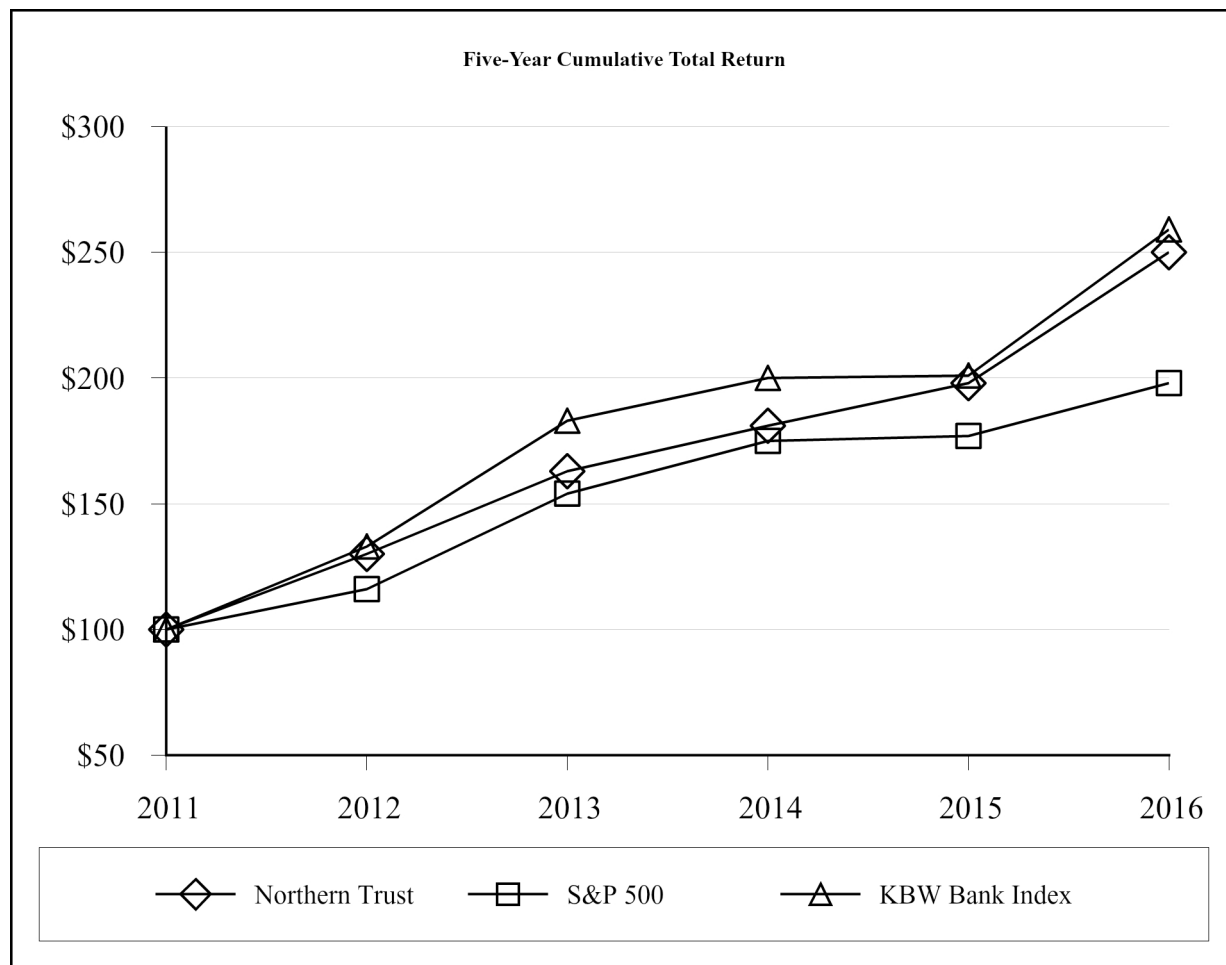
PERIOD	TOTAL NUMBER OF SHARES PURCHASED	AVERAGE PRICE PAID PER SHARE	TOTAL NUMBER OF SHARES PURCHASED AS PART OF A PUBLICLY ANNOUNCED PLAN (1)	MAXIMUM NUMBER OF SHARES THAT MAY YET BE PURCHASED UNDER THE PLAN
October 1-31, 2016	95,889	\$ 70.91	95,889	4,806,722
November 1-30, 2016	463,131	77.08	463,131	4,343,591
December 1-31, 2016	257,197	85.92	257,197	4,086,394
Total (Fourth Quarter)	816,217	\$ 79.14	816,217	4,086,394

(1) Repurchases were made pursuant to the repurchase program announced by the Corporation on April 22, 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. 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, 2016. The cumulative total stockholder return assumes the investment of \$100 in the Corporation's common stock and in each index on December 31, 2011 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, 2011 with Reinvestment of Dividends**



	DECEMBER 31,					2016
	2011	2012	2013	2014	2015	
Northern Trust	100	130	163	181	198	<b>250</b>
S&P 500	100	116	154	175	177	<b>198</b>
KBW Bank Index	100	133	183	200	201	<b>259</b>

## ITEM 6 – SELECTED FINANCIAL DATA

	2016	2015	2014	2013	2012		
<b>FOR THE YEAR ENDED DECEMBER 31,</b>							
<b>CONDENSED STATEMENTS OF INCOME (In Millions)</b>							
Noninterest Income	\$ 3,726.9	\$ 3,632.5	\$ 3,325.7	\$ 3,156.2	\$ 2,905.8		
Net Interest Income	<b>1,234.9</b>	1,070.1	1,005.5	933.1	990.3		
Total Revenue	\$ <b>4,961.8</b>	\$ 4,702.6	\$ 4,331.2	\$ 4,089.3	\$ 3,896.1		
Provision for Credit Losses	<b>(26.0)</b>	(43.0)	6.0	20.0	25.0		
Noninterest Expense	<b>3,470.7</b>	3,280.6	3,135.0	2,993.8	2,878.8		
Income before Income Taxes	\$ <b>1,517.1</b>	\$ 1,465.0	\$ 1,190.2	\$ 1,075.5	\$ 992.3		
Provision for Income Taxes	<b>484.6</b>	491.2	378.4	344.2	305.0		
Net Income	\$ <b>1,032.5</b>	\$ 973.8	\$ 811.8	\$ 731.3	\$ 687.3		
Preferred Stock Dividends	<b>23.4</b>	23.4	9.5	—	—		
Net Income Applicable to Common Stock	\$ <b>1,009.1</b>	\$ 950.4	\$ 802.3	\$ 731.3	\$ 687.3		
<b>PER COMMON SHARE</b>							
Net Income – Basic	\$ <b>4.35</b>	\$ 4.03	\$ 3.34	\$ 3.01	\$ 2.82		
– Diluted	<b>4.32</b>	3.99	3.32	2.99	2.81		
Cash Dividends Declared Per Common Share	<b>1.48</b>	1.41	1.30	1.23	1.18		
Book Value – End of Period (EOP)	<b>38.88</b>	36.27	34.54	33.34	31.51		
Market Price – EOP	<b>89.05</b>	72.09	67.40	61.89	50.16		
<b>SELECTED BALANCE SHEET DATA (In Millions)</b>							
<i>At Year End:</i>							
Earning Assets	\$ <b>115,446.4</b>	\$ 106,848.9	\$ 100,889.8	\$ 93,367.2	\$ 87,472.7		
Total Assets	<b>123,926.9</b>	116,749.6	109,946.5	102,947.3	97,463.8		
Deposits	<b>101,651.7</b>	96,868.9	90,757.0	84,098.1	81,407.8		
Senior Notes	<b>1,496.6</b>	1,497.4	1,497.0	1,996.6	2,405.8		
Long-Term Debt	<b>1,330.9</b>	1,371.3	1,615.1	1,709.2	1,421.6		
Stockholders' Equity	<b>9,770.4</b>	8,705.9	8,448.9	7,912.0	7,527.0		
<i>Average Balances:</i>							
Earning Assets	\$ <b>107,037.6</b>	\$ 102,249.8	\$ 95,947.5	\$ 85,628.3	\$ 84,168.5		
Total Assets	<b>115,570.3</b>	110,715.1	104,083.5	94,857.7	92,975.5		
Deposits	<b>93,613.9</b>	90,768.0	84,656.6	75,596.3	75,219.8		
Senior Notes	<b>1,496.6</b>	1,497.2	1,661.2	2,247.0	2,295.2		
Long-Term Debt	<b>1,392.4</b>	1,426.4	1,654.9	1,211.7	1,634.1		
Stockholders' Equity	<b>9,085.3</b>	8,624.5	8,166.5	7,667.7	7,358.2		
<b>CLIENT ASSETS (In Billions)</b>							
Assets Under Custody	\$ <b>6,720.5</b>	\$ 6,072.1	\$ 5,968.8	\$ 5,575.7	\$ 4,804.9		
Assets Under Management	<b>942.4</b>	875.3	934.1	884.5	758.9		
<b>SELECTED RATIOS AND METRICS</b>							
<i>Financial Ratios and Metrics:</i>							
Return on Average Common Equity	<b>11.9%</b>	11.5%	10.0%	9.5%	9.3%		
Return on Average Assets	<b>0.89%</b>	0.88	0.78	0.77	0.74		
Dividend Payout Ratio	<b>34.3</b>	35.3	39.2	41.1	42.0		
Net Interest Margin (*)	<b>1.18</b>	1.07	1.08	1.13	1.22		
Average Stockholders' Equity to Average Assets	<b>7.9</b>	7.8	7.8	8.1	7.9		
<i>Capital Ratios:</i>							
	<b>DECEMBER 31, 2016</b>		DECEMBER 31, 2015		DECEMBER 31, 2014	December 31, 2013 <sup>(d)</sup>	December 31, 2012 <sup>(d)</sup>
	<b>ADVANCED APPROACH<sup>(a)</sup></b>	<b>STANDARDIZED APPROACH<sup>(b)</sup></b>	ADVANCED APPROACH <sup>(a)</sup>	STANDARDIZED APPROACH <sup>(b)</sup>	ADVANCED APPROACH <sup>(a)</sup>	STANDARDIZED APPROACH <sup>(b)</sup>	
Common Equity Tier 1	<b>12.4%</b>	<b>11.8%</b>	11.9%	10.8%	12.4%	12.5%	12.9%
Tier 1	<b>13.7</b>	<b>12.9</b>	12.5	11.4	13.2	13.3	13.4
Total	<b>15.1</b>	<b>14.5</b>	14.2	13.2	15.0	15.5	15.8
Tier 1 Leverage	<b>8.0</b>	<b>8.0</b>	7.5	7.5	N/A	7.8	7.9
Supplementary Leverage <sup>(c)</sup>	<b>6.8</b>	<b>N/A</b>	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 88.

(a) Effective with the second quarter of 2014, Northern Trust exited its parallel run. Accordingly, the December 31, 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 and 2012 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 22 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 2016 totaled \$1.03 billion, up \$58.7 million or 6%, from \$973.8 million in 2015. Earnings per diluted common share totaled \$4.32 in 2016 compared to \$3.99 in 2015. Return on average common equity improved to 11.9% in 2016, from 11.5% in 2015. The current-year second quarter revenue included the gain on sale of 1.1 million shares of Visa Inc. Class B common stock (Visa Class B common shares), net of the valuation adjustment to existing swap agreements, totaling \$118.2 million (\$73.1 million after tax), partially offset by impairment charges associated with our leasing portfolio of \$21.6 million (\$13.4 million after tax). Additionally, the current-year second quarter noninterest expense included charges relating to certain securities lending litigation of \$46.5 million (\$28.9 million after tax), contractual modifications associated with certain existing asset servicing clients of \$18.6 million (\$11.6 million after tax), and severance and other personnel related charges of \$17.5 million (\$11.2 million after tax). The prior-year second quarter included a pre-tax gain on the sale of 1.0 million Visa Inc. Class B common shares totaling \$99.9 million (\$62.1 million after tax), voluntary cash contributions to certain constant dollar net-asset-value (NAV) funds of \$45.8 million (\$28.6 million after tax), and the impairment of the residual value of certain aircraft under leveraged lease agreements of \$17.8 million (\$11.1 million after tax). Excluding these items, net income increased \$73.1 million, or 8%, compared to the prior year.

The 2016 results reflect a continued focus on serving the complex and evolving needs of our clients, while enhancing profitability and returns for our stockholders. Revenue increased 6% to \$4.96 billion in 2016 from \$4.70 billion in the prior year, driven by a 15% increase in net interest income and a 4% increase in trust, investment and other servicing fees. Noninterest expense increased 6% to \$3.47 billion in 2016 compared to \$3.28 billion in 2015, attributable to increased compensation, outside services and equipment and software expense.

Client assets under custody/administration (AUC/A), under custody, a component of AUC/A, and under management were up 10%, 11%, and 8%, respectively, as of December 31, 2016 as compared to December 31, 2015 levels. As of December 31, 2016, AUC/A increased to \$8.54 trillion from \$7.80 trillion in 2015. As of December 31, 2016, client assets under custody increased to \$6.72 trillion from \$6.07 trillion, and included \$3.97 trillion of global custody assets, up 12% from \$3.53 trillion in 2015. As of December 31, 2016, client assets under management increased to \$942.4 billion from \$875.3 billion in 2015.

Trust, investment and other servicing fees, which represent the largest component of total revenue, increased 4% to \$3.11 billion, 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 equity markets.

Foreign exchange trading income of \$236.6 million decreased 10% from \$261.8 million in 2015, primarily resulting from lower client volumes.

Other operating income in 2016 and 2015 includes a \$123.1 million net gain and a \$99.9 million net gain on the sale of 1.1 million and 1.0 million Visa Class B common shares, respectively.

Net interest income on a fully taxable equivalent (FTE) basis in 2016 was \$1.26 billion, an increase of \$164.6 million, or 15%, from \$1.10 billion in 2015, reflecting an increased net interest margin and higher levels of earning assets. The net interest margin on an FTE basis increased to 1.18% in 2016 from 1.07% in 2015 due to higher yields on earning assets. The current-year and prior-year net interest margins on an FTE basis reflect the impact of a \$2.7 million and a \$17.8 million impairment of the residual value of certain assets under leveraged lease agreements, respectively. Excluding the impairments, net interest margin on an FTE basis was 1.18% and 1.09% in 2016 and 2015, respectively.

The provision for credit losses in 2016 was a credit of \$26.0 million, reflecting improved credit quality across the portfolio and an update to the underlying data used in the quantitative portion of the inherent allowance for credit losses that resulted in a reduction in the allowance ascribed to the residential real estate and private client portfolios. The provision for credit losses in 2015 was a credit of \$43.0 million, which reflected improved credit quality across the portfolio coupled with the adoption of a change in estimation methodology for inherent losses. The 2015 change in estimate resulted in a decrease in the estimate for the allowance for credit losses for the commercial and institutional loan portfolio, partially offset by an increase in the allowance for undrawn loan commitments and standby letters of credit. Loans and leases as of December 31, 2016 totaled \$33.8 billion, up 2% from \$33.2 billion in 2015. Net charge-offs for the year ended December 31, 2016 and nonperforming assets as of December 31, 2016, were \$15.2 million and \$165.4 million, respectively, compared to \$19.5 million and \$188.3 million in 2015.

Noninterest expense totaled \$3.47 billion in 2016, up \$190.1 million, or 6%, from \$3.28 billion in the prior year. The current-year second quarter noninterest expense included charges relating to certain securities lending litigation of \$46.5 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. The prior-year second quarter included a \$45.8 million charge related to voluntary cash contributions to certain constant dollar NAV funds. Excluding these charges, noninterest expense increased \$153.3 million, or 5%, primarily attributable to increased compensation, outside services, and equipment and software expense, partially offset by the favorable impact of movements in foreign exchange rates.

The provision for income taxes in 2016 totaled \$484.6 million, representing an effective tax rate of 31.9%. The provision for income taxes in 2015 totaled \$491.2 million, representing an effective tax rate of 33.5%. The current year includes a \$12.3 million income tax benefit attributed to the Corporation adopting ASU No. 2016-09, "Compensation - Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting," an increase in federal tax-exempt income and change in the earnings mix in tax jurisdictions in which the Corporation operates, each of which resulted in a reduction of the effective tax rate.

Northern Trust continued to maintain a strong capital position during 2016, with all capital ratios exceeding those required for classification as "well-capitalized" under federal bank regulatory capital requirements. Total stockholders' equity equaled \$9.8 billion at year-end, up 12% from \$8.7 billion in 2015. On August 8, 2016, the Corporation issued 5,000 shares of Series D preferred stock for proceeds of \$493.5 million, net of underwriting discounts, commissions and other issuance costs. During the year ended December 31, 2016, Northern Trust increased its quarterly common stock dividend to \$0.38 per share and repurchased 6.1 million shares of common stock, returning \$754.7 million in capital to common stockholders, compared to \$829.9 million in 2015.

## 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.

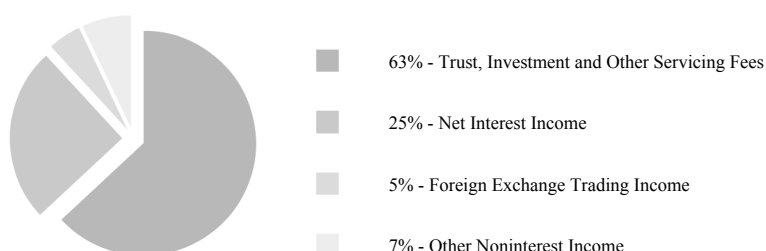
Revenue in 2016 was \$4.96 billion, an increase of 6% from \$4.70 billion in 2015. Noninterest income represented 75% of total revenue in 2016 compared to 77% in 2015, and totaled \$3.73 billion, up 3% from \$3.63 billion in 2015.

The current-year increase in noninterest income primarily reflected higher trust, investment and other servicing fees, partially offset by lower foreign exchange trading income. Trust, investment and other servicing fees totaled \$3.11 billion in 2016, up \$127.6 million, or 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 equity markets. Foreign exchange trading income in 2016 totaled \$236.6 million, down \$25.2 million, or 10%, compared with \$261.8 million in 2015, primarily resulting from lower client volumes. Other operating income in 2016 and 2015 included a \$123.1 million net gain and a \$99.9 million net gain on the sale of 1.1 million and 1.0 million Visa Class B common shares, respectively.

Net interest income on an FTE basis in 2016 was \$1.26 billion, an increase of \$164.6 million, or 15%, from \$1.10 billion in 2015, reflecting higher levels of earning assets and an increased net interest margin. Average earning assets increased \$4.8 billion, or 5%, in 2016, reflecting higher levels of securities and loans and leases, partially offset by a decrease in interest-bearing due from and deposits with banks. The net interest margin on an FTE basis increased to 1.18% in 2016 from 1.07% in 2015 due to higher yields on earning assets. The current-year and prior-year net interest margins reflect the impact of a \$2.7 million and a \$17.8 million impairment of the residual value of certain assets under leveraged lease agreements, respectively. Excluding the impairments, net interest margin was 1.18% and 1.09% in 2016 and 2015, respectively.

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

## 2016 TOTAL REVENUE OF \$4.96 BILLION



### Noninterest Income

The components of noninterest income, and a discussion of significant changes during 2016 and 2015, are provided below.

**TABLE 3: NONINTEREST INCOME**

(\$ In Millions)	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
Trust, Investment and Other Servicing Fees	\$ 3,108.1	\$ 2,980.5	\$ 2,832.8	4 %	5 %
Foreign Exchange Trading Income	236.6	261.8	210.1	(10)%	25 %
Treasury Management Fees	62.8	64.7	66.0	(3)%	(2)%
Security Commissions and Trading Income	81.4	78.7	67.6	3 %	16 %
Other Operating Income	241.2	247.1	153.5	(2)%	61 %
Investment Security Losses, net	(3.2)	(0.3)	(4.3)	N/M	(94)%
Total Noninterest Income	\$ 3,726.9	\$ 3,632.5	\$ 3,325.7	3 %	9 %

### Trust, Investment and Other Servicing Fees

Trust, investment and other servicing fees were \$3.11 billion in 2016 compared with \$2.98 billion in 2015. 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 2016 trust, investment and other servicing fees, refer to the "Reporting Segments and Related Information" section.

The following table presents selected equity market indices and the percentage changes year over year.

**TABLE 4: MARKET INDICES**

	DAILY AVERAGES			YEAR-END		
	2016	2015	CHANGE	2016	2015	CHANGE
S&P 500	2,094	2,061	2%	2,239	2,044	10%
MSCI EAFE (U.S. dollars)	1,646	1,810	(9)	1,684	1,716	(2)
MSCI EAFE (local currency)	956	1,048	(9)	1,037	1,013	2

**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, 2016, AUC/A were \$8.54 trillion, up 10% from \$7.80 trillion at December 31, 2015. Assets under custody, a component of AUC/A, were \$6.72 trillion at December 31, 2016, up 11% from \$6.07 trillion at December 31, 2015, and included \$3.97 trillion of global custody assets, compared to \$3.53 trillion at December 31, 2015. The increase in assets under custody primarily reflected net inflows and the favorable impact from equity markets, partially offset by an unfavorable impact from foreign currency translation. Assets under management totaled \$942.4 billion, up 8% from \$875.3 billion at the end of 2015. The increase primarily reflected net inflows and the favorable impact of equity markets, partially offset by the unfavorable impact of foreign currency translation.

AUC/A by reporting segment were as follows:

**TABLE 5: ASSETS UNDER CUSTODY/ADMINISTRATION BY REPORTING SEGMENT**

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

Assets under custody by reporting segment were as follows:

**TABLE 6: ASSETS UNDER CUSTODY BY REPORTING SEGMENT**

(\$ In Billions)	DECEMBER 31,					CHANGE		FIVE-YEAR COMPOUND GROWTH RATE
	2016	2015	2014	2013	2012	2016 /2015	2015 / 2014	
Corporate & Institutional	\$ 6,176.9	\$ 5,565.8	\$ 5,453.1	\$ 5,079.7	\$ 4,358.6	11%	2%	7%
Wealth Management	543.6	506.3	515.7	496.0	446.3	7	(2)	4
Total Assets Under Custody	\$ 6,720.5	\$ 6,072.1	\$ 5,968.8	\$ 5,575.7	\$ 4,804.9	11%	2%	7%



Assets under custody were invested as follows:

**TABLE 7: ASSETS UNDER CUSTODY BY INVESTMENT TYPE**

	DECEMBER 31,				
	2016	2015	2014	2013	2012
Equities	46%	44%	45%	47%	44%
Fixed Income Securities	36	37	36	34	36
Cash and Other Assets	18	19	19	19	20

Assets under management by reporting segment were as follows:

**TABLE 8: ASSETS UNDER MANAGEMENT BY REPORTING SEGMENT**

(\$ In Billions)	DECEMBER 31,					CHANGE		FIVE-YEAR COMPOUND GROWTH RATE
	2016	2015	2014	2013	2012	2016 / 2015	2015 / 2014	
Corporate & Institutional	\$ 694.0	\$ 648.0	\$ 709.6	\$ 662.7	\$ 561.2	7%	(9)%	4%
Wealth Management	248.4	227.3	224.5	221.8	197.7	9	1	5
Total Assets Under Management	\$ 942.4	\$ 875.3	\$ 934.1	\$ 884.5	\$ 758.9	8%	(6)%	4%

Assets under management were invested and managed as follows:

**TABLE 9: ASSETS UNDER MANAGEMENT BY INVESTMENT TYPE**

	DECEMBER 31,				
	2016	2015	2014	2013	2012
Equities	51%	51%	52%	54%	48%
Fixed Income Securities	17	17	17	17	19
Cash and Other Assets	20	20	18	17	21
Securities Lending Collateral	12	12	13	12	12

**TABLE 10: ASSETS UNDER MANAGEMENT BY MANAGEMENT STYLE**

	DECEMBER 31,				
	2016	2015	2014	2013	2012
Index	47%	47%	49%	51%	47%
Active	40	40	39	43	46
Multi-Manager	5	4	6	4	5
Other	8	9	6	2	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 \$236.6 million in 2016 compared with \$261.8 million in the prior year. The decrease of \$25.2 million, or 10%, is attributable to lower client volumes in 2016.

### ***Treasury Management Fees***

Treasury management fees, generated from cash and treasury management products and services provided to clients, totaled \$62.8 million, down 3% from \$64.7 million in 2015.

### ***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 \$81.4 million in 2016, up 3%, or \$2.7 million, from \$78.7 million in 2015, primarily due to growth from the acquisition of Aviate Global LLP, which closed during the second quarter of 2016, partially offset by lower income from interest rate protection products sold to clients.

**Other Operating Income**

The components of other operating income include:

**TABLE 11: OTHER OPERATING INCOME**

(\$ In Millions)	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
Loan Service Fees	\$ 56.6	\$ 59.1	\$ 62.7	(4)%	(6)%
Banking Service Fees	50.6	48.2	49.6	5	(3)
Other Income	134.0	139.8	41.2	(4)	N/M
Total Other Operating Income	\$ 241.2	\$ 247.1	\$ 153.5	(2)%	61 %

Other income in the current-year second quarter included the gain on sale of 1.1 million Visa 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 a non-strategic loan and lease portfolio of \$18.9 million. Other income in the prior-year second quarter includes a \$99.9 million net gain on the sale of 1.0 million Visa Class B common shares held by Northern Trust. Excluding these items, other income totaled \$34.7 million in 2016 and \$39.9 million in 2015, down \$5.2 million or 13%, primarily due to net charges associated with a non-strategic loan and lease portfolio.

**Investment Security Losses, Net**

Net investment security losses totaled \$3.2 million and \$0.3 million in 2016 and 2015, respectively. Losses in 2016 include \$3.7 million of charges related to the other-than-temporary impairment (OTTI) of certain Community Reinvestment Act (CRA) eligible held-to-maturity securities. There were no OTTI losses in 2015.

**NONINTEREST INCOME – 2015 COMPARED WITH 2014**

Trust, investment and other servicing fees were \$2.98 billion in 2015, up 5% from \$2.83 billion in 2014, primarily attributable to new business, favorable equity markets and lower money market mutual fund fee waivers, partially offset by the unfavorable impacts of movements in foreign exchange rates. Foreign exchange trading income increased 25% to \$261.8 million in 2015 from \$210.1 million in 2014, resulting from higher currency market volatility as compared to 2014.

Other operating income totaled \$247.1 million in 2015, an increase of 61% from \$153.5 million in 2014. Other operating income in 2015 includes a \$99.9 million net gain on the sale of 1.0 million Visa Class B common shares held by Northern Trust. Excluding the gain, other operating income in 2015 decreased 4% from 2014, primarily due to net charges associated with a non-strategic loan and lease portfolio.

Net investment security losses totaled \$0.3 million and \$4.3 million in 2015 and 2014, respectively. There were no OTTI losses in 2015. Losses in 2014 include \$4.2 million of charges related to the OTTI of certain CRA eligible held-to-maturity securities.

**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 88.

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 12: ANALYSIS OF NET INTEREST INCOME (FTE)**

(\$ In Millions)	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
Interest Income – GAAP	\$ 1,416.9	\$ 1,224.0	\$ 1,186.9	16%	3%
FTE Adjustment	25.1	25.3	29.4	(1)	(14)
Interest Income – FTE	1,442.0	1,249.3	1,216.3	15	3
Interest Expense	182.0	153.9	181.4	18	(15)
Net Interest Income – FTE Adjusted	1,260.0	1,095.4	1,034.9	15	6
Net Interest Income – GAAP	1,234.9	1,070.1	1,005.5	15	6
<b>AVERAGE BALANCE</b>					
Earning Assets	\$ 107,037.6	\$ 102,249.8	\$ 95,947.5	5%	7%
Interest-Related Funds	76,886.0	74,252.7	73,167.2	4	1
Net Noninterest-Related Funds	30,151.6	27,997.1	22,780.3	8	23
<b>CHANGE IN PERCENTAGE</b>					
<b>AVERAGE RATE</b>					
Earning Assets	1.35%	1.22%	1.27%	0.13	(0.05)
Interest-Related Funds	0.24	0.21	0.25	0.03	(0.04)
Interest Rate Spread	1.11	1.01	1.02	0.10	(0.01)
Total Source of Funds	0.17	0.15	0.19	0.02	(0.04)
Net Interest Margin – GAAP	1.15%	1.05%	1.05%	0.10	—
Net Interest Margin – FTE	1.18%	1.07%	1.08%	0.11	(0.01)

Refer to pages 166 and 167 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 2016 was \$1.23 billion, up \$164.8 million, or 15%, from \$1.07 billion in 2015. Net interest income on an FTE basis for 2016 was \$1.26 billion, an increase of \$164.6 million, or 15%, from \$1.10 billion in 2015, reflecting higher levels of earning assets and an increased net interest margin. Average earning assets increased \$4.8 billion, or 5%, to \$107.0 billion from \$102.2 billion in 2015, reflecting higher levels of securities and loans and leases. The net interest margin in 2016 was 1.15%, up from 1.05% in 2015. The net interest margin on an FTE basis in 2016 was 1.18%, up from 1.07% in 2015. The current-year and prior-year net interest margins reflect the impact of a \$2.7 million and a \$17.8 million impairment of the residual value of certain assets under leveraged lease agreements, respectively. Excluding the impairments, net interest margin on an FTE basis was 1.18% and 1.09% in 2016 and 2015, respectively.

Growth in average earning assets primarily reflected increased securities and loans and leases, partially offset by a decrease in interest-bearing due from and deposits with banks. 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 \$42.0 billion, an increase of \$4.6 billion, or 12%, from \$37.4 billion in 2015. Loans and leases averaged \$34.0 billion, an increase of \$1.0 billion, or 3%, from \$33.0 billion in 2015. Interest-bearing due from and deposits with banks averaged \$8.7 billion in 2016, down \$2.0 billion, or 18%, from \$10.7 billion in 2015.

The increase in average earning assets was primarily funded by higher levels of demand and other noninterest-bearing deposits, short-term borrowings, and interest-bearing deposits. Average demand and other noninterest-bearing deposits

increased \$1.7 billion, or 7%, to \$26.2 billion in 2016 from \$24.5 billion in 2015. Average short-term borrowings increased \$1.5 billion, or 33%, to \$6.3 billion in 2016 from \$4.8 billion in 2015. Non-U.S.-office interest-bearing client deposits averaged \$50.8 billion in 2016, up \$1.4 billion, or 3%, from \$49.4 billion in 2015.

Stockholders' equity averaged \$9.1 billion in 2016, compared with \$8.6 billion in 2015. The increase of \$460.8 million, or 5%, primarily reflected current-year 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. During the year ended December 31, 2016, the Corporation increased its quarterly common stock dividend by 6% to \$0.38 per share and repurchased 6.1 million shares, returning \$754.7 million in capital to common stockholders, compared to \$829.9 million in 2015.

Under the Corporation's 2016 Capital Plan, which was reviewed without objection by the Federal Reserve, the Corporation may repurchase up to \$145.0 million of common stock after December 31, 2016, through June 2017.

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 – 2015 COMPARED WITH 2014**

Net interest income on an FTE basis increased 6% to \$1.10 billion in 2015 from \$1.03 billion in 2014, primarily attributable to higher levels of average earning assets, partially offset by a decline in the net interest margin. The net interest margin on an FTE basis in 2015 was 1.07%, down from 1.08% in 2014. 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. Excluding the impairment, the net interest margin on an FTE basis was 1.09% in 2015.

Average earning assets increased \$6.3 billion, or 7%, to \$102.2 billion in 2015 from \$95.9 billion in 2014. Growth in average earning assets primarily reflected a \$4.0 billion, or 12% increase in securities, and a \$2.8 billion, or 9% increase in loans and leases.

Stockholders' equity averaged \$8.6 billion and \$8.2 billion in 2015 and 2014, respectively. The increase in 2015 reflected the retention of earnings, partially offset by dividend declarations and the repurchase of common stock pursuant to the Corporation's share repurchase program. On August 5, 2014, the Corporation issued 16,000 shares of Series C preferred stock for proceeds of \$388.5 million, net of underwriting discounts, commissions and other issuance costs.

#### **Provision for Credit Losses**

The provision for credit losses was a credit of \$26.0 million in 2016 compared with a credit provision of \$43.0 million in 2015, and a provision of \$6.0 million in 2014. The current-year provision primarily reflected improved credit quality across the portfolio and an update to the underlying data used in the quantitative portion of the inherent allowance for credit losses that resulted in a reduction in the allowance ascribed to the residential real estate and private client portfolios.

Nonperforming assets at December 31, 2016 decreased 12% from the prior year-end. Residential real estate and commercial loans accounted for 72% and 21%, respectively, of nonperforming loans and leases at December 31, 2016. For further discussion of the allowance and provision for credit losses for 2016, 2015, and 2014, refer to the "Asset Quality" section.

#### **Noninterest Expense**

Noninterest expense for 2016 totaled \$3.47 billion, up \$190.1 million, or 6%, from \$3.28 billion in 2015. The current-year second quarter noninterest expense included charges relating to certain securities lending litigation of \$46.5 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. The prior-year second quarter included a \$45.8 million charge related to voluntary cash contributions to certain constant dollar NAV funds. Excluding the charges, noninterest expense increased \$153.3 million, or 5%, primarily attributable to increased compensation, outside services, and equipment and software expense, partially offset by the favorable impact of movements in foreign exchange rates.

The components of noninterest expense and a discussion of significant changes during 2016 and 2015 are provided below.

**TABLE 13: NONINTEREST EXPENSE**

(\$ In Millions)	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
Compensation	\$ 1,541.1	\$ 1,443.3	\$ 1,417.9	7%	2%
Employee Benefits	293.3	285.3	268.7	3	6
Outside Services	627.1	595.7	574.6	5	4
Equipment and Software	467.4	454.8	421.4	3	8
Occupancy	177.4	173.5	180.3	2	(4)
Other Operating Expense	364.4	328.0	272.1	11	21
Total Noninterest Expense	\$ 3,470.7	\$ 3,280.6	\$ 3,135.0	6%	5%

### **Compensation**

Compensation expense, the largest component of noninterest expense, totaled \$1.54 billion and \$1.44 billion in 2016 and 2015, respectively, an increase of \$97.8 million, or 7%. The current-year second quarter compensation expense included severance and related charges totaling \$13.0 million. Excluding these charges, compensation expense increased \$84.8 million, or 6%, primarily reflecting higher salary expense and performance-based incentive compensation. The increase in salary expense was driven by staff growth and base-pay adjustments, partially offset by the favorable impact of movements in foreign exchange rates. Staff on a full-time equivalent basis totaled approximately 17,100 at December 31, 2016, up 6% from approximately 16,200 at December 31, 2015.

### **Employee Benefits**

Employee benefits expense totaled \$293.3 million in 2016, up \$8.0 million, or 3%, from \$285.3 million in 2015. The current-year second quarter employee benefits expense included \$1.5 million of severance and related charges. Excluding these charges, employee benefits expense increased \$6.5 million, or 2%, attributable to higher medical expense and payroll taxes, partially offset by a decrease in retirement-related expense.

### **Outside Services**

Outside services expense totaled \$627.1 million in 2016, up \$31.4 million, or 5%, from \$595.7 million in 2015. Current-year second quarter outside services expense included \$0.7 million of severance and related charges. Excluding these charges, outside services expense increased \$30.7 million, or 5%, primarily reflecting increased technical services and consulting services, partially offset by a reduction in third-party advisory fees.

### **Equipment and Software**

Equipment and software expense, comprised of depreciation and amortization, rental, and maintenance costs, increased \$12.6 million, or 3%, to \$467.4 million in 2016 compared to \$454.8 million in 2015, reflecting increased software amortization, partially offset by a decrease in software dispositions.

### **Occupancy**

Occupancy expense totaled \$177.4 million in 2016, up \$3.9 million, or 2%, from \$173.5 million in 2015, primarily related to an early termination penalty recorded in 2016 and higher rent expense.

**Other Operating Expense**

Other operating expense in 2016 totaled \$364.4 million, up \$36.4 million, or 11%, from \$328.0 million in 2015. The components of other operating expense are as follows:

**TABLE 14: OTHER OPERATING EXPENSE**

(\$ In Millions)	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
Business Promotion	\$ 83.6	\$ 85.1	\$ 79.7	(2)%	7%
FDIC Insurance Premiums	31.7	25.2	22.0	26	14
Staff Related	43.0	40.5	39.1	6	4
Other Intangibles Amortization	8.8	10.9	19.5	(19)	(44)
Other Expenses	197.3	166.3	111.8	19	49
Total Other Operating Expense	\$ 364.4	\$ 328.0	\$ 272.1	11 %	21%

The current-year second quarter other operating expense included charges relating to certain securities lending litigation of \$46.5 million, contractual modifications associated with certain existing asset servicing clients of \$18.6 million, and severance and other personnel related charges of \$2.3 million. The prior-year second quarter included a \$45.8 million charge related to voluntary cash contributions to certain constant dollar NAV funds. Excluding the charges, other operating expense increased \$14.8 million, or 5%, primarily attributable to increases in FDIC deposit protection expense and other miscellaneous expense categories.

**NONINTEREST EXPENSE – 2015 COMPARED WITH 2014**

Noninterest expense in 2015 totaled \$3.28 billion, up 5% from \$3.14 billion in 2014. Results for 2015 included a \$45.8 million charge related to voluntary cash contributions to certain constant dollar NAV funds, while 2014 included \$47.5 million of charges and write-offs.

Compensation expense increased 2% to \$1.44 billion in 2015 from \$1.42 billion in 2014. Results for 2014 include severance-related charges totaling \$29.4 million. Excluding these charges, compensation expense increased \$54.8 million, or 4%, reflecting staff growth and base pay adjustments.

Employee benefits expense totaled \$285.3 million in 2015, up 6% from \$268.7 million in 2014. Results for 2014 included \$2.7 million of severance-related charges. Excluding these charges, employee benefits expense increased \$19.3 million, or 7%, attributable to higher pension and employee medical expense.

Outside services expense totaled \$595.7 million in 2015, up 4% from \$574.6 million in 2014. Outside services expense in 2014 included \$1.6 million of severance-related charges. Excluding these charges, outside services expense increased \$22.7 million, or 4%, primarily reflecting higher consulting expense due to regulatory related spend and increased technical services expense.

Equipment and software expense increased 8% to \$454.8 million in 2015 compared to \$421.4 million in 2014. Results for 2014 include \$9.5 million of write-offs of replaced or eliminated software. Excluding these write-offs, equipment and software expense increased \$42.9 million, or 10%, reflecting increased software amortization and related software support costs.

Occupancy expense for 2015 was \$173.5 million, down 4% from \$180.3 million in 2014. Occupancy expense in 2014 included charges totaling \$4.3 million in connection with reductions in office space. Excluding these charges, occupancy expense decreased 1% compared to 2014.

Other operating expense totaled \$328.0 million in 2015, up 21% from \$272.1 million in 2014. Other operating expense in 2015 includes 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.

**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. The 2016 provision for income taxes was \$484.6 million, representing an effective rate of 31.9%. This compares with a provision for income taxes of \$491.2 million and an effective rate of 33.5% in 2015. The current year includes a \$12.3 million income tax benefit attributed to the Corporation adopting ASU 2016-09, an increase in federal tax-exempt income and change in the earnings mix in tax jurisdictions in which the Corporation operates, each of which resulted in a reduction of the effective tax rate.

The income tax provisions for 2016 and 2015 reflect reductions totaling \$50.1 million and \$43.6 million, respectively, related to certain non-U.S. subsidiaries whose earnings are being reinvested indefinitely outside of the United States. The

2014 income tax provision of \$378.4 million represented an effective tax rate of 31.8%, and reflects reductions of \$43.0 million related to non-U.S. subsidiaries whose earnings are being 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 15: CONSOLIDATED FINANCIAL INFORMATION**

(\$ In Millions)	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
<b>Noninterest Income</b>					
Trust, Investment and Other Servicing Fees	\$ 3,108.1	\$ 2,980.5	\$ 2,832.8	4%	5%
Foreign Exchange Trading Income	236.6	261.8	210.1	(10)	25
Other Noninterest Income	382.2	390.2	282.8	(2)	38
Net Interest Income (Note)	1,260.0	1,095.4	1,034.9	15	6
Revenue (Note)	4,986.9	4,727.9	4,360.6	5	8
Provision for Credit Losses	(26.0)	(43.0)	6.0	(40)	N/M
Noninterest Expense	3,470.7	3,280.6	3,135.0	6	5
Income before Income Taxes (Note)	1,542.2	1,490.3	1,219.6	3	22
Provision for Income Taxes (Note)	509.7	516.5	407.8	(1)	27
Net Income	\$ 1,032.5	\$ 973.8	\$ 811.8	6%	20%
Average Assets	\$ 115,570.3	\$ 110,715.1	\$ 104,083.5	4%	6%

Note: Stated on an FTE basis. The consolidated figures include \$25.1 million, \$25.3 million, and \$29.4 million of FTE adjustments for 2016, 2015, and 2014, 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, 2016, 2015, and 2014 on a management-reporting basis.

**TABLE 16: C&IS RESULTS OF OPERATIONS**

(\$ In Millions)	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
<b>Noninterest Income</b>					
Trust, Investment and Other Servicing Fees	\$ 1,787.8	\$ 1,696.9	\$ 1,584.0	5 %	7 %
Foreign Exchange Trading Income	224.4	249.4	200.4	(10)	24
Other Noninterest Income	147.0	170.5	177.9	(14)	(4)
Net Interest Income (Note)	565.0	414.4	310.0	36	34
Revenue (Note)	2,724.2	2,531.2	2,272.3	8	11
Provision for Credit Losses	1.9	(22.6)	5.8	N/M	N/M
Noninterest Expense	2,012.2	1,856.4	1,732.8	8	7
Income before Income Taxes (Note)	710.1	697.4	533.7	2	31
Provision for Income Taxes (Note)	212.9	212.8	149.4	—	42
Net Income	\$ 497.2	\$ 484.6	\$ 384.3	3 %	26 %
Percentage of Consolidated Net Income	48%	50%	47%		
Average Assets	\$ 76,194.7	\$ 73,598.4	\$ 59,462.9	4 %	24 %

Note: Stated on an FTE basis.

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. The 26% increase in C&IS net income in 2015 primarily resulted from higher trust, investment and other servicing fees, net interest income, foreign exchange trading income and lower provision for credit losses, partially offset by higher noninterest expense.

#### ***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.

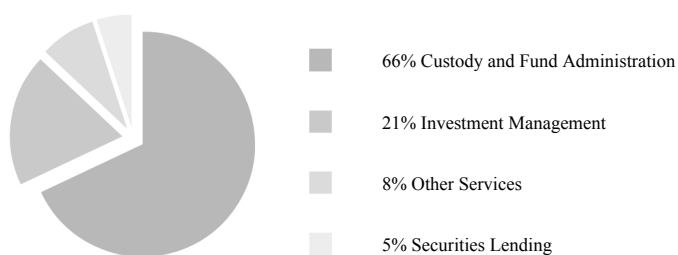
Provided below are the components of C&IS trust, investment and other servicing fees.

**TABLE 17: C&IS TRUST, INVESTMENT AND OTHER SERVICING FEES**

(\$ In Millions)	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
Custody and Fund Administration	\$ 1,182.2	\$ 1,150.8	\$ 1,069.9	3%	8%
Investment Management	371.8	325.2	305.7	14	6
Securities Lending	97.7	90.5	96.5	8	(6)
Other	136.1	130.4	111.9	4	17
Total Trust, Investment and Other Servicing Fees	\$ 1,787.8	\$ 1,696.9	\$ 1,584.0	5%	7%



**2016 C&IS TRUST, INVESTMENT, AND OTHER SERVICING FEES**



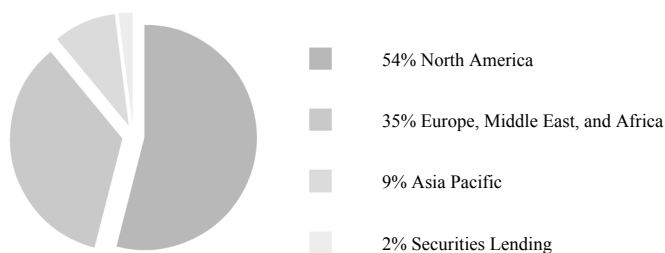
Custody and fund administration fees, the largest component of trust, investment and other servicing fees, increased \$31.4 million, or 3%, primarily reflecting new business, partially offset by lower equity markets and the unfavorable impact of movements in foreign exchange rates. Fees from investment management increased \$46.6 million, or 14%, primarily due to lower money market mutual fund fee waivers. Money market mutual fund fee waivers in C&IS totaled \$1.9 million and \$48.8 million in 2016 and 2015, respectively. Securities lending revenue increased 8% due to higher spreads. C&IS other trust, investment and servicing fees increased \$5.7 million, or 4%, primarily due to new business related to investment risk and analytical services and increased other ancillary services. C&IS trust, investment, and other servicing fees totaled \$1.70 billion in 2015, an increase of \$112.9 million or 7%, from \$1.58 billion in 2014, primarily due to increases in custody and fund administration fees driven by new business and the favorable equity markets, partially offset by the unfavorable impact of movements in foreign exchange rates.

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

**TABLE 18: C&IS ASSETS UNDER CUSTODY**

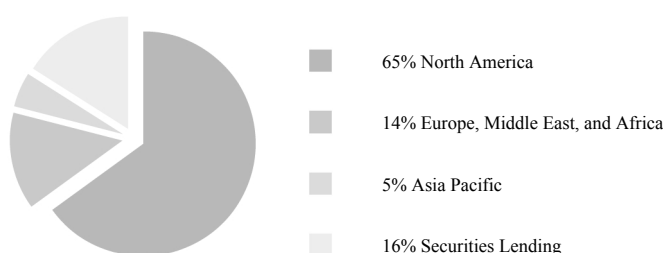
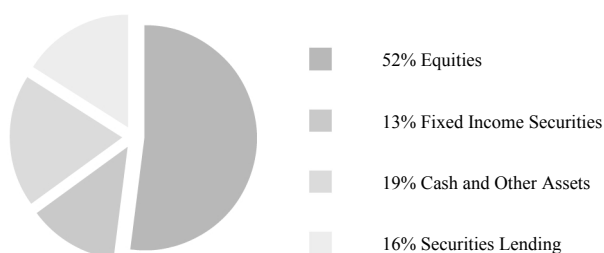
(\$ In Billions)	DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
North America	\$ 3,334.5	\$ 2,999.0	\$ 2,920.3	11%	3%
Europe, Middle East, and Africa	2,152.2	1,971.1	1,939.3	9	2
Asia Pacific	578.4	492.0	477.3	18	3
Securities Lending	111.8	103.7	116.2	8	(11)
Total Assets Under Custody	\$ 6,176.9	\$ 5,565.8	\$ 5,453.1	11%	2%

**2016 C&IS ASSETS UNDER CUSTODY**



**TABLE 19: C&IS ASSETS UNDER MANAGEMENT**

(\$ In Billions)	DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
North America	\$ 450.2	\$ 410.4	\$ 415.5	10%	(1)%
Europe, Middle East, and Africa	98.8	102.0	115.6	(3)	(12)
Asia Pacific	33.2	31.9	62.3	4	(49)
Securities Lending	111.8	103.7	116.2	8	(11)
Total Assets Under Management	\$ 694.0	\$ 648.0	\$ 709.6	7%	(9)%

**2016 C&IS ASSETS UNDER MANAGEMENT**

**2016 C&IS ASSETS UNDER MANAGEMENT BY INVESTMENT TYPE**


C&IS assets under custody were \$6.18 trillion at December 31, 2016, 11% higher than \$5.57 trillion at December 31, 2015. Assets under management increased 7% to \$694.0 billion at December 31, 2016, from \$648.0 billion at December 31, 2015. 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 \$111.8 billion and \$103.7 billion at December 31, 2016 and 2015, respectively.

***C&IS Foreign Exchange Trading Income***

Foreign exchange trading income totaled \$224.4 million in 2016, a \$25.0 million, or 10%, decrease from \$249.4 million in 2015. The decrease is attributable to lower client volumes in the current year. Foreign exchange trading income in 2015 of \$249.4 million increased \$49.0 million, or 24%, from \$200.4 million in 2014, due to higher currency market volatility and trading volumes as compared to 2014.

***C&IS Other Noninterest Income***

Other noninterest income for 2016 totaled \$147.0 million, down \$23.5 million, or 14%, from \$170.5 million in 2015, 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. Other noninterest income in 2015 of \$170.5 million decreased \$7.4 million, or 4%, from \$177.9 million in

2014, due to decreases within various categories of other operating income, partially offset by higher security commissions and trading income.

### ***C&IS Net Interest Income***

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. Net interest margin on an FTE basis increased to 0.81% from 0.62%, primarily reflecting higher yields on earning assets. Additionally, the current-year second quarter included a charge of \$2.7 million related to the residual value of certain aircraft and rail cars. The prior-year second quarter included a charge of \$17.8 million related to the residual value of certain aircraft under leveraged lease agreements. Average earning assets totaled \$69.7 billion, an increase of \$2.7 billion, or 4%, from \$67.0 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 \$46.6 billion in 2016, up from \$46.0 billion in 2015. Net interest income on an FTE basis increased \$104.4 million or 34%, in 2015 to \$414.4 million from \$310.0 million in 2014, due to an increase in the net interest margin and average earning assets. The presentation of average assets for 2015 was changed to reflect a modification to the methodology by which assets are allocated among our reporting segments. For C&IS, this change in presentation resulted in an increase to average assets and a reduction to the net interest margin in 2015.

### ***C&IS Provision for Credit Losses***

The provision for credit losses was \$1.9 million for 2016, compared to a provision credit of \$22.6 million in 2015, and a provision of \$5.8 million in 2014. The 2016 provision reflected an increase to a specific reserve in the commercial portfolio that was charged-off during the current year, partially offset by increased credit quality across the portfolio. The 2015 provision primarily reflected improved credit quality across the portfolio coupled with the adoption of a change in estimation methodology for inherent losses. The provision for credit losses in 2014 primarily reflected allowances established as a result of higher commercial and institutional loan volumes, partially offset by continued improvement in the credit quality of commercial and institutional loans.

### ***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 \$2.01 billion in 2016, an increase of \$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 the current year. Noninterest expense in the current-year second quarter included a charge in connection with an agreement to settle certain securities lending litigation of \$46.5 million, charges related to contractual modifications associated with existing C&IS clients of \$18.6 million, and severance and related charges of \$7.4 million. In the current-year third quarter, there was a \$3.5 million charge to settle securities litigation that had not been part of the second quarter settlement. Noninterest expense for 2015 increased \$123.6 million, or 7%, from \$1.73 billion in 2014. The increase was due to higher indirect expense allocations, primarily attributable to \$36.6 million of the charge related to voluntary cash contributions to certain constant dollar NAV funds allocated to C&IS, as well as higher outside services and compensation expense in 2015.

### **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 \$543.6 billion of assets under custody and \$248.4 billion of assets under management at December 31, 2016. 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, 2016, 2015, and 2014 on a management-reporting basis.

**TABLE 20: WEALTH MANAGEMENT RESULTS OF OPERATIONS**

(\$ In Millions)	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
<b>Noninterest Income</b>					
Trust, Investment and Other Servicing Fees	\$ 1,320.3	\$ 1,283.6	\$ 1,248.8	3%	3%
Foreign Exchange Trading Income	8.6	12.4	9.7	(32)	28
Other Noninterest Income	105.7	111.8	98.3	(6)	14
Net Interest Income (Note)	651.4	568.1	536.1	15	6
Revenue (Note)	2,086.0	1,975.9	1,892.9	6	4
Provision for Credit Losses	(27.9)	(20.4)	0.2	38	N/M
Noninterest Expense	1,315.3	1,291.9	1,268.7	2	2
Income before Income Taxes (Note)	798.6	704.4	624.0	13	13
Provision for Income Taxes (Note)	301.1	264.7	234.8	14	13
Net Income	\$ 497.5	\$ 439.7	\$ 389.2	13%	13%
Percentage of Consolidated Net Income	48%	45%	48%		
Average Assets	\$ 26,525.0	\$ 25,048.7	\$ 23,629.3	6%	6%

Note: Stated on an FTE basis.

Wealth Management net income increased 13% in 2016, primarily reflecting higher net interest income and trust, investment and other servicing fees, partially offset by a higher provision for income taxes and higher noninterest expense. The 13% increase in Wealth Management net income in 2015 from 2014 is primarily attributable to higher trust, investment and other servicing fees, net interest income and lower provision for credit losses, partially offset by higher noninterest expense.

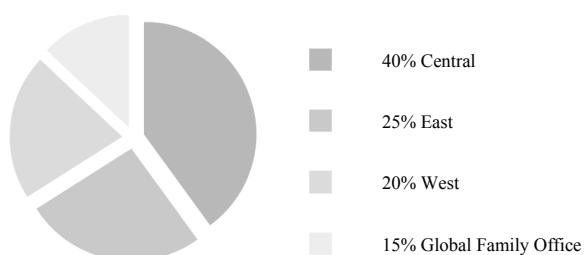
### Wealth Management Trust, Investment and Other Servicing Fees

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

**TABLE 21: WEALTH MANAGEMENT TRUST, INVESTMENT AND OTHER SERVICING FEES**

(\$ In Millions)	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
Central	\$ 523.8	\$ 514.3	\$ 509.1	2%	1%
East	334.4	332.7	325.3	1	2
West	268.9	267.7	262.5	—	2
Global Family Office	193.2	168.9	151.9	14	11
Total Trust, Investment and Other Servicing Fees	\$ 1,320.3	\$ 1,283.6	\$ 1,248.8	3%	3%

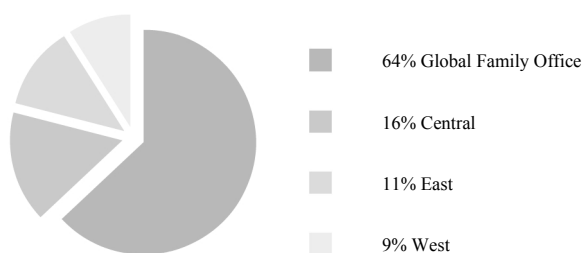
#### 2016 WEALTH MANAGEMENT FEES



**TABLE 22: WEALTH MANAGEMENT ASSETS UNDER CUSTODY**

(\$ In Billions)	DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
Global Family Office	\$ 347.7	\$ 321.4	\$ 324.0	8%	(1)%
Central	83.8	79.5	85.7	5	(7)
East	61.7	58.5	58.5	6	—
West	50.4	46.9	47.5	7	(1)
Total Assets Under Custody	\$ 543.6	\$ 506.3	\$ 515.7	7%	(2)%

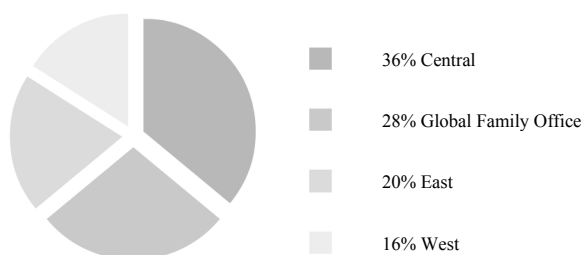
#### 2016 WEALTH MANAGEMENT ASSETS UNDER CUSTODY



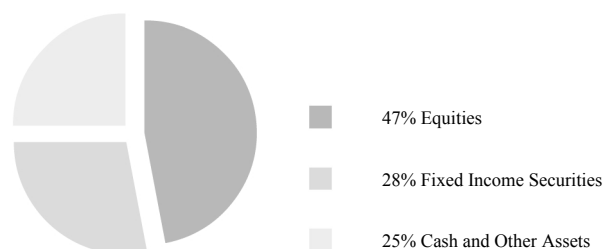
**TABLE 23: WEALTH MANAGEMENT ASSETS UNDER MANAGEMENT**

(\$ In Billions)	DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
Central	\$ 89.7	\$ 81.8	\$ 83.4	10%	(2)%
Global Family Office	69.3	61.9	57.0	12	9
East	50.9	47.4	47.4	7	—
West	38.5	36.2	36.7	6	(1)
Total Assets Under Management	\$ 248.4	\$ 227.3	\$ 224.5	9%	1 %

**2016 WEALTH MANAGEMENT ASSETS UNDER MANAGEMENT**



**2016 WEALTH MANAGEMENT ASSETS UNDER MANAGEMENT BY INVESTMENT TYPE**



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 \$1.32 billion in 2016, up \$36.7 million, or 3%, from \$1.28 billion in 2015, which in turn was up \$34.8 million, or 3%, from \$1.25 billion in 2014. The results in 2016 benefited from 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. The 3% increase in trust, investment and other servicing fees in 2015 compared to 2014 was attributable to new business, higher equity markets and lower money market mutual fund fee waivers.

At December 31, 2016, assets under custody in Wealth Management were \$543.6 billion compared with \$506.3 billion at December 31, 2015. Assets under management were \$248.4 billion at December 31, 2016 compared to \$227.3 billion at the previous year end.

***Wealth Management Foreign Exchange Trading Income***

Foreign exchange trading income totaled \$8.6 million in 2016, a \$3.8 million, or 32%, decrease from \$12.4 million in 2015. The decrease is attributable to lower client volumes in the current year. Foreign exchange trading income in 2015 increased \$2.7 million, or 28%, as compared to 2014, primarily reflecting increased client activity.

***Wealth Management Other Noninterest Income***

Other noninterest income for 2016 totaled \$105.7 million, a decrease of \$6.1 million, or 6%, from \$111.8 million in 2015, primarily reflecting lower security commissions and trading income. Other noninterest income in 2015 increased \$13.5 million, or 14%, as compared to 2014, primarily reflecting higher security commissions and trading income and increases within various categories of other operating income.

***Wealth Management Net Interest Income***

Net interest income on an FTE basis was \$651.4 million for 2016, up \$83.3 million, or 15%, from \$568.1 million in 2015, primarily attributable to an increase in the net interest margin and average earning assets. Net interest margin on an FTE basis increased to 2.48% from 2.29%, primarily reflecting higher yields on earning assets. Average earning assets totaled \$26.3 billion in the current year, a 6% increase from \$24.8 billion in the prior year. Net interest income on an FTE basis in 2015 increased \$32.0 million, or 6%, from 2014 and the net interest margin on an FTE basis in 2015 of 2.29% was down from the 2014 margin of 2.32%. The lower net interest margin in 2015 as compared to 2014 was attributable to lower yields on earning assets, partially offset by lower cost of interest-related funds. Earning assets and funding sources in 2016, 2015, and 2014 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 \$27.9 million for 2016, compared to a provision credit of \$20.4 million in 2015, and a provision of \$0.2 million in 2014. The 2016 provision primarily reflected improved credit quality in the underlying data used in the quantitative portion of the inherent allowance for credit losses that resulted in a reduction in the allowance ascribed to the residential real estate and private client portfolios. The 2015 provision 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. The 2014 provision reflected improvement in the credit quality of the commercial and institutional and commercial real estate loan classes.

***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 \$1.32 billion in 2016, an increase of \$23.4 million, or 2%, from \$1.29 billion in the prior year. The increase was primarily due to higher compensation expense and indirect expense allocations in the current year. Noninterest expense for 2015 increased \$23.2 million, or 2%, from \$1.27 billion in 2014. The prior-year increase was due to higher indirect allocations, primarily attributable to \$9.2 million of the charge related to voluntary cash contributions to certain constant dollar NAV funds allocated to Wealth Management, as well as increased employee benefits expense, partially offset by lower expense for outside services.

## 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, 2016, 2015, and 2014 on a management-reporting basis.

**TABLE 24: TREASURY AND OTHER RESULTS OF OPERATIONS**

(\$ In Millions)	FOR THE YEAR ENDED DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
Noninterest Income	\$ 133.1	\$ 107.9	\$ 6.6	23 %	N/M
Net Interest Income (Note)	43.6	112.9	188.8	(61)	(40)
Revenue (Note)	176.7	220.8	195.4	(20)	13
Noninterest Expense	143.2	132.3	133.5	8	(1)
Income before Income Taxes (Note)	33.5	88.5	61.9	(62)	43
Provision for Income Taxes (Note)	(4.3)	39.0	23.6	N/M	65
Net Income	\$ 37.8	\$ 49.5	\$ 38.3	(24)%	29 %
Percentage of Consolidated Net Income	4%	5%	5%		
Average Assets	\$ 12,850.6	\$ 12,068.0	\$ 20,991.3	6 %	(43)%

Note: Stated on an FTE basis.

Treasury and Other noninterest income in 2016 was \$133.1 million compared to \$107.9 million in 2015. The increase primarily reflects an increase in other operating income, a component of other noninterest income. Other operating income in 2016 included the gain on sale of 1.1 million Visa Class B common shares, net of the valuation adjustment to existing swap agreements, totaling \$118.2 million. The prior-year included a gain on the sale of 1.0 million Visa Class B common shares totaling \$99.9 million. Excluding the gains, Treasury and Other noninterest income increased slightly compared to 2015. Excluding the 2015 gain, noninterest income in 2015 increased slightly as compared to 2014.

Treasury and Other net interest income on an FTE basis in 2016 was \$43.6 million, down \$69.3 million, or 61%, from \$112.9 million in 2015. The decrease reflected a decline in the net interest margin, partially offset by higher levels of earning assets. For the prior-year, the presentation of average assets was changed to reflect a modification to the methodology by which assets are allocated among our reporting segments. For Treasury and Other, this change in presentation resulted in a decrease to average assets and an increase in the net interest margin. Net interest income on an FTE basis in 2015 decreased \$75.9 million, or 40%, to \$112.9 million from \$188.8 million in 2014. The decrease reflected lower levels of earning assets, partially offset by an increase in the net interest margin.

Treasury and Other noninterest expense in 2016 equaled \$143.2 million, up \$10.9 million, or 8%, from \$132.3 million in 2015. 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.

## 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, 2016, Northern Trust managed \$942.4 billion in assets for personal and institutional clients, including \$694.0 billion for C&IS clients and \$248.4 billion for Wealth Management clients. The following table presents consolidated assets under management as of December 31, 2016, 2015 and 2014 by investment type.

**TABLE 25: CONSOLIDATED ASSETS UNDER MANAGEMENT BY INVESTMENT TYPE**

(\$ In Billions)	DECEMBER 31,			CHANGE	
	2016	2015	2014	2016 / 2015	2015 / 2014
Equities	\$ 480.6	\$ 446.6	\$ 485.7	8%	(8)%
Fixed Income Securities	160.5	147.1	162.2	9	(9)
Cash and Other Assets	189.3	177.7	169.9	7	5
Securities Lending Collateral	112.0	103.9	116.3	8	(11)
Total Assets Under Management	\$ 942.4	\$ 875.3	\$ 934.1	8%	(6)%

Assets under management increased \$67.1 billion, or 8%, from \$875.3 billion at year-end 2015. The increase primarily reflected net inflows and the favorable impact of equity markets, partially offset by the unfavorable impact of foreign currency translation. The following table presents activity in consolidated assets under management by investment type during the year ended December 31, 2016.

**TABLE 26: ACTIVITY IN CONSOLIDATED ASSETS UNDER MANAGEMENT BY INVESTMENT TYPE**

(\$ In Billions)	2016	2015
Balance as of January 1,	\$ 875.3	\$ 934.1
Inflows by Investment Type		
Equity	136.0	116.2
Fixed Income	59.3	41.7
Cash & Other Assets	383.4	281.0
Securities Lending Collateral	93.8	28.8
Total Inflows	672.5	467.7
Outflows by Investment Type		
Equity	(136.1)	(143.0)
Fixed Income	(48.0)	(54.6)
Cash & Other Assets	(363.6)	(273.3)
Securities Lending Collateral	(85.7)	(41.2)
Total Outflows	(633.4)	(512.1)
Net Inflows	39.1	(44.4)
Market Performance, Currency & Other		
Market Performance & Other	32.0	—
Currency	(4.0)	—
Total Market Performance, Currency & Other	28.0	(14.4)
<b>Balance as of December 31,</b>	<b>\$ 942.4</b>	<b>\$ 875.3</b>

## 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, 2016, 2015 and 2014.

**TABLE 27: SECURITIES PORTFOLIO**

(\$ In Millions)	DECEMBER 31,		
	2016	2015	2014
<b>Securities Held to Maturity</b>			
U.S. Government	\$ 15.0	\$ 26.0	\$ —
Obligations of States and Political Subdivisions	63.6	89.2	121.9
Government Sponsored Agency	7.4	9.9	18.4
Other	8,835.1	5,123.2	4,030.5
<b>Total Securities Held to Maturity</b>	<b>\$ 8,921.1</b>	<b>\$ 5,248.3</b>	<b>\$ 4,170.8</b>
<b>Securities Available for Sale</b>			
U.S. Government	\$ 7,522.6	\$ 6,178.3	\$ 4,506.9
Obligations of States and Political Subdivisions	885.2	36.4	4.6
Government Sponsored Agency	17,892.8	16,366.8	16,389.2
Asset-Backed	2,556.7	2,500.1	2,327.7
Auction Rate	4.7	17.1	18.1
Other	6,717.8	7,219.2	6,312.0
<b>Total Securities Available for Sale</b>	<b>\$ 35,579.8</b>	<b>\$ 32,317.9</b>	<b>\$ 29,558.5</b>
<b>Trading Account</b>	<b>\$ 0.3</b>	<b>\$ 1.2</b>	<b>\$ 4.7</b>
<b>Total Securities at Year-End</b>	<b>\$ 44,501.2</b>	<b>\$ 37,567.4</b>	<b>\$ 33,734.0</b>
<b>Average Total Securities</b>	<b>\$ 42,041.3</b>	<b>\$ 37,407.9</b>	<b>\$ 33,445.9</b>

Northern Trust maintains a high quality securities portfolio, with 81% of the combined available for sale, held to maturity, and trading account portfolios at December 31, 2016 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, 9% were rated double-A, 3% were rated below double-A, and 7% were not rated by Standard and Poor's or Moody's Investors Service (primarily negotiable certificates of deposits of banks and non-U.S. sovereign securities whose long-term ratings are at least A).

At December 31, 2016, 30% of corporate debt was rated triple-A, 31% was rated double-A, and 39% was rated below double-A. Securities classified as "other asset-backed" at December 31, 2016 had average lives of less than 5 years, and 100% were rated triple-A.

Unrealized losses within the investment securities portfolio at December 31, 2016 were \$176.0 million as compared to \$140.5 million at December 31, 2015, primarily reflecting widened credit spreads and higher market rates since purchase; 34% of the corporate debt portfolio is backed by guarantees provided by U.S. and non-U.S. governmental entities. There were \$3.7 million and \$4.2 million of losses recognized in 2016 and 2014, 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 date.

## Loans and Leases

The following table presents the amounts outstanding of loans and leases by segment and class as of December 31, 2016 and the preceding four year-ends.

**TABLE 28: COMPOSITION OF LOAN PORTFOLIO**

(\$ In Millions)	DECEMBER 31,				
	2016	2015	2014	2013	2012
<b>Commercial</b>					
Commercial and Institutional	\$ 9,523.0	\$ 9,431.5	\$ 8,381.9	\$ 7,375.8	\$ 7,468.5
Commercial Real Estate	4,002.5	3,848.8	3,333.3	2,955.8	2,859.8
Lease Financing, net	293.9	544.4	916.3	975.1	1,035.0
Non-U.S.	1,877.8	1,137.7	1,530.6	954.7	1,192.3
Other	205.1	194.1	191.5	358.6	341.6
<b>Total Commercial</b>	<b>\$ 15,902.3</b>	<b>\$ 15,156.5</b>	<b>\$ 14,353.6</b>	<b>\$ 12,620.0</b>	<b>\$ 12,897.2</b>
<b>Personal</b>					
Residential Real Estate	\$ 7,841.9	\$ 8,850.7	\$ 9,782.6	\$ 10,271.3	\$ 10,375.2
Private Client	10,052.0	9,136.4	7,466.9	6,445.6	6,130.1
Other	25.9	37.3	37.1	48.6	102.0
<b>Total Personal</b>	<b>\$ 17,919.8</b>	<b>\$ 18,024.4</b>	<b>\$ 17,286.6</b>	<b>\$ 16,765.5</b>	<b>\$ 16,607.3</b>
<b>Total Loans and Leases</b>	<b>\$ 33,822.1</b>	<b>\$ 33,180.9</b>	<b>\$ 31,640.2</b>	<b>\$ 29,385.5</b>	<b>\$ 29,504.5</b>

### 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 \$7.8 billion at December 31, 2016, or 25% of total U.S. loans, compared with \$8.9 billion, or 28% of total U.S. loans, at December 31, 2015. 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 \$7.8 billion in residential real estate loans at December 31, 2016, \$2.1 billion were in Florida, \$1.7 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 \$1.2 billion and \$1.4 billion at December 31, 2016 and 2015, 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, Florida, California, 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 29: COMMERCIAL REAL ESTATE LOANS**

(\$ In Millions)	DECEMBER 31,	
	2016	2015
Commercial Mortgages:		
Office	\$ 866.1	\$ 830.4
Apartment/Multi-family	784.8	770.1
Retail	698.1	683.3
Industrial / Warehouse	359.7	310.5
Other	457.6	442.3
Total Commercial Mortgages	3,166.3	3,036.6
Construction, Acquisition and Development Loans	445.0	392.8
Single Family Investment	179.6	147.4
Other Commercial Real Estate Related	211.6	272.0
Total Commercial Real Estate Loans	\$ 4,002.5	\$ 3,848.8

At December 31, 2016, legally binding commitments to extend credit and standby letters of credit to commercial real estate borrowers totaled \$546.1 million and \$15.7 million, respectively. At December 31, 2015, legally binding commitments and standby letters of credit totaled \$750.9 million and \$26.6 million, respectively.

#### ***Nonperforming Assets and 90 Days Past Due Loans***

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, 2016 and each of the prior four year-ends.

**TABLE 30: NONPERFORMING ASSETS**

(\$ In Millions)	DECEMBER 31,				
	2016	2015	2014	2013	2012
Nonperforming Loans and Leases					
Commercial					
Commercial and Institutional	\$ 33.7	\$ 42.9	\$ 15.0	\$ 23.1	\$ 21.6
Commercial Real Estate	11.6	16.7	37.1	49.2	56.4
Total Commercial	45.3	59.6	52.1	72.3	78.0
Personal					
Residential Real Estate	\$ 114.6	\$ 120.1	\$ 162.4	\$ 189.1	\$ 174.6
Private Client	0.3	0.4	1.2	1.4	2.2
Total Personal	114.9	120.5	163.6	190.5	176.8
Total Nonperforming Loans and Leases	160.2	180.1	215.7	262.8	254.8
Other Real Estate Owned	5.2	8.2	16.6	11.9	20.3
Total Nonperforming Assets	\$ 165.4	\$ 188.3	\$ 232.3	\$ 274.7	\$ 275.1
90 Day Past Due Loans Still Accruing	\$ 31.0	\$ 7.1	\$ 22.7	\$ 16.4	\$ 19.0
Nonperforming Loans and Leases to Total Loans and Leases	0.47%	0.54%	0.68%	0.89%	0.86%
Allowance for Credit Losses Assigned to Loans and Leases to Nonperforming Loans and Leases	1.0x	1.1x	1.2x	1.1x	1.2x

Nonperforming assets of \$165.4 million as of December 31, 2016, decreased \$22.9 million, or 12%, reflecting improved credit quality across the 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***TABLE 31: CHANGES IN THE ALLOWANCE FOR CREDIT LOSSES**

(\$ In Millions)		<b>2016</b>		2015		2014
Balance at January 1	\$	<b>233.3</b>	\$	295.9	\$	307.9
Charge-Offs		<b>(27.3)</b>		(30.7)		(36.1)
Recoveries		<b>12.1</b>		11.2		18.1
Net Charge-Offs		<b>(15.2)</b>		(19.5)		(18.0)
Provision for Credit Losses		<b>(26.0)</b>		(43.0)		6.0
Effects of Foreign Exchange Rates		<b>(0.1)</b>		(0.1)		—
Balance at December 31	\$	<b>192.0</b>	\$	233.3	\$	295.9

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, 2016, and at each of the prior four year-ends.

**TABLE 32: ALLOCATION OF THE ALLOWANCE FOR CREDIT LOSSES**

(\$ In Millions)	2016		2015		2014		2013		2012	
	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	\$ 2.1	—%	\$ 3.1	—%	\$ 21.1	—%	\$ 24.9	—%	\$ 32.5	—%
Allocated Inherent Allowance										
Commercial										
Commercial and Institutional	34.7	28	40.4	28	73.0	26	67.5	25	79.2	25
Commercial Real Estate	69.2	12	69.5	12	69.4	10	71.5	10	80.6	10
Lease Financing, net	0.4	1	1.9	2	3.6	3	4.2	3	5.5	4
Non-U.S.	—	5	—	3	3.3	5	2.1	3	3.4	4
Other	0.6	1	—	1	—	1	—	2	—	1
Total Commercial	104.9	47	111.8	46	149.3	45	145.3	43	168.7	44
Personal										
Residential Real Estate	69.0	23	96.2	27	107.7	31	118.7	35	110.9	35
Private Client	13.8	30	19.7	27	17.8	24	19.0	22	15.5	21
Other	2.2	—	2.5	—	—	—	—	—	—	—
Total Personal	85.0	53	118.4	54	125.5	55	137.7	57	126.4	56
Total Allocated Inherent Allowance	\$ 189.9	100%	\$ 230.2	100%	\$ 274.8	100%	\$ 283.0	100%	\$ 295.1	100%
Total Allowance for Credit Losses	\$ 192.0	100%	\$ 233.3	100%	\$ 295.9	100%	\$ 307.9	100%	\$ 327.6	100%
Allowance Assigned to:										
Loans and Leases	\$ 161.0		\$ 193.8		\$ 267.0		\$ 278.1		\$ 297.9	
Undrawn Commitments and Standby Letters of Credit	31.0		39.5		28.9		29.8		29.7	
Total Allowance for Credit Losses	\$ 192.0		\$ 233.3		\$ 295.9		\$ 307.9		\$ 327.6	
Allowance Assigned to Loans and Leases to Total Loans and Leases	0.48%		0.58%		0.84%		0.95%		1.01%	

**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, 2016, the specific allowance component amounted to \$2.1 million compared with \$3.1 million at the end of 2015. The \$1.0 million decrease is primarily attributable to charge-offs and pay-offs, partially offset by additional allowances provided for new nonperforming loans.

The decrease in the specific component of the allowance from \$21.1 million in 2014 to \$3.1 million in 2015 was primarily attributable to charge-offs and restructurings and pay-offs as a result of improvements in commercial and institutional, commercial real estate and residential real estate 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 \$40.3 million to \$189.9 million at December 31, 2016, compared with \$230.2 million at December 31, 2015, and decreased \$44.6 million from \$274.8 million at December 31, 2014.

The decrease in 2016 reflected improved credit quality across the portfolio and an update to the underlying data used in the quantitative portion of the inherent allowance for credit losses that resulted in a reduction in the allowance ascribed to the residential real estate and private client portfolios. The decrease in 2015 was driven by improved credit quality across the loan and lease portfolio coupled with the adoption of a change in estimation methodology for inherent losses.

**Overall Allowance:** The evaluation of the specific component and the inherent component above resulted in a total allowance for credit losses of \$192.0 million at December 31, 2016, compared with \$233.3 million at the end of 2015. The allowance of \$161.0 million assigned to loans and leases, as a percentage of total loans and leases, was 0.48% at December 31, 2016, down from a \$193.8 million allowance, representing 0.58% of total loans and leases, at December 31, 2015. Allowances assigned to undrawn loan commitments and standby letters of credit totaled \$31.0 million and \$39.5 million at December 31, 2016 and December 31, 2015, respectively, and are included in other liabilities in the consolidated balance sheets.

**Provision:** The provision for credit losses was a credit of \$26.0 million and net charge-offs totaled \$15.2 million in 2016. This compares with a credit provision of \$43.0 million and net charge-offs of \$19.5 million in 2015, and a \$6.0 million provision for credit losses and net charge-offs of \$18.0 million in 2014.

### ***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, 2016, impaired loans totaled \$156.1 million and included \$127.6 million of loans deemed troubled debt restructurings as compared to total impaired loans of \$157.3 million at December 31, 2015, which included \$117.1 million of loans deemed troubled debt restructurings. Impaired loans had \$2.1 million and \$3.1 million of the allowance for credit losses allocated to them at December 31, 2016, and December 31, 2015, 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, 2016) 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, pension plan accounting, and OTTI of investment securities. 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 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, 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 2016 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 which 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 2016, Northern Trust utilized a discount rate of 4.71% for both the Qualified Plan and the Nonqualified Plan. The rate of increase in the compensation level is based on a graded schedule from 7.50% to 2.50% that averaged 4.25%. The expected long-term rate of return on Qualified Plan assets was 7.00%.

In evaluating possible revisions to pension-related assumptions for the U.S. plans as of Northern Trust's December 31, 2016 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 4.46% at December 31, 2016 for the Qualified and Nonqualified plans, a decrease from 4.71% at December 31, 2015.
- **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 7.00% for 2016 to 6.75% for 2017.
- **Mortality Table:** Northern Trust uses the aggregate RP-2014 mortality table with adjustment from 2014 to 2006. Northern Trust reflects proposed future improvement under scale MP-2016, released by the Society of Actuaries in October 2016. This assumption was updated at December 31, 2016 from improvement scale MP-2015. The updated improvement scale applies to annuity payments only and results in generally lower projected mortality improvements than estimated by the MP-2015 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 2017.

In order to illustrate the sensitivity of these assumptions on the expected U.S. Plans' periodic pension expense in 2017 and the projected benefit obligation as of December 31, 2016, the following table is presented to show the effect of increasing or decreasing each of these assumptions by 25 basis points.

**TABLE 33: SENSITIVITY OF U.S. PENSION PLANS ASSUMPTIONS**

(\$ In Millions)	25 BASIS POINT INCREASE	25 BASIS POINT DECREASE
Increase (Decrease) in 2017 Pension Expense		
Discount Rate Change	\$ (3.7)	\$ 3.8
Compensation Level Change	1.6	(1.5)
Rate of Return on Plan Assets Change	(3.5)	3.5
Increase (Decrease) in 2016 Projected Benefit Obligation		
Discount Rate Change	(41.6)	43.9
Compensation Level Change	5.6	(5.4)

**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 2016 and 2015 due to strong asset performance over the past several years. The minimum required contribution to the Qualified Plan is expected to be zero in 2017. The maximum deductible contribution is estimated at \$225 million for 2017.

### Other-Than-Temporary Impairment of Investment Securities

Under GAAP, companies are required to perform periodic reviews of securities with unrealized losses to determine whether the declines in value are considered other-than-temporary. For available-for-sale and held-to-maturity securities that management has no intent to sell, and believes it more-likely-than-not that it will not be required to sell, prior to recovery, the consolidated statements of income reflect only the credit loss component of an impairment, while the remainder of the fair value loss is recognized in accumulated other comprehensive income. The credit loss component recognized in earnings is based on the amount of principal and interest not expected to be received over the remaining term of the security. For debt securities that Northern Trust intends to sell, or would more-likely-than-not be required to sell, before the expected recovery of the amortized cost basis, the full impairment (that is, the difference between the security's amortized cost basis and fair value) is recognized in earnings. The application of significant judgment is required in determining the assumptions used in assessing whether OTTI exists and, if so, in the calculation of the credit loss component of the OTTI. Assumptions used in this process are inherently subject to change in future periods. Different judgments or subsequent changes in estimates could result in materially different impairment loss recognition.

Northern Trust conducts security impairment reviews quarterly to identify and evaluate those securities within its investment portfolio 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.

There were \$3.7 million and \$4.2 million of losses recognized in 2016 and 2014, respectively, in connection with the write-down of securities determined to be OTTI. There were no OTTI losses recognized in 2015. Additional OTTI may occur in future periods as a result of market and economic conditions.

### 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, 2016, approximately 30% 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 20% 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 80% of Northern Trust's assets and 97% 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 94% of Level 2 assets with the remaining 6% 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, 2016, 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, 2016, the fair value of Northern Trust's Level 3 assets was \$4.7 million. Level 3 assets consist of auction rate securities purchased from Northern Trust clients. As of December 31, 2016, 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, 2015, Northern Trust estimated the fair value of auction rate securities by developing and maintaining a pricing model that discounted estimated cash flows over their estimated remaining lives. Significant inputs to the model included the contractual terms of the securities, credit risk ratings, discount rates, forward interest rates, credit/liquidity spreads, and Northern Trust's own assumptions about the estimated remaining lives of the securities.

As of December 31, 2016, 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 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.

In 2016, Northern Trust focused efforts on its assessment project as well as an extensive contract review, covering services offered in each of its respective locations throughout the world. Northern Trust recognizes the majority of its revenues “over time” under current policy and expects to continue this practice upon adoption of ASU 2014-09. Further, Northern Trust is currently assessing the extent of changes to revenue-related information technology applications as well as the control environment and will continue to evaluate certain aspects of ASU 2014-09 such as transition method, agent vs. principle considerations, and detailed disclosures. ASU 2014-09 is not expected to impact significantly Northern Trust’s consolidated financial position 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 the accompanying notes to the financial statements. ASU 2016-01 is effective for interim and annual periods beginning after December 15, 2017. Although Northern Trust is currently assessing the impact of ASU 2016-01, it is not expected to impact significantly Northern Trust’s consolidated financial position 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 on 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 lease payments, known as the lease liability, and a right-of-use 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, although early adoption is permitted. Northern Trust is currently establishing an overall governance structure and a detailed project plan for its implementation efforts. Further, Northern Trust has begun to assess its inventory of leases within the scope of ASU 2016-02 and is currently assessing the impact of adoption of ASU 2016-02.

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 is currently establishing an overall governance structure and a detailed project plan for its implementation efforts. Further, Northern Trust has begun to assess differences between the existing incurred loss impairment model and the expected loss impairment model requirements under ASU 2016-13. Northern Trust is currently assessing the impact of adoption of ASU 2016-13.

In October 2016, the FASB issued ASU No. 2016-16, “Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory” (ASU 2016-16). ASU 2016-16 requires an entity to recognize the income tax consequences of intra-entity transfers of assets (excluding inventory) in the period in which the transfer occurs. ASU 2016-16 is effective for interim and annual reporting periods beginning after December 15, 2017, although early adoption is permitted. Northern Trust is currently assessing the impact of adoption of ASU 2016-16.

In October 2016, the FASB issued ASU No. 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. ASU 2016-17 is effective for interim and annual reporting periods beginning after December 15, 2016, although early adoption is permitted. Although Northern Trust is currently assessing the impact of ASU 2016-17, it is not expected to impact significantly Northern Trust’s consolidated financial position or results of operations.

In November 2016, the FASB issued ASU No. 2016-18, “Statement of Cash Flows (Topic 230): Restricted Cash (a consensus of the FASB Emerging Issues Task Force)” (ASU 2016-18). ASU 2016-18 requires that a statement of cash flows explain the change during the period in the total of cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. As such, amounts generally described as restricted cash and restricted cash equivalents should be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. ASU 2016-18 is effective for interim and annual reporting periods beginning after December 15, 2017, although early adoption is permitted. Northern Trust is currently assessing the impact of adoption of ASU 2016-18.

## CAPITAL EXPENDITURES

Capital expenditures in 2016 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 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. 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 planned 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 2015 totaled \$433.5 million, of which \$335.0 million was for software, \$59.2 million was for computer hardware, \$34.2 million was for building and leasehold improvements, and \$5.1 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, 2016 and 2015.

**TABLE 34: SUMMARY OF OFF-BALANCE-SHEET FINANCIAL INSTRUMENTS WITH CONTRACT AMOUNTS**

(\$ In Millions)	DECEMBER 31,	
	2016	2015
Undrawn Commitments to Extend Credit		
One Year and Less	\$ 10,953.5	\$ 12,530.3
Over One Year	21,814.6	24,716.7
<b>Total</b>	<b>\$ 32,768.1</b>	<b>\$ 37,247.0</b>
Standby Letters of Credit	\$ 3,846.1	\$ 4,305.4
Commercial Letters of Credit	24.0	17.2
Custody Securities Lent with Indemnification	102,325.2	94,514.0

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, 2016.

**TABLE 35: UNDRAWN COMMITMENTS TO EXTEND CREDIT BY INDUSTRY SECTOR**

AS OF DECEMBER 31, 2016 (\$ In Millions)	COMMITMENT EXPIRATION			
	TOTAL COMMITMENTS	ONE YEAR AND LESS	OVER ONE YEAR	OUTSTANDING LOANS
Commercial				
Commercial and Institutional				
Finance and Insurance	\$ 3,732.0	\$ 1,659.2	\$ 2,072.8	\$ 954.6
Holding Companies	7.7	1.7	6.0	68.0
Manufacturing	7,718.3	676.2	7,042.1	2,198.9
Mining	731.8	187.0	544.8	95.2
Public Administration	160.8	3.3	157.5	61.1
Retail Trade	1,029.3	120.9	908.4	220.7
Services	6,332.4	1,800.8	4,531.6	4,881.9
Transportation and Warehousing	331.8	4.8	327.0	278.3
Utilities	1,201.4	7.0	1,194.4	45.0
Wholesale Trade	746.3	87.5	658.8	506.7
Other Commercial	365.2	192.4	172.8	212.6
Commercial and Institutional (Note)	22,357.0	4,740.8	17,616.2	9,523.0
Commercial Real Estate	546.1	85.3	460.8	4,002.5
Lease Financing, net	—	—	—	293.9
Non-U.S.	1,579.6	751.7	827.9	1,877.8
Other	168.2	168.2	—	205.1
<b>Total Commercial</b>	<b>24,650.9</b>	<b>5,746.0</b>	<b>18,904.9</b>	<b>15,902.3</b>
Personal				
Residential Real Estate	1,162.2	192.7	969.5	7,841.9
Private Client	6,933.8	4,993.6	1,940.2	10,052.0
Other	21.2	21.2	—	25.9
<b>Total Personal</b>	<b>8,117.2</b>	<b>5,207.5</b>	<b>2,909.7</b>	<b>17,919.8</b>
<b>Total</b>	<b>32,768.1</b>	<b>10,953.5</b>	<b>21,814.6</b>	<b>33,822.1</b>

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 \$3.8 billion and \$4.3 billion at December 31, 2016 and 2015, respectively, include \$134.2 million and \$147.1 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, 2016 and 2015.

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 \$102.3 billion and \$94.5 billion at December 31, 2016 and 2015, 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, 2016, or 2015 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. These community development projects are formed as limited partnerships and limited liability companies in which Northern Trust typically 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 investments 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, the Corporation 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 Risk Management**

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

### ***Governance and Risk Management Framework***

Northern Trust manages its liquidity under a global risk management framework, incorporating regional policies, limits and management when appropriate. The Corporate Liquidity Management Policy, as well as corporate liquidity procedures, limits and risk appetite, are reviewed and approved annually by the Board of Directors. The Board receives a semiannual update on the Corporation's operations in accordance with established liquidity limits. The Business Risk Committee receives reports at least quarterly on the Corporation's liquidity risk profile and liquidity risk tolerance. Additionally, the Asset & Liability Management Committee (ALCO) is responsible for recommending liquidity policies to the Board, establishing internal liquidity thresholds, assessing Northern Trust's overall liquidity status, and reviewing reports,

including liquidity stress test results, cash flows and other analyses on a regular basis. The Treasury department has the day-to-day responsibility for managing liquidity risk within the thresholds and limits established by ALCO and the Board. The Risk Management function provides oversight of adherence with the Corporate Liquidity Management Policy and established thresholds and limits, as well as independent review of the practices and procedures used to manage liquidity risk.

Northern Trust's liquidity management framework focuses on five key areas - position management; liquidity analysis; contingency planning; peer group comparisons; and management reporting - while also providing for the review and management of the liquidity of the Corporation separate from that of the Bank. It is through this framework that management monitors its sources and uses of liquidity, evaluates their level of stability under various circumstances, plans for adverse situations, benchmarks itself against other banks, provides information to management, and complies with various U.S. and international regulations.

Position management includes daily and intraday monitoring of cash positions, anticipating future funding requirements given both internal and external events, controlling and monitoring collateral positions, and management of liquidity metrics such as the liquidity coverage ratio. 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, 2016, the Bank had over \$36.7 billion of securities and loans readily available as collateral to support discount window borrowings. The Bank is also 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 66% of total assets as of December 31, 2016. The market value of unencumbered securities at the Bank, which include those placed at the Federal Reserve discount window, totaled \$41.7 billion at December 31, 2016. The Corporation and the Bank each satisfied the U.S. liquidity coverage ratio requirements during 2016.

Liquidity analysis evaluates a bank's ability to meet its cash flow obligations given a variety of possible internal and external events and under different economic conditions. Northern Trust uses liquidity analysis to support its contingent liquidity plans, size its liquidity buffer, gain insight into its liquidity position and strengthen its liquidity and management practices. Liquidity analysis is performed using multiple independent scenarios, across major currencies, at a consolidated corporate level and for various international banking subsidiaries. These scenarios, which include both company-specific and systemic events, analyze potential impacts on Northern Trust's domestic and foreign deposit balances, intraday exposures, wholesale funding sources, financial market access, external borrowing capacity, and other on- and off-balance-sheet obligations. Results are reviewed by senior management and ALCO on a regular basis.

Another important area of Northern Trust's liquidity risk management is the development and maintenance of contingent liquidity plans. A contingent funding plan covering the Corporation, Bank and major subsidiaries is approved at least once per calendar year by the Business Risk Committee and regularly updated and tested. This plan, which can be activated in the event of an actual liquidity crisis, details organizational responsibilities and defines specific actions designed to provide the proper maintenance of liquidity during periods of stress. In conjunction with Northern Trust's global contingent funding plan, international banking subsidiaries also have individual contingent liquidity plans.

Northern Trust analyzes its liquidity profile against a peer group of large U.S. bank holding companies, including other major custody banks. This analysis provides management with benchmarking information, highlights industry trends, and supports the establishment of new strategies.

Management regularly reviews various reports, analyses and other information depicting changes in Northern Trust's liquidity mix and funding concentrations, overall financial market conditions and other internal and external liquidity metrics. Management uses this information to evaluate the overall status of Northern Trust's liquidity position and anticipate potential events that could stress that position in the future. An overall Liquidity Status Level for Northern Trust, established and regularly reviewed by ALCO, is monitored on an ongoing basis by senior management and risk oversight bodies. Downgrades in liquidity status resulting from internal, external or industry-wide events trigger specific pre-determined actions and limits designed to position Northern Trust to respond better to potential liquidity stresses.



**Corporation Liquidity**

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. In 2016, the Corporation received \$300.0 million of dividends from the Bank. 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 2016 were \$411.1 million of common stock repurchases and \$333.0 million of common stock dividends.

The Corporation's liquidity, defined as the amount of cash and highly marketable assets, was \$757.0 million and \$757.5 million at December 31, 2016 and 2015, respectively. During, and at year-end, 2016 and 2015, 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 2016 and 2015 was \$562.8 million and \$846.2 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, 2016, provided below, allow Northern Trust to access capital markets on favorable terms.

**TABLE 36: NORTHERN TRUST CREDIT RATINGS AS OF DECEMBER 31, 2016**

	CREDIT RATING		
	STANDARD & POOR'S	MOODY'S	FITCH RATINGS
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, 2016, was \$40.7 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, 2016, that would be triggered by a significant downgrade in its debt ratings.

**Statements of Cash Flows**

For the year ended December 31, 2016, net cash provided by operating activities was \$1.5 billion, primarily reflecting period earnings and decreased other operating activities.

Net cash provided by operating activities for the year ended December 31, 2015, was \$1.8 billion and was primarily the result of period earnings, decreased net collateral deposited with counterparties and the impact of non-cash charges such as amortization of computer software, partially offset by other operating activities.

Net cash used in investing activities was \$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.

Net cash used in investing activities of \$6.9 billion for the year ended December 31, 2015, primarily reflected net purchases of securities available for sale and held to maturity to increase the yield on earning assets and increased loans and leases net of \$585.2 million in gross cash proceeds received related to the decision to exit a non-strategic loan and lease portfolio, partially offset by decreased levels of Federal Reserve deposits.

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.

For the year ended December 31, 2015, net cash provided by financing activities totaled \$8.5 billion, primarily attributable to increased levels of total deposits and increases in short-term other borrowings with the Federal Home Loan Bank, partially offset by federal funds purchased, the repurchase of common stock pursuant to the Corporation's share repurchase program, dividends paid on common and preferred stock, securities sold under agreements to repurchase and the repayment of sterling denominated notes. The increase in total deposits is primarily attributable to higher levels of non-U.S. office deposits.

### 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, 2016.

**TABLE 37: CONTRACTUAL OBLIGATIONS AS OF DECEMBER 31, 2016**

(\$ In Millions)	PAYMENT DUE BY PERIOD				
	TOTAL	ONE YEAR AND LESS	1-3 YEARS	3-5 YEARS	OVER 5 YEARS
Senior Notes <sup>(1)</sup>	\$ 1,496.6	\$ —	\$ —	\$ 997.9	\$ 498.7
Subordinated Debt <sup>(1)</sup>	1,307.9	207.6	315.3	—	785.0
Floating Rate Capital Debt <sup>(1)</sup>	277.4	—	—	—	277.4
Capital Lease Obligations <sup>(2)</sup>	25.8	9.3	18.2	(1.7)	—
Operating Leases <sup>(2)</sup>	585.9	91.0	160.2	133.3	201.4
Purchase Obligations <sup>(3)</sup>	277.2	133.8	127.1	13.0	3.3
Total Contractual Obligations	\$ 3,970.8	\$ 441.7	\$ 620.8	\$ 1,142.5	\$ 1,765.8

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, 2016 activity was used as a base to project future obligations.

### 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 2016 as average stockholders' equity increased \$460.8 million, or 5%, reaching \$9.1 billion. Total stockholders' equity was \$9.8 billion at December 31, 2016, as compared to \$8.7 billion at December 31, 2015. In April 2016, the Board increased the quarterly common stock dividend by 6% to \$0.38 per common share. Common dividends totaling \$343.5 million were declared in 2016. During the year ended December 31, 2016, the Corporation repurchased 6.1 million shares of common stock, including 0.4 million shares withheld related to share-based compensation, at an average price per share of \$67.91. In August 2016, the Corporation issued Series D Preferred Stock for net proceeds of \$493.5 million. Preferred dividends totaling \$23.4 million were declared in 2016.

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, 2016 and 2015.

**TABLE 38: CAPITAL ADEQUACY**

(\$ In Millions)	December 31, 2016		December 31, 2015	
	Advanced Approach	Standardized Approach	Advanced Approach	Standardized Approach
<b>Common Equity Tier 1 Capital</b>				
Common Stockholders' Equity	\$ 8,888.4	\$ 8,888.4	\$ 8,317.3	\$ 8,317.3
Net Unrealized (Gains) Losses on Securities Available for Sale	12.9	12.9	18.6	18.6
Net Unrealized (Gains) Losses on Cash Flow Hedges	(2.4)	(2.4)	1.8	1.8
Goodwill and Other Intangible Assets, net of Deferred Tax Liability	(488.1)	(488.1)	(494.0)	(494.0)
Pension and Other Postretirement Benefit Adjustments	130.1	130.1	192.7	192.7
Other	(60.5)	(60.5)	(23.8)	(23.8)
<b>Total Common Equity Tier 1</b>	<b>8,480.4</b>	<b>8,480.4</b>	8,012.6	8,012.6
<b>Additional Tier 1 Capital</b>				
Preferred Stock	882.0	882.0	388.5	388.5
Floating Rate Capital	—	—	67.2	67.2
Other	(42.5)	(42.5)	(37.0)	(37.0)
<b>Total Additional Tier 1 Capital</b>	<b>839.5</b>	<b>839.5</b>	418.7	418.7
<b>Total Tier 1 Capital</b>	<b>9,319.9</b>	<b>9,319.9</b>	8,431.3	8,431.3
<b>Tier 2 Capital</b>				
Qualifying Allowance for Credit Losses	—	191.9	—	233.3
Qualifying Subordinated Debt	809.3	809.3	909.2	909.2
Floating Rate Capital	161.5	161.5	201.7	201.7
Other	(9.1)	(7.6)	(12.5)	(7.8)
<b>Total Tier 2 Capital</b>	<b>961.7</b>	<b>1,155.1</b>	1,098.4	1,336.4
<b>Total Risk-Based Capital</b>	<b>\$ 10,281.6</b>	<b>\$ 10,475.0</b>	\$ 9,529.7	\$ 9,767.7
Risk-Weighted Assets <sup>(1)</sup>	\$ 68,257.6	\$ 72,020.9	\$ 67,334.6	\$ 73,962.5
Total Assets – End of Period (EOP)	123,926.9	123,926.9	116,749.6	116,749.6
Adjusted Average Fourth Quarter Assets <sup>(2)</sup>	116,958.0	116,958.0	113,099.9	113,099.9
Total Loans and Leases – EOP	33,822.1	33,822.1	33,180.9	33,180.9
Common Stockholders' Equity to:				
Total Loans and Leases – EOP	26.28%	26.28%	25.07%	25.07%
Total Assets – EOP	7.17	7.17	7.12	7.12
<b>Risk-Based Capital Ratios</b>				
Common Equity Tier 1	12.4%	11.8%	11.9%	10.8%
Tier 1	13.7	12.9	12.5	11.4
Total (Tier 1 and Tier 2)	15.1	14.5	14.2	13.2
Leverage	8.0	8.0	7.5	7.5
Supplementary Leverage <sup>(3)</sup>	6.8	N/A	6.2	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, 2016 and 2015, 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, 2016, the Corporation's common equity Tier 1 capital ratio as calculated under the advanced approaches methodologies would have been 12.1% on a fully phased-in basis, while the Corporation's common equity Tier 1 capital ratio under the standardized approach would have been 11.5% on a fully phased-in basis.

The implementation of Basel III in the United States 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.

## 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 behavior of employees 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. Please refer to the "Liquidity and Capital Resources" section for a discussion of liquidity risk management.

Northern Trust reinforces a culture of effective risk management through training and developing employees and evaluating and rewarding employee performance.

### Risk Governance and Oversight

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 39: 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)					
Global Enterprise Risk Management Committee (GERM)					
Credit Risk Committee	Operational Risk Committee	Fiduciary Risk Committee	Compliance & Ethics Oversight Committee	Asset & Liability Management 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 annually approves Northern Trust's enterprise risk management framework, risk universe 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 management team of Northern Trust, together with the 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 overseen by the Business Risk Committee. 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 Global Enterprise Risk Management Committee (GERM)* provides senior management oversight and guidance to the management of all categories of risk within Northern Trust. GERM is chaired by the CRO, and members include risk practice leads, business unit and regional chief risk officers, and various functional risk leaders.

*The Credit Risk Committee* establishes and monitors credit-related policies and practices throughout Northern Trust and promotes their uniform application. The Credit Risk Committee is chaired by the Chief Credit Officer, and members include the CRO, the Treasurer, the Chief Operational Risk Officer, the Controller, and various functional risk and business management leaders.

*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 to identify, monitor, measure, manage and report on operational risk. At ORC, senior management reviews and discusses operational risks including existing and emerging issues. The ORC also is responsible for coordinating operational risk issues related to compliance and fiduciary risks.

*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 to identify, monitor, manage and report on fiduciary risk. At FRC, senior management reviews and discusses fiduciary risks including existing and emerging issues.

*The Compliance & Ethics Oversight Committee* 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. This committee also may resolve significant interpretive issues regarding compliance in situations where specific compliance policies do not provide for or allow resolution of the issue by another individual or committee.

*The Asset & Liability Management Committee (ALCO)* establishes and monitors Northern Trust's market and liquidity risk frameworks and policies as well as actively manages Northern Trust's market and liquidity risks through oversight of the implementation of approved asset and liability management strategies. At ALCO, senior management reviews and discusses Northern Trust's market and liquidity risk profile as well as various scenario analyses. ALCO establishes and monitors market and liquidity risk metrics, such as net interest income and market value of equity sensitivity, trading value-at-risk (VaR), notional position sizes, the liquidity coverage ratio (LCR), and the liquid asset buffer.

*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. MROC reviews and, where applicable, provides guidance and approval as to the direction of the Northern Trust Model Risk Program and Policy. MROC tracks and provides oversight, advice, approval and direction on risk mitigation activities and the acceptance of significant risks, where appropriate.

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***

Northern Trust utilizes a risk classification system called the “risk universe” to identify and classify the risks that it inherently faces and a “risk inventory” in which such risks are defined and maintained to support granular and dynamic risk identification. The risk universe and risk inventory form the basis of common risk language and provide a consistent framework for the definition and categorization of risk and the organization of risk management activities. The risk universe and risk inventory support risk management at all levels and enable risks to be clearly and consistently identified, categorized, assessed, managed and reported to line management, corporate risk and committees.

As part of the integrated enterprise risk framework, Northern Trust has established four key processes as described below.

***Risk Appetite:*** 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. Risk appetite is a methodology to measure Northern Trust’s willingness to take risk and reflects Northern Trust’s tolerance of certain levels of risk exposures as measured at the enterprise and business level, as applicable. Northern Trust’s Corporate Risk Appetite Statement reflects Northern Trust’s expectation that risk is consciously considered as part of day-to-day activities and strategic decisions. Northern Trust manages its business activities consistent with the risk appetite statement, in which specific guidelines are detailed for credit, operational, fiduciary, compliance, market, liquidity, and strategic risk. Communication and enforcement of the Corporate Risk Appetite Statement occurs through written policies and risk assessment processes within risk practices, business units, regions and legal entities, supporting alignment of risk-taking decisions with applicable aspects of the Corporate Risk Appetite Statement. GERC reviews the measurement and assessment of risk within the Corporation and against Northern Trust’s Corporate Risk Appetite Statement. When appropriate, GERC addresses emerging risk issues and directs risk mitigation actions.

***Assessment of Risks:*** Northern Trust’s risk assessment process consists of a series of programs that identify, manage and measure risks in line with Northern Trust’s Corporate Risk Appetite Statement and guidelines. Risk assessments are performed on a regular basis by business risk management and facilitated by the Risk Management function. The risk assessment process draws on the input of management, staff and risk personnel across the business, focusing on the inherent drivers of risk, the effectiveness of controls and the resulting residual risks.

***Risk Management Embedding:*** Risk management processes extend beyond risk assessment and measurement, and are embedded in strategic and business planning and decision-making. Although the Risk Management function sets the direction for Northern Trust’s risk management activities, 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.

***Risk Reporting, Review and Communication:*** The risk reporting, review and communication process produces risk reports that provide updates on the risk profile, performance against risk guidelines and thresholds, and analysis and trend information, all of which highlight top and emerging risks for management and the Board. Risk reporting includes a robust escalation process to alert senior management of significant issues.

***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 the following groups, each with its own risk focus and oversight. The Business Risk Committee oversees Risk Control and each of the groups below.

***Model Risk Management***

Financial and risk modeling are used by Northern Trust to inform numerous decisions regarding risk management, as well as capital estimation, financial reporting and disclosure, valuation and pricing and portfolio management. Model risk may result from decisions based on models that produce incorrect results or models that are improperly used. 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. Validations are documented and include an assessment of the conceptual soundness of the modeling approach, outcomes analysis, applicability of use, model assumptions and limitations, development documentation, ongoing monitoring and model controls. Oversight of Model Risk Management is provided by the MROC.

***Credit Review***

Credit Review provides an independent, ongoing assessment of credit exposure and related credit risk management processes across Northern Trust. The scope of Credit Review activities includes all client-related transactions that give rise to credit exposure and processes that are designed to manage or monitor such exposure. Credit exposure includes credit risk inherent in the entire portfolio, as well as individual credits or transactions in the form of direct outstandings, potential exposure and contingent liabilities that are on- or off-balance sheet.

***Global Compliance Testing and Independent Verification***

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. Global Compliance Testing identifies weaknesses that could result in regulatory compliance violations or risks to Northern Trust's businesses and monitors action plans designed to mitigate those weaknesses. Oversight of Global Compliance Testing activities is provided by the Compliance & Ethics Oversight Committee. Also included is an Independent Verification program that 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 program independently verifies Northern Trust's advanced systems in order to comply with the qualification requirements related to the Advanced Internal Ratings Based and Advanced Measurement Approaches. In addition, Independent Verification performs conceptual soundness evaluations of proposed changes to the Bank's advanced systems prior to notification to regulatory authorities as required in Basel Coordination Committee Bulletin 14-2. The Independent Verification program assesses the effectiveness of the Credit Risk, Operational Risk, and Market Risk frameworks. The Independent Verification team presents an annual assessment report of its findings to the Business Risk Committee, which is required to review and approve the effectiveness of Northern Trust's advanced systems on an annual basis.

***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 as it is generally more conservative in terms of credit risk. In particular, 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. These activities are designed to diversify credit exposure on an industry and client basis and reduce overall credit risk.



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 Chief Credit Officer reports directly to the CRO. Independent oversight and review of the credit risk framework 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. Northern Trust uses the Advanced Internal Rating Based approach to calculate regulatory capital using regulatory formulas and exposure level risk information from Northern Trust's internal rating system. 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. Northern Trust's internal risk rating system is intended to rank its credit risk without any modeled linkage to external credit ratings.

The Credit Risk Management function is responsible for the ongoing oversight of each model that supports the internal risk-rating system. This oversight includes the development, monitoring and maintenance of the models, as well as providing information to the Credit Risk Committee to support model approval and monitoring of ongoing model performance. 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 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, management reporting, setting of loss allowances, and capital calculations. Borrower risk ratings are discussed further in Note 6, "Loans and Leases," to the consolidated financial statements provided in Item 8, "Financial Statements and Supplementary Data."

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. In addition, 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.

Northern Trust maintains a loan portfolio watch list for adversely classified credit exposures. 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. Loans outstanding to watch list borrowers associated with these risk profiles that are not currently in default but have limited financial flexibility totaled \$229.6 million at December 31, 2016. Cash flows and capital levels range from acceptable to potentially insufficient to meet current requirements and borrowers typically have minimal cushion in adverse down cycle scenarios. 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.

### ***Counterparty Credit Risk***

Counterparty credit risk for Northern Trust primarily arises from over-the-counter (OTC) currency and interest rate derivatives and from indemnified securities lending transactions, which in turn are derived from a variety of funding, treasury, trading and custody-related activities. 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 has policies in place to ensure that credit risk mitigation is appropriately recognized, recorded and monitored. Recognition of credit risk mitigants in capital estimations is dependent upon the form of mitigation. 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 and/or documented guarantees. Liquidation of collateral that is securing credit risk exposures is considered in Northern Trust's estimation of loss given default. 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. The frequency of collateral valuation increases commensurate with the volatility of the collateral's value.

**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. A sub-set of these arrangements are conducted under an International Swaps and Derivatives Association Credit Support Annex. 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 may also recognize "implied support," where the commitment provided is less than that of a legally enforceable guarantee, in its assignment of borrower probability of default as permitted under U.S. supervisory guidance. 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 catastrophes to result in losses. Operational risk includes:

- execution, delivery and process management risk;
- risk resulting from business disruption and system failures;
- risk of damage to physical assets;
- risk resulting from clients, products and business practices;
- employment practice and workplace safety risk;
- internal fraud risk;
- external fraud risk;
- compliance risk;
- fiduciary risk; and
- legal risk.

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

To monitor and control operational risk, Northern Trust maintains a framework that consists of risk management policies, programs and practices designed to promote a sound operational environment.

Northern Trust's operational risk management strategy is to:

- align the operational risk framework with evolving business and industry practice and with regulatory requirements;
- identify, assess and mitigate risks inherent in business strategies;
- promote risk awareness and foster a proactive risk management environment within each business; and
- report key topics and developments to senior governance bodies.

The goal of these activities is to keep the operational risk profile and losses within the Board-approved Corporate Risk Appetite Statement and guidelines.

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 corporate-wide operational risk framework as well as business specific risk management programs to identify, monitor, measure, and manage operational risk and mitigate Northern Trust's exposure to loss. Risk Control provides independent oversight and review of the operational risk framework.

### ***Operational Risk Framework and Governance***

The ORC is responsible for overseeing the activities of Northern Trust related to the management of operational risk. 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.

The ORC is responsible for setting the Corporate Operational Risk Management Policy and approving the operational risk framework and programs that support the coordination of operational risk activities to identify, monitor, measure, manage and report on operational risk. In addition, the ORC serves as an escalation point for significant issues raised by its programs.

Operational risk is identified, monitored, measured, managed and reported through the operational risk framework. 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. Several key programs support the operational risk framework, including:

- ***Loss Event Data Program*** – a program that collects loss data for use in monitoring operational risk exposure, various business analyses and a Basel Advanced Management Approach (AMA) capital quantification. Both internal and external loss data are used in the operational risk capital quantification. Thresholds drive analysis, action and escalation through Northern Trust's businesses and the Operational Risk Management function.
- ***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. This process facilitates management's consideration of operational risk to which the business is exposed and the potential impact and response to such events.
- ***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.
- ***Business Process Transition Risk Management Program*** – a program designed to effectively manage the risk associated with transitioning and migrating business processes to different geographic or jurisdictional locations within the organization.
- ***Information Security and Technology Risk Management*** – a program that communicates and implements compliance and risk management processes and controls to address information security 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.

- **Scalability & Capacity Assessment Review** – a program that provides a mechanism for identifying scalability and/or capacity constraints within Northern Trust's business areas and their ability to take on change, whether driven by new business, strategic projects, market volatility or regulatory change.
- **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 by setting and enforcing standards, providing training, establishing partnerships, and encouraging continual improvement in workplace security.
- **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.

### **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. While internal loss data is the foundation for the capital quantification, external loss event data and qualitative risk and control self-assessments are also utilized to inform the creation of scenario analysis data employed in the capital quantification process. 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<sup>th</sup> percentile of the aggregate loss distribution over a one-year time horizon.

### **Information Security**

Northern Trust's approach to information security begins at a governance level with an organizational structure which reflects support from executive management and includes risk committees comprised of members from across Northern Trust's businesses. In addition, technology risk is mitigated not only through a strong governance process, but also internal controls and risk management practices 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. The desired control environment is expressed through Northern Trust's policies, standards and guidelines that together define its tolerance for risk. Each business is responsible for complying with these policies, standards and guidelines, as well as external regulations. Where appropriate, these policies, standards and guidelines contain limits and benchmarks to facilitate the measurement, monitoring and reporting of risk.

Effective management of information and technology risk is crucial in an environment of increasing threat and requires a structured approach to establish and communicate expectations and required practices. Northern Trust employees are responsible for promoting information security and following sound technology risk management practices 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 ongoing and include multiple approaches such as mandatory computer based training. 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 business, and alerts the organization in accordance with its documented Cyber Incident Response Plan.

### **Business Resiliency**

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 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 by allowing staff to work from home.

All of Northern Trust's businesses are required to regularly risk-assess 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 Program identifies, assesses, measures and monitors fiduciary risk. 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. Each business also is expected to establish procedures for enhanced review in the event a product or relationship involves unique or more complex fiduciary risks. The Corporate Fiduciary Risk Program framework utilizes existing corporate and business risk management tools to measure and guide the assessment of fiduciary risk in the businesses.

#### ***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. At FRC meetings, senior management reviews and discusses fiduciary risks including existing and emerging issues. 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 Compliance and Ethics Oversight Committee 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 Compliance and Ethics Oversight Committee.

**Market Risk**

There are two types of market risk, interest rate risk and market 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, programs and practices to keep the market 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. ALCO and the Market and Liquidity Risk Committee (MLRC) provide oversight and are responsible for developing the market risk management framework and programs that support the coordination of market risk activities to identify, monitor, manage and report on market risk. At ALCO and MLRC meetings, senior management reviews and discusses Northern Trust's market risk profile as well as various scenario analyses. ALCO and MLRC establish and monitor guidelines based on measures such as net interest income (NII) sensitivity, market value of equity (MVE), VaR and notional position sizes.

**Interest Rate Risk Overview**

Interest rate risk is the risk to NII, associated with the balance sheet, or value of equity 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 market value of equity. 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 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 the changing relationships between rates earned and paid on different financial instruments with otherwise similar repricing characteristics; and
- embedded optionality, which arises from client or counterparty behavior in response to interest rate changes.

**Interest Rate Risk Measurement, Reporting and Analysis**

Northern Trust uses two primary measurement techniques to manage interest rate risk: NII sensitivity and MVE sensitivity. Simulation of NII provides management with a short-term view of the impact of interest rate changes on NII. Simulation of MVE 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. These two techniques, which are performed monthly, are complementary and are used in concert to provide a comprehensive interest rate risk management capability.

**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, balance sheet changes, 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 simulation:

- the balance sheet size and mix generally 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 products such as securities (the assumed reinvestment of which is determined by management's strategies); non-maturity deposits, of which some recent increases are assumed to be temporary in nature; and long-term fixed rate borrowings, which upon maturity are replaced with overnight wholesale instruments;
- 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;
- non-maturity 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 40: NET INTEREST INCOME SENSITIVITY**

(\$ In Millions)	INCREASE/(DECREASE) ESTIMATED IMPACT ON NEXT TWELVE MONTHS OF NET INTEREST INCOME
<b>INCREASE IN INTEREST RATES ABOVE MARKET IMPLIED FORWARD RATES</b>	
100 Basis Points	\$ 28
200 Basis Points	40

The NII sensitivity analysis does not incorporate any management actions that may be used to mitigate negative consequences of actual interest rate movement. For that reason and others, they do not reflect the likely actual results but serve as conservative 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.

**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 long 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 41: MARKET VALUE OF EQUITY SENSITIVITY DECEMBER 31, 2016**

(\$ In Millions)	INCREASE/(DECREASE) ESTIMATED IMPACT ON MARKET VALUE OF EQUITY
<b>INCREASE IN INTEREST RATES ABOVE MARKET IMPLIED FORWARD RATES</b>	
100 Basis Points	\$ 321
200 Basis Points	325

The MVE simulations do not incorporate any management actions that may be used to mitigate negative consequences of actual interest rate movements. For that reason and others, they do not reflect the likely actual results but serve as conservative 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.

**Interest Rate Risk Monitoring**

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/return trade-offs. 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.

Northern Trust strives to use the most effective instruments for implementing its interest rate risk management strategies, considering the costs, liquidity, collateral and capital requirements of the various alternatives and the risk-return trade-offs. During the year ended December 31, 2016, 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 non-trading 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 a rich 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 42: FOREIGN CURRENCY VALUE-AT-RISK**

(\$ In Millions)	TOTAL VaR (SPOT AND FORWARD)		FOREIGN EXCHANGE SPOT VaR		FOREIGN EXCHANGE FORWARD VaR	
	2016	2015	2016	2015	2016	2015
As of December 31						
High	\$ 1.4	\$ 0.6	\$ 1.5	\$ 0.5	\$ 0.7	\$ 0.5
Low	0.1	0.1	—	—	0.1	0.1
Average	0.3	0.3	0.1	0.2	0.3	0.3
Year-End	1.4	0.3	1.5	0.1	0.2	0.3

During 2016 and 2015, 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, 2016.

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 long-term risk to earnings or capital from adverse effects of business decisions, improper implementation of business decisions, unexpected external events or damage to Northern Trust's reputation from negative public opinion. Strategic risk includes the following three subcategories:

**Business Risk:** the risk arising from the general economic conditions and external factors in which Northern Trust operates that could adversely affect its revenues, profits and or capital;

**Strategy Risk:** the long-term risk to earnings or capital from adverse effects of business decisions, improper implementation of business decisions and unexpected external events; and

**Reputation Risk:** the risk arising 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 business or to access sources of funding.

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, accounting estimates and assumptions, credit quality including allowance levels, future pension plan contributions, anticipated tax benefits, anticipated expense levels, spending related to technology and regulatory initiatives, risk management policies, contingent liabilities, strategic initiatives, 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 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;
- 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 referendum held in the United Kingdom in which voters approved a departure 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 controlling expenses and implementing revenue enhancement initiatives;
- 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 improving 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 43: RECONCILIATION TO FULLY TAXABLE EQUIVALENT**

(\$ In Millions)	FOR THE YEAR ENDED DECEMBER 31,								
	2016			2015			2014		
	REPORTED	FTE ADJ.	FTE	REPORTED	FTE ADJ.	FTE	REPORTED	FTE ADJ.	FTE
Interest Income	\$ 1,416.9	\$ 25.1	\$ 1,442.0	\$ 1,224.0	\$ 25.3	\$ 1,249.3	\$ 1,186.9	\$ 29.4	\$ 1,216.3
Interest Expense	182.0	—	182.0	153.9	—	153.9	181.4	—	181.4
Net Interest Income	\$ 1,234.9	\$ 25.1	\$ 1,260.0	\$ 1,070.1	\$ 25.3	\$ 1,095.4	\$ 1,005.5	\$ 29.4	\$ 1,034.9
Net Interest Margin	1.15%		1.18%	1.05%		1.07%	1.05%		1.08%
Total Revenue	\$ 4,961.8	\$ 25.1	\$ 4,986.9	\$ 4,702.6	\$ 25.3	\$ 4,727.9	\$ 4,331.2	\$ 29.4	\$ 4,360.6

(\$ In Millions)	FOR THE YEAR ENDED DECEMBER 31,					
	2013			2012		
	REPORTED	FTE ADJ.	FTE	REPORTED	FTE ADJ.	FTE
Interest Income	\$ 1,155.5	\$ 32.5	\$ 1,188.0	\$ 1,287.7	\$ 40.8	\$ 1,328.5
Interest Expense	222.4	—	222.4	297.4	—	297.4
Net Interest Income	\$ 933.1	\$ 32.5	\$ 965.6	\$ 990.3	\$ 40.8	\$ 1,031.1
Net Interest Margin	1.09%		1.13%	1.18%		1.22%
Total Revenue	\$ 4,089.3	\$ 32.5	\$ 4,121.8	\$ 3,896.1	\$ 40.8	\$ 3,936.9

## **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

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

We have audited the accompanying consolidated balance sheets of Northern Trust Corporation and subsidiaries (Northern Trust) as of December 31, 2016 and 2015, 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, 2016. These consolidated financial statements are the responsibility of Northern Trust’s management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Northern Trust Corporation and subsidiaries as of December 31, 2016 and 2015, and the results of their operations and their cash flows for each of the years in the three-year period ended December 31, 2016, 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), Northern Trust Corporation’s internal control over financial reporting as of December 31, 2016, 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, 2017 expressed an unqualified opinion on the effectiveness of Northern Trust Corporation’s internal control over financial reporting.

**KPMG LLP**

CHICAGO, ILLINOIS  
FEBRUARY 27, 2017

**CONSOLIDATED BALANCE SHEETS**

(In Millions Except Share Information)	DECEMBER 31,	
	2016	2015
<b>ASSETS</b>		
Cash and Due from Banks	\$ 5,332.0	\$ 6,418.5
Federal Reserve and Other Central Bank Deposits	26,674.2	23,695.5
Interest-Bearing Deposits with Banks	4,800.6	6,872.2
Federal Funds Sold and Securities Purchased under Agreements to Resell	1,974.3	1,614.2
Securities		
Available for Sale	35,579.8	32,317.9
Held to Maturity (Fair value of \$8,905.1 and \$5,227.5)	8,921.1	5,248.3
Trading Account	0.3	1.2
Total Securities	44,501.2	37,567.4
Loans and Leases		
Commercial	15,902.3	15,156.5
Personal	17,919.8	18,024.4
Total Loans and Leases (Net of unearned income of \$41.2 and \$103.6)	33,822.1	33,180.9
Allowance for Credit Losses Assigned to Loans and Leases	(161.0)	(193.8)
Buildings and Equipment	466.6	446.9
Client Security Settlement Receivables	1,043.7	2,157.0
Goodwill	519.4	526.4
Other Assets	4,953.8	4,464.4
<b>Total Assets</b>	<b>\$ 123,926.9</b>	<b>\$ 116,749.6</b>
<b>LIABILITIES</b>		
Deposits		
Demand and Other Noninterest-Bearing	\$ 22,190.4	\$ 23,435.5
Savings and Money Market	16,509.0	15,035.9
Savings Certificates and Other Time	1,331.7	1,455.8
Non-U.S. Offices – Noninterest-Bearing	7,972.5	6,719.9
– Interest-Bearing	53,648.1	50,221.8
Total Deposits	101,651.7	96,868.9
Federal Funds Purchased	204.8	351.5
Securities Sold under Agreements to Repurchase	473.7	546.6
Other Borrowings	5,109.5	4,055.1
Senior Notes	1,496.6	1,497.4
Long-Term Debt	1,330.9	1,371.3
Floating Rate Capital Debt	277.4	277.3
Other Liabilities	3,611.9	3,075.6
Total Liabilities	114,156.5	108,043.7
<b>STOCKHOLDERS' EQUITY</b>		
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	—
Common Stock, \$1.66 2/3 Par Value; Authorized 560,000,000 shares; Outstanding shares of 228,605,485 and 229,293,783	408.6	408.6
Additional Paid-in Capital	1,035.8	1,072.3
Retained Earnings	8,908.4	8,242.8
Accumulated Other Comprehensive Income (Loss)	(370.0)	(372.7)
Treasury Stock (16,566,039 and 15,877,741 shares, at cost)	(1,094.4)	(1,033.6)
Total Stockholders' Equity	9,770.4	8,705.9
<b>Total Liabilities and Stockholders' Equity</b>	<b>\$ 123,926.9</b>	<b>\$ 116,749.6</b>

See accompanying notes to consolidated financial statements on pages 95-164.

**CONSOLIDATED STATEMENTS OF INCOME**

(In Millions Except Share Information)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
<b>Noninterest Income</b>			
Trust, Investment and Other Servicing Fees	\$ 3,108.1	\$ 2,980.5	\$ 2,832.8
Foreign Exchange Trading Income	236.6	261.8	210.1
Treasury Management Fees	62.8	64.7	66.0
Security Commissions and Trading Income	81.4	78.7	67.6
Other Operating Income	241.2	247.1	153.5
Investment Security Losses, net (Note)	(3.2)	(0.3)	(4.3)
<b>Total Noninterest Income</b>	<b>3,726.9</b>	<b>3,632.5</b>	<b>3,325.7</b>
<b>Net Interest Income</b>			
Interest Income	1,416.9	1,224.0	1,186.9
Interest Expense	182.0	153.9	181.4
<b>Net Interest Income</b>	<b>1,234.9</b>	<b>1,070.1</b>	<b>1,005.5</b>
Provision for Credit Losses	(26.0)	(43.0)	6.0
<b>Net Interest Income after Provision for Credit Losses</b>	<b>1,260.9</b>	<b>1,113.1</b>	<b>999.5</b>
<b>Noninterest Expense</b>			
Compensation	1,541.1	1,443.3	1,417.9
Employee Benefits	293.3	285.3	268.7
Outside Services	627.1	595.7	574.6
Equipment and Software	467.4	454.8	421.4
Occupancy	177.4	173.5	180.3
Other Operating Expense	364.4	328.0	272.1
<b>Total Noninterest Expense</b>	<b>3,470.7</b>	<b>3,280.6</b>	<b>3,135.0</b>
<b>Income before Income Taxes</b>	<b>1,517.1</b>	<b>1,465.0</b>	<b>1,190.2</b>
Provision for Income Taxes	484.6	491.2	378.4
<b>NET INCOME</b>	<b>\$ 1,032.5</b>	<b>\$ 973.8</b>	<b>\$ 811.8</b>
Preferred Stock Dividends	23.4	23.4	9.5
<b>Net Income Applicable to Common Stock</b>	<b>\$ 1,009.1</b>	<b>\$ 950.4</b>	<b>\$ 802.3</b>
<b>PER COMMON SHARE</b>			
Net Income – Basic	\$ 4.35	\$ 4.03	\$ 3.34
– Diluted	4.32	3.99	3.32
Average Number of Common Shares Outstanding – Basic	227,580,584	232,279,849	235,829,790
– Diluted	229,151,406	234,221,729	237,720,255
Note: Changes in Other-Than-Temporary-Impairment (OTTI) Losses	\$ (3.7)	\$ —	\$ (4.9)
Noncredit-related OTTI Losses Recorded in (Reclassified from) OCI	—	—	0.7
Other Security Gains/(Losses), net	0.5	(0.3)	(0.1)
Investment Security Losses, net	\$ (3.2)	\$ (0.3)	\$ (4.3)

**CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
<b>Net Income</b>	<b>\$ 1,032.5</b>	<b>\$ 973.8</b>	<b>\$ 811.8</b>
<b>Other Comprehensive Income (Loss) (Net of Tax and Reclassifications)</b>			
Net Unrealized (Losses) Gains on Securities Available for Sale	(1.4)	(58.6)	21.6
Net Unrealized Gains (Losses) on Cash Flow Hedges	9.1	1.7	(7.6)
Foreign Currency Translation Adjustments	(0.9)	(15.9)	(8.8)
Pension and Other Postretirement Benefit Adjustments	(4.1)	19.8	(80.6)
<b>Other Comprehensive Income (Loss)</b>	<b>2.7</b>	<b>(53.0)</b>	<b>(75.4)</b>
<b>Comprehensive Income</b>	<b>\$ 1,035.2</b>	<b>\$ 920.8</b>	<b>\$ 736.4</b>

See accompanying notes to consolidated financial statements on pages 95-164.



**CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
<b>PREFERRED STOCK</b>			
Balance at January 1	\$ 388.5	\$ 388.5	\$ —
Issuance of Preferred Stock, Series C	—	—	388.5
Issuance of Preferred Stock, Series D	493.5	—	—
Balance at December 31	882.0	388.5	388.5
<b>COMMON STOCK</b>			
Balance at January 1 and December 31	408.6	408.6	408.6
<b>ADDITIONAL PAID-IN CAPITAL</b>			
Balance at January 1	1,072.3	1,050.9	1,035.7
Treasury Stock Transactions – Stock Options and Awards	(116.6)	(74.0)	(71.1)
Stock Options and Awards – Amortization	87.7	77.7	77.5
Stock Options and Awards – Tax Benefits	(7.6)	17.7	8.8
Balance at December 31	1,035.8	1,072.3	1,050.9
<b>RETAINED EARNINGS</b>			
Balance at January 1	8,242.8	7,625.4	7,134.8
Net Income	1,032.5	973.8	811.8
Dividends Declared – Common Stock	(343.5)	(333.0)	(311.7)
Dividends Declared – Preferred Stock	(23.4)	(23.4)	(9.5)
Balance at December 31	8,908.4	8,242.8	7,625.4
<b>ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)</b>			
Balance at January 1	(372.7)	(319.7)	(244.3)
Net Unrealized (Losses) Gains on Securities Available for Sale	(1.4)	(58.6)	21.6
Net Unrealized Gains (Losses) on Cash Flow Hedges	9.1	1.7	(7.6)
Foreign Currency Translation Adjustments	(0.9)	(15.9)	(8.8)
Pension and Other Postretirement Benefit Adjustments	(4.1)	19.8	(80.6)
Balance at December 31	(370.0)	(372.7)	(319.7)
<b>TREASURY STOCK</b>			
Balance at January 1	(1,033.6)	(704.8)	(422.8)
Stock Options and Awards	350.3	168.1	198.7
Stock Purchased	(411.1)	(496.9)	(480.7)
Balance at December 31	(1,094.4)	(1,033.6)	(704.8)
Total Stockholders' Equity at December 31	\$ 9,770.4	\$ 8,705.9	\$ 8,448.9

See accompanying notes to consolidated financial statements on pages 95-164.

**CONSOLIDATED STATEMENTS OF CASH FLOWS**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
<b>CASH FLOWS FROM OPERATING ACTIVITIES</b>			
Net Income	\$ 1,032.5	\$ 973.8	\$ 811.8
Adjustments to Reconcile Net Income to Net Cash Provided by Operating Activities			
Investment Security Losses, net	3.2	0.3	4.3
Amortization and Accretion of Securities and Unearned Income, net	100.9	53.3	34.8
Provision for Credit Losses	(26.0)	(43.0)	6.0
Depreciation on Buildings and Equipment	89.2	90.4	90.6
Amortization of Computer Software	275.3	250.3	225.6
Amortization of Intangibles	8.8	10.9	19.5
Change in Accrued Income Taxes	(129.0)	206.8	55.2
Pension Plan Contributions	(12.8)	(21.1)	(18.7)
Deferred Income Tax Provision	(175.8)	(146.2)	(36.4)
Change in Receivables	(129.2)	(16.2)	20.9
Change in Interest Payable	(0.1)	(8.2)	(4.5)
Change in Collateral With Derivative Counterparties, net	(180.4)	801.4	(359.2)
Other Operating Activities, net	653.4	(318.1)	86.1
Net Cash Provided by Operating Activities	1,510.0	1,834.4	936.0
<b>CASH FLOWS FROM INVESTING ACTIVITIES</b>			
Net Change in Federal Funds Sold and Securities Purchased under Agreements to Resell	(372.9)	(549.8)	(533.1)
Change in Interest-Bearing Deposits with Banks	1,906.1	284.9	1,198.0
Net Change in Federal Reserve and Other Central Bank Deposits	(4,124.2)	558.6	(2,397.8)
Purchases of Securities – Held to Maturity	(8,573.2)	(8,075.5)	(7,138.7)
Proceeds from Maturity and Redemption of Securities – Held to Maturity	4,026.5	6,628.3	4,907.7
Purchases of Securities – Available for Sale	(14,741.9)	(11,490.3)	(12,668.0)
Proceeds from Sale, Maturity and Redemption of Securities – Available for Sale	11,317.3	8,576.1	11,476.6
Change in Loans and Leases	(471.0)	(1,581.0)	(2,288.3)
Purchases of Buildings and Equipment	(111.3)	(98.5)	(81.9)
Purchases and Development of Computer Software	(362.1)	(335.0)	(327.6)
Change in Client Security Settlement Receivables	1,105.0	(605.0)	(224.1)
Acquisition of a Subsidiary, Net of Cash Acquired	(16.9)	—	—
Other Investing Activities, net	226.5	(212.9)	(157.4)
Net Cash Used in Investing Activities	(10,192.1)	(6,900.1)	(8,234.6)
<b>CASH FLOWS FROM FINANCING ACTIVITIES</b>			
Change in Deposits	6,737.4	8,105.7	8,487.7
Change in Federal Funds Purchased	(146.7)	(581.4)	(32.2)
Change in Securities Sold under Agreements to Repurchase	(72.9)	(338.5)	(32.2)
Change in Short-Term Other Borrowings	1,073.5	2,312.8	(164.3)
Repayments of Senior Notes and Long-Term Debt	(6.7)	(231.0)	(640.0)
Contingent Consideration Liability Payment	—	—	(55.3)
Proceeds from Issuance of Preferred Stock – Series C and Series D	493.5	—	388.5
Treasury Stock Purchased	(411.1)	(496.9)	(480.7)
Net Proceeds from Stock Options	233.8	94.0	127.5
Cash Dividends Paid on Common Stock	(333.0)	(321.4)	(302.9)
Cash Dividends Paid on Preferred Stock	(23.4)	(27.0)	—
Other Financing Activities, net	(7.5)	17.8	(222.4)
Net Cash Provided by Financing Activities	7,536.9	8,534.1	7,073.7
Effect of Foreign Currency Exchange Rates on Cash	58.7	(70.9)	86.9
Increase (Decrease) in Cash and Due from Banks	(1,086.5)	3,397.5	(138.0)
Cash and Due from Banks at Beginning of Year	6,418.5	3,021.0	3,159.0
Cash and Due from Banks at End of Year	\$ 5,332.0	\$ 6,418.5	\$ 3,021.0
<b>SUPPLEMENTAL DISCLOSURES OF CASH FLOW INFORMATION</b>			
Interest Paid	\$ 181.6	\$ 161.6	\$ 186.5
Income Taxes Paid	754.2	390.0	279.2
Transfers from Loans to OREO	14.2	13.0	21.4

See accompanying notes to consolidated financial statements on pages 95-164.

**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.

**Change in Presentation.** Based on the increase in trade clearing activity taking place outside of the United States, during the year ended December 31, 2016, Northern Trust became a participant in the Clearing House Automated Payment System (CHAPS) in the United Kingdom. In addition, Northern Trust anticipates becoming a participant in the European solution for securities settlements, the Target 2 Securities (T2S) platform, in 2017. As a part of the implementation of these programs, management assessed the nature of Northern Trust’s deposits with non-U.S. central banks and determined that they were similar to the deposits Northern Trust has with the U.S. Federal Reserve System (Federal Reserve). As such, during the year ended December 31, 2016, the presentation of non-U.S. central bank deposits was combined with the presentation of Federal Reserve deposits on a single financial statement line, Federal Reserve and Other Central Bank Deposits, on the face of the consolidated balance sheets. Northern Trust determined that this change in presentation was material to the financial statements and has revised the prior-period presentation of the consolidated balance sheets, statements of cash flows and applicable notes to the financial statements. This change in presentation has no impact on the consolidated statements of income, comprehensive income or changes in stockholders’ equity.

The table below shows the effect of the change in presentation on the Corporation’s consolidated balance sheets, statements of cash flows, and related footnotes for the periods presented.

**TABLE 44: CHANGE IN PRESENTATION**

Consolidated Balance Sheets (In Millions)	DECEMBER 31, 2015		
	Previously Reported	Adjustment	Revised
Cash and Due from Banks	\$ 6,444.6	\$ (26.1)	\$ <b>6,418.5</b>
Federal Reserve Deposits	16,398.5	(16,398.5)	—
Federal Reserve and Other Central Bank Deposits	—	23,695.5	<b>23,695.5</b>
Interest-Bearing Deposits with Banks	14,143.1	(7,270.9)	<b>6,872.2</b>

Consolidated Statements of Cash Flows (In Millions)	FOR THE YEAR ENDED					
	DECEMBER 31, 2015			DECEMBER 31, 2014		
	Previously Reported	Adjustment	Revised	Previously Reported	Adjustment	Revised
Change in Interest-Bearing Deposits with Banks	\$ (144.9)	\$ 429.8	\$ 284.9	\$ 3,297.2	\$ (2,099.2)	\$ 1,198.0
Net Change in Federal Reserve Deposits	987.8	(987.8)	—	(4,474.8)	4,474.8	—
Net Change in Federal Reserve and Other Central Bank Deposits	—	558.6	558.6	—	(2,397.8)	(2,397.8)
Net Cash Used in Investing Activities	(6,900.7)	0.6	(6,900.1)	(8,212.4)	(22.2)	(8,234.6)
Effect of Foreign Currency Exchange Rates on Cash	(73.8)	2.9	(70.9)	90.9	(4.0)	86.9
Increase in Cash and Due from Banks	3,394.0	3.5	3,397.5	(111.8)	(26.2)	(138.0)
Cash and Due from Banks at Beginning of Year	3,050.6	(29.6)	3,021.0	3,162.4	(3.4)	3,159.0
Cash and Due from Banks at End of Period	6,444.6	(26.1)	6,418.5	3,050.6	(29.6)	3,021.0

## Note 17 Net Interest Income

FOR THE YEAR ENDED

(In Millions)	DECEMBER 31, 2015			DECEMBER 31, 2014		
	Previously Reported	Adjustment	Revised	Previously Reported	Adjustment	Revised
Interest-Bearing Due from and Deposits with Banks	\$ 108.3	\$ (23.4)	\$ 84.9	\$ 127.6	\$ (30.4)	\$ 97.2
Federal Reserve Deposits and Other	46.8	\$ (46.8)	—	41.3	\$ (41.3)	—
Federal Reserve and Other Central Bank Deposits and Other	—	\$ 70.2	70.2	—	\$ 71.7	71.7

**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.

**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-US 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, non-U.S., lease financing, 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 Leverage 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 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.

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 not yet vested. Dividend equivalents are accrued on performance stock unit awards granted on or after February 16, 2016 and director awards not yet vested, and are paid upon vesting. Cash flows resulting from the realization of tax deductions from the exercise of stock options in excess of the compensation cost recognized (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 awards, which are unvested share-based payment awards that contain nonforfeitable rights to dividends or dividend equivalents. These restricted shares 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, 2016, the Corporation adopted ASU 2015-02, “Consolidation (Topic 810): Amendments to the Consolidation Analysis” (ASU 2015-02), which modified the Corporation’s evaluation of whether certain legal entities are Variable Interest Entities (VIEs), and if Northern Trust would be deemed to be the primary beneficiary of the VIEs. Upon adoption, Northern Trust was not deemed to be the primary beneficiary of the VIEs, and therefore there was no impact to its consolidated financial position or statement of operations.

In March 2016, the Financial Accounting Standards Board (FASB) issued ASU No. 2016-09, “Compensation - Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting.” ASU No. 2016-09 simplifies several aspects of the accounting for share-based payment transactions, including income tax consequences, classification of awards as either equity or liabilities, and classification on the statement of cash flows.

The Corporation early adopted ASU No. 2016-09 with an effective date of January 1, 2016. As a result of the adoption, during the year ended December 31, 2016, the Corporation recognized a benefit of \$12.3 million in provision for income taxes for excess tax benefits associated with share-based payment transactions. For all years prior to the year ended December 31, 2016, these excess tax benefits were recognized in additional paid-in capital.

For the year ended December 31, 2016, the Corporation reclassified excess tax benefits from other financing activities to other operating activities and for the years ended December, 31 2016, 2015 and 2014, the Corporation classified taxes paid related to net share settlement of equity awards in financing activities in the consolidated statements of cash flows, respectively.

The Corporation had no previously unrecognized excess tax benefits; therefore, there was no impact to the consolidated financial statements as it related to the elimination of the requirement that excess tax benefits be realized before recognition.

The Corporation elected to retain its existing accounting policy regarding award forfeitures.

## 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, 2016, or 2015.

**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, 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. As of December 31, 2015, Northern Trust's available for sale securities portfolio included 1,044 Level 2 securities with an aggregate market value of \$26.1 billion. All 1,044 securities were valued by external pricing vendors. Trading account securities, which totaled \$0.3 million and \$1.2 million as of December 31, 2016, and December 31, 2015, 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.** As of December 31, 2016, 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. As of December 31, 2015, Northern Trust estimated the fair value of auction rate securities by developing and maintaining a pricing model that discounted estimated cash flows over their estimated remaining lives. Significant inputs to the model included the contractual terms of the securities, credit risk ratings, discount rates, forward interest rates, credit/liquidity spreads, and Northern Trust's own assumptions about estimated remaining lives of the securities. Significant increases (decreases) in the estimated remaining lives or the discount rates in isolation would result in a slightly lower (higher) fair value measurement.

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 conclude as to 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, 2016 and 2015.

**TABLE 45: LEVEL 3 SIGNIFICANT UNOBSERVABLE INPUTS**

DECEMBER 31, 2016				
FINANCIAL INSTRUMENT	FAIR VALUE	VALUATION TECHNIQUE	UNOBSERVABLE INPUT	RANGE OF INPUTS
Auction Rate Securities	\$ 4.7 million	Comparables	Price	\$84 – \$99
Swaps Related to Sale of Certain Visa Class B Common Shares	\$ 25.2 million	Discounted Cash Flow	Visa Class A Appreciation Conversion Rate Expected Duration	7.0% – 11.0% 1.63x – 1.65x 1.5 – 4.5 years
DECEMBER 31, 2015				
FINANCIAL INSTRUMENT	FAIR VALUE	VALUATION TECHNIQUE	UNOBSERVABLE INPUT	RANGE OF INPUTS
Auction Rate Securities	\$ 17.1 million	Discounted Cash Flow	Remaining Lives Discount Rates	0.42 – 8.64 years 0.3% – 4.4%
Swap Related to Sale of Certain Visa Class B Common Shares	\$ 10.8 million	Discounted Cash Flow	Visa Class A Appreciation Conversion Rate Expected Duration	9.5% – 15.0% 1.61x – 1.65x 1.5 – 4.5 years

The following presents assets and liabilities measured at fair value on a recurring basis as of December 31, 2016 and 2015, segregated by fair value hierarchy level.

**TABLE 46: RECURRING BASIS HIERARCHY LEVELING**

(In Millions)	DECEMBER 31, 2016				ASSETS/ LIABILITIES AT FAIR VALUE
	LEVEL 1	LEVEL 2	LEVEL 3	NETTING	
<b>Securities</b>					
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
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
<b>Total Available for Sale</b>	<b>7,522.6</b>	<b>28,052.5</b>	<b>4.7</b>	<b>—</b>	<b>35,579.8</b>
Trading Account	—	0.3	—	—	0.3
<b>Total Available for Sale and Trading Securities</b>	<b>7,522.6</b>	<b>28,052.8</b>	<b>4.7</b>	<b>—</b>	<b>35,580.1</b>
<b>Other Assets</b>					
Derivative Assets					
Foreign Exchange Contracts	—	3,609.6	—	—	3,609.6
Interest Rate Contracts	—	247.2	—	—	247.2
<b>Total Derivative Assets</b>	<b>—</b>	<b>3,856.8</b>	<b>—</b>	<b>(2,170.4)</b>	<b>1,686.4</b>
<b>Other Liabilities</b>					
Derivative Liabilities					
Foreign Exchange Contracts	—	3,242.9	—	—	3,242.9
Interest Rate Swaps	—	108.0	—	—	108.0
Other Financial Derivatives <sup>(1)</sup>	—	—	25.2	—	25.2
<b>Total Derivative Liabilities</b>	<b>\$ —</b>	<b>\$ 3,350.9</b>	<b>\$ 25.2</b>	<b>\$ (2,431.2)</b>	<b>\$ 944.9</b>

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 swaps related to the sale of certain Visa Class B common shares.

DECEMBER 31, 2015

(In Millions)	LEVEL 1	LEVEL 2	LEVEL 3	NETTING	ASSETS/ LIABILITIES AT FAIR VALUE
<b>Securities</b>					
Available for Sale					
U.S. Government	\$ 6,178.3	\$ —	\$ —	\$ —	6,178.3
Obligations of States and Political Subdivisions	—	36.4	—	—	36.4
Government Sponsored Agency	—	16,366.8	—	—	16,366.8
Non-U.S. Government	—	309.5	—	—	309.5
Corporate Debt	—	3,712.2	—	—	3,712.2
Covered Bonds	—	1,870.2	—	—	1,870.2
Sub-Sovereign, Supranational and Non-U.S. Agency Bonds	—	859.4	—	—	859.4
Other Asset-Backed	—	2,500.1	—	—	2,500.1
Auction Rate	—	—	17.1	—	17.1
Commercial Mortgage-Backed	—	374.4	—	—	374.4
Other	—	93.5	—	—	93.5
<b>Total Available for Sale</b>	<b>6,178.3</b>	<b>26,122.5</b>	<b>17.1</b>	<b>—</b>	<b>32,317.9</b>
Trading Account	—	1.2	—	—	1.2
<b>Total Available for Sale and Trading Securities</b>	<b>6,178.3</b>	<b>26,123.7</b>	<b>17.1</b>	<b>—</b>	<b>32,319.1</b>
<b>Other Assets</b>					
Derivative Assets					
Foreign Exchange Contracts	—	2,623.4	—	—	2,623.4
Interest Rate Swaps	—	228.5	—	—	228.5
<b>Total Derivatives Assets</b>	<b>—</b>	<b>2,851.9</b>	<b>—</b>	<b>(1,600.2)</b>	<b>1,251.7</b>
<b>Other Liabilities</b>					
Derivative Liabilities					
Foreign Exchange Contracts	—	2,519.4	—	—	2,519.4
Interest Rate Swaps	—	131.2	—	—	131.2
Other Financial Derivatives <sup>(1)</sup>	—	0.1	10.8	—	10.9
<b>Total Derivative Liabilities</b>	<b>\$ —</b>	<b>\$ 2,650.7</b>	<b>\$ 10.8</b>	<b>\$ (1,717.6)</b>	<b>\$ 943.9</b>

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, 2015, derivative assets and liabilities shown above also include reductions of \$322.8 million and \$440.2 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 and total return swaps.

The following tables present the changes in Level 3 assets and liabilities for the years ended December 31, 2016 and 2015.

**TABLE 47: CHANGES IN LEVEL 3 ASSETS AND LIABILITIES**

LEVEL 3 ASSETS (In Millions)	AUCTION RATE SECURITIES	
	2016	2015
Fair Value at January 1	\$ 17.1	\$ 18.1
Total Gains (Losses):		
Included in Other Comprehensive Income <sup>(1)</sup>	(0.7)	0.7
Purchases, Issuances, Sales, and Settlements:		
Sales	(10.1)	(1.2)
Settlements	(1.6)	(0.5)
Fair Value at December 31	\$ 4.7	\$ 17.1

(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 (In Millions)	SWAPS RELATED TO SALE OF CERTAIN VISA CLASS B COMMON SHARES	
	2016	2015
Fair Value at January 1	\$ 10.8	\$ —
Total Losses:		
Included in Earnings <sup>(1)</sup>	4.4	0.8
Purchases, Issuances, Sales, and Settlements:		
Issuance	14.9	11.3
Settlements	(4.9)	(1.3)
Fair Value at December 31	\$ 25.2	\$ 10.8
Unrealized (Gains) Losses Included in Earnings Related to Financial Instruments Held at December 31 <sup>(1)</sup>	\$ 4.4	\$ 0.7

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

For the years ended December 31, 2016 and 2015 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, 2016 and 2015, 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 \$6.7 million and \$0.7 million, respectively, at December 31, 2016, and \$10.4 million and \$3.6 million, respectively, at December 31, 2015. 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, 2016.

**TABLE 48: LEVEL 3 NONRECURRING BASIS SIGNIFICANT UNOBSERVABLE INPUTS**

FINANCIAL INSTRUMENT	FAIR VALUE	VALUATION TECHNIQUE	UNOBSERVABLE INPUT	RANGE OF DISCOUNTS APPLIED
Loans	\$6.7 million	Market Approach	Discount to reflect realizable value	15.0% – 25.0%
OREO	\$0.7 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, although such deposits are typically priced at a premium in banking industry consolidations.



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

**TABLE 49: FAIR VALUE OF FINANCIAL INSTRUMENTS**

(In Millions)	DECEMBER 31, 2016				
	BOOK VALUE	TOTAL FAIR VALUE	LEVEL 1	LEVEL 2	LEVEL 3
<b>ASSETS</b>					
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 <i>(Note)</i>	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	—
<b>LIABILITIES</b>					
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
<b>DERIVATIVE INSTRUMENTS</b>					
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					
Liabilities <sup>(1)</sup>	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 105 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, 2015

FAIR VALUE

(In Millions)	BOOK VALUE	TOTAL FAIR VALUE	LEVEL 1	LEVEL 2	LEVEL 3
<b>ASSETS</b>					
Cash and Due from Banks	\$ 6,418.5	\$ 6,418.5	\$ 6,418.5	\$ —	\$ —
Federal Reserve and Other Central Bank Deposits	23,695.5	23,695.5	—	23,695.5	—
Interest-Bearing Deposits with Banks	6,872.2	6,872.2	—	6,872.2	—
Federal Funds Sold and Resell Agreements	1,614.2	1,614.2	—	1,614.2	—
Securities					
Available for Sale <i>(Note)</i>	32,317.9	32,317.9	6,178.3	26,122.5	17.1
Held to Maturity	5,248.3	5,227.5	26.0	5,201.5	—
Trading Account	1.2	1.2	—	1.2	—
Loans (excluding Leases)					
Held for Investment	32,432.7	32,596.5	—	—	32,596.5
Held for Sale	12.0	12.0	—	—	12.0
Client Security Settlement Receivables	2,157.0	2,157.0	—	2,157.0	—
Other Assets					
Federal Reserve and Federal Home Loan Bank Stock	253.1	253.1	—	253.1	—
Community Development Investments	173.5	177.1	—	177.1	—
Employee Benefit and Deferred Compensation	155.3	153.4	104.2	49.2	—
<b>LIABILITIES</b>					
Deposits					
Demand, Noninterest-Bearing, Savings and Money Market	\$ 45,191.3	\$ 45,191.3	\$ 45,191.3	\$ —	\$ —
Savings Certificates and Other Time	1,455.8	1,463.5	—	1,463.5	—
Non-U.S. Offices Interest-Bearing	50,221.8	50,221.8	—	50,221.8	—
Federal Funds Purchased	351.5	351.5	—	351.5	—
Securities Sold under Agreements to Repurchase	546.6	546.6	—	546.6	—
Other Borrowings	4,055.1	4,055.7	—	4,055.7	—
Senior Notes	1,497.4	1,531.8	—	1,531.8	—
Long Term Debt (excluding Leases)					
Subordinated Debt	1,341.6	1,332.2	—	1,332.2	—
Floating Rate Capital Debt	277.3	236.6	—	236.6	—
Other Liabilities					
Standby Letters of Credit	46.6	46.6	—	—	46.6
Loan Commitments	48.9	48.9	—	—	48.9
<b>DERIVATIVE INSTRUMENTS</b>					
Asset/Liability Management					
Foreign Exchange Contracts					
Assets	\$ 81.6	\$ 81.6	\$ —	\$ 81.6	\$ —
Liabilities	19.0	19.0	—	19.0	—
Interest Rate Contracts					
Assets	117.4	117.4	—	117.4	—
Liabilities	22.7	22.7	—	22.7	—
Other Financial Derivatives					
Liabilities <sup>(1)</sup>	10.9	10.9	—	0.1	10.8
Client-Related and Trading					
Foreign Exchange Contracts					
Assets	2,541.8	2,541.8	—	2,541.8	—
Liabilities	2,500.4	2,500.4	—	2,500.4	—
Interest Rate Contracts					
Assets	111.1	111.1	—	111.1	—
Liabilities	108.5	108.5	—	108.5	—

Note: Refer to the table located on page 106 for the disaggregation of available for sale securities.

**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 50: RECONCILIATION OF AMORTIZED COST TO FAIR VALUE OF SECURITIES AVAILABLE FOR SALE**

(In Millions)	DECEMBER 31, 2016			
	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
<b>Total</b>	<b>\$ 35,631.9</b>	<b>\$ 78.7</b>	<b>\$ 130.8</b>	<b>\$ 35,579.8</b>

(In Millions)	DECEMBER 31, 2015			
	AMORTIZED COST	GROSS UNREALIZED GAINS	GROSS UNREALIZED LOSSES	FAIR VALUE
U.S. Government	\$ 6,180.4	\$ 3.4	\$ 5.5	\$ 6,178.3
Obligations of States and Political Subdivisions	36.4	0.1	0.1	36.4
Government Sponsored Agency	16,370.5	42.8	46.5	16,366.8
Non-U.S. Government	309.5	0.1	0.1	309.5
Corporate Debt	3,744.4	0.9	33.1	3,712.2
Covered Bonds	1,873.3	1.8	4.9	1,870.2
Sub-Sovereign, Supranational and Non-U.S. Agency Bonds	860.9	0.5	2.0	859.4
Other Asset-Backed	2,504.2	0.1	4.2	2,500.1
Auction Rate	16.7	0.5	0.1	17.1
Commercial Mortgage-Backed	378.1	—	3.7	374.4
Other	93.4	0.1	—	93.5
<b>Total</b>	<b>\$ 32,367.8</b>	<b>\$ 50.3</b>	<b>\$ 100.2</b>	<b>\$ 32,317.9</b>

**TABLE 51: REMAINING MATURITY OF SECURITIES AVAILABLE FOR SALE**

(In Millions)	DECEMBER 31, 2016		DECEMBER 31, 2015	
	AMORTIZED COST	FAIR VALUE	AMORTIZED COST	FAIR VALUE
Due in One Year or Less	\$ 7,880.8	\$ 7,876.6	\$ 9,335.0	\$ 9,332.6
Due After One Year Through Five Years	21,094.8	21,058.7	17,808.8	17,777.0
Due After Five Years Through Ten Years	5,759.1	5,753.6	4,036.5	4,023.1
Due After Ten Years	897.2	890.9	1,187.5	1,185.2
<b>Total</b>	<b>\$ 35,631.9</b>	<b>\$ 35,579.8</b>	<b>\$ 32,367.8</b>	<b>\$ 32,317.9</b>

*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 52: RECONCILIATION OF AMORTIZED COST TO FAIR VALUES OF SECURITIES HELD TO MATURITY**

(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
<b>Total</b>	<b>\$ 8,921.1</b>	<b>\$ 29.2</b>	<b>\$ 45.2</b>	<b>\$ 8,905.1</b>

(In Millions)	DECEMBER 31, 2015			
	AMORTIZED COST	GROSS UNREALIZED GAINS	GROSS UNREALIZED LOSSES	FAIR VALUE
U.S. Government	\$ 26.0	\$ —	\$ —	\$ 26.0
Obligations of States and Political Subdivisions	89.2	5.2	—	94.4
Government Sponsored Agency	9.9	0.7	—	10.6
Covered Bonds	892.4	0.4	1.9	890.9
Non-U.S. Government	1,118.0	4.8	0.5	1,122.3
Certificates of Deposit	691.6	0.1	0.1	691.6
Sub-Sovereign, Supranational and Non-U.S. Agency Bonds	2,326.2	8.3	0.9	2,333.6
Other	95.0	—	36.9	58.1
<b>Total</b>	<b>\$ 5,248.3</b>	<b>\$ 19.5</b>	<b>\$ 40.3</b>	<b>\$ 5,227.5</b>

**TABLE 53: REMAINING MATURITY OF SECURITIES HELD TO MATURITY**

(In Millions)	DECEMBER 31, 2016		DECEMBER 31, 2015	
	AMORTIZED COST	FAIR VALUE	AMORTIZED COST	FAIR VALUE
Due in One Year or Less	\$ 3,631.6	\$ 3,635.9	\$ 1,908.8	\$ 1,913.2
Due After One Year Through Five Years	5,072.7	5,081.6	3,271.1	3,278.3
Due After Five Years Through Ten Years	158.7	156.1	14.9	11.7
Due After Ten Years	58.1	31.5	53.5	24.3
<b>Total</b>	<b>\$ 8,921.1</b>	<b>\$ 8,905.1</b>	<b>\$ 5,248.3</b>	<b>\$ 5,227.5</b>

*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.

**Investment Security Gains and Losses.** Net investment security losses of \$3.2 million were recognized in 2016, and include \$3.7 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 \$0.3 million, and \$4.3 million were recognized in 2015, and 2014, respectively. There were no OTTI losses in 2015. Losses in 2014 include \$4.2 million of OTTI charges. 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. Proceeds of \$851.8 million from the sale of securities in 2014 resulted in gross realized gains and losses of \$2.8 million and \$2.9 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, 2016 and 2015.

**TABLE 54: SECURITIES WITH UNREALIZED LOSSES**

AS OF DECEMBER 31, 2016 (In Millions)	LESS THAN 12 MONTHS		12 MONTHS OR LONGER		TOTAL	
	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
<b>Total</b>	<b>\$ 18,412.8</b>	<b>\$ 130.2</b>	<b>\$ 3,627.4</b>	<b>\$ 45.8</b>	<b>\$ 22,040.2</b>	<b>\$ 176.0</b>

AS OF DECEMBER 31, 2015 (In Millions)	LESS THAN 12 MONTHS		12 MONTHS OR LONGER		TOTAL	
	FAIR VALUE	UNREALIZED LOSSES	FAIR VALUE	UNREALIZED LOSSES	FAIR VALUE	UNREALIZED LOSSES
U.S. Government	\$ 3,888.0	\$ 5.5	\$ —	\$ —	\$ 3,888.0	\$ 5.5
Obligations of States and Political Subdivisions	15.1	0.1	—	—	15.1	0.1
Government Sponsored Agency	9,208.5	38.7	1,213.6	7.8	10,422.1	46.5
Non-U.S. Government	314.3	0.6	—	—	314.3	0.6
Corporate Debt	2,067.6	10.3	1,057.1	22.8	3,124.7	33.1
Covered Bonds	1,598.4	6.7	10.0	0.1	1,608.4	6.8
Sub-Sovereign, Supranational and Non-U.S. Agency Bonds	1,132.9	2.3	109.3	0.6	1,242.2	2.9
Other Asset-Backed	2,122.7	4.0	170.6	0.2	2,293.3	4.2
Certificates of Deposit	180.3	0.1	—	—	180.3	0.1
Auction Rate	—	—	6.4	0.1	6.4	0.1
Commercial Mortgage-Backed	374.4	3.7	—	—	374.4	3.7
Other	28.7	13.3	50.7	23.6	79.4	36.9
<b>Total</b>	<b>\$ 20,930.9</b>	<b>\$ 85.3</b>	<b>\$ 2,617.7</b>	<b>\$ 55.2</b>	<b>\$ 23,548.6</b>	<b>\$ 140.5</b>

As of December 31, 2016, 1,154 securities with a combined fair value of \$22.0 billion were in an unrealized loss position, with their unrealized losses totaling \$176.0 million. Unrealized losses of \$70.6 million related to government sponsored agency securities are primarily attributable to changes in market rates since their purchase. Unrealized losses of \$25.2 million within corporate debt securities primarily reflect widened credit spreads and higher market rates since purchase; 34% of the corporate debt portfolio is backed by guarantees provided by U.S. and non-U.S. governmental entities.

The majority of the \$35.9 million of unrealized losses in securities classified as “other” at December 31, 2016, relate to securities primarily purchased at a premium or par by Northern Trust for compliance with 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, 2016, are attributable to changes in overall market interest rates, increased credit spreads, or reduced market liquidity. As of December 31, 2016, 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 2014 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 \$3.7 million and \$4.2 million OTTI losses recognized in 2016 and 2014 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, 2016, 2015, and 2014.

**TABLE 55: NET IMPAIRMENT LOSSES RECOGNIZED IN EARNINGS**

(In Millions)	DECEMBER 31,		
	2016	2015	2014
Changes in Other-Than-Temporary Impairment Losses <sup>(1)</sup>	\$ (3.7)	\$ —	\$ (4.9)
Noncredit-related Losses Recorded in / (Reclassified from) OCI <sup>(2)</sup>	—	—	0.7
Net Impairment Losses Recognized in Earnings	\$ (3.7)	\$ —	\$ (4.2)

*(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 56: CUMULATIVE CREDIT-RELATED LOSSES ON SECURITIES HELD**

(In Millions)	YEAR ENDED DECEMBER 31,	
	2016	2015
Cumulative Credit-Related Losses on Securities Held – Beginning of Year	\$ 5.2	\$ 5.2
Plus: Losses on Newly Identified Impairments	0.5	—
Additional Losses on Previously Identified Impairments	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	\$ 3.4	\$ 5.2

**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 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.

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

**TABLE 57: SECURITIES PURCHASED UNDER AGREEMENTS TO RESELL**

(\$ In Millions)	2016	2015
Balance at December 31	\$ 1,967.5	\$ 1,600.0
Average Balance During the Year	1,764.1	1,144.7
Average Interest Rate Earned During the Year	1.04%	0.54%
Maximum Month-End Balance During the Year	2,050.9	1,600.0

**TABLE 58: SECURITIES SOLD UNDER AGREEMENTS TO REPURCHASE**

(\$ In Millions)	2016	2015
Balance at December 31	\$ 473.7	\$ 546.6
Average Balance During the Year	847.1	649.5
Average Interest Rate Paid During the Year	0.27%	0.05%
Maximum Month-End Balance During the Year	565.5	802.4

**Note 6 – Loans and Leases**

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

**TABLE 59: LOANS AND LEASES**

(In Millions)	DECEMBER 31,	
	2016	2015
<b>Commercial</b>		
Commercial and Institutional	\$ 9,523.0	\$ 9,431.5
Commercial Real Estate	4,002.5	3,848.8
Lease Financing, net	293.9	544.4
Non-U.S.	1,877.8	1,137.7
Other	205.1	194.1
<b>Total Commercial</b>	<b>15,902.3</b>	<b>15,156.5</b>
<b>Personal</b>		
Residential Real Estate	7,841.9	8,850.7
Private Client	10,052.0	9,136.4
Other	25.9	37.3
<b>Total Personal</b>	<b>17,919.8</b>	<b>18,024.4</b>
<b>Total Loans and Leases</b>	<b>\$ 33,822.1</b>	<b>\$ 33,180.9</b>
Allowance for Credit Losses Assigned to Loans and Leases	(161.0)	(193.8)
<b>Net Loans and Leases</b>	<b>\$ 33,661.1</b>	<b>\$ 32,987.1</b>

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, 2016 and 2015, equity credit lines totaled \$1.2 billion and \$1.5 billion, respectively, and equity credit lines for which first liens were held by Northern Trust represented 91% and 89%, 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 \$1.4 billion and \$719.5 million at December 31, 2016 and 2015, respectively. Demand deposits reclassified as loan balances totaled \$88.1 million and \$75.4 million at December 31, 2016 and 2015, respectively. Loans classified as held for sale totaled \$13.4 million at December 31, 2016. Leases classified as held for sale totaled \$43.0 million at December 31, 2016 related to the decision to exit a non-strategic loan and lease portfolio. Loans and leases classified as held for sale totaled \$12.0 million and \$112.3 million, respectively, at December 31, 2015 related to a 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 60: DIRECT FINANCE AND LEVERAGED LEASES**

(In Millions)	DECEMBER 31,	
	2016	2015
Direct Finance Leases		
Lease Receivable	\$ 37.6	\$ 53.8
Residual Value	75.3	109.3
Initial Direct Costs	1.0	1.3
Unearned Income	(3.5)	(9.4)
Investment in Direct Finance Leases	110.4	155.0
Leveraged Leases		
Net Rental Receivable	110.1	260.2
Residual Value	106.2	215.4
Unearned Income	(32.8)	(86.2)
Investment in Leveraged Leases	183.5	389.4
Lease Financing, net	\$ 293.9	\$ 544.4

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

**TABLE 61: FUTURE MINIMUM LEASE PAYMENTS**

(In Millions)	FUTURE MINIMUM LEASE PAYMENTS	
2017	\$	11.3
2018		11.2
2019		9.1
2020		3.9
2021		2.1

**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, 2016 and 2015 are provided below, segregated by borrower ratings into "1 to 3", "4 to 5", and "6 to 9" (watch list), categories.

**TABLE 62: BORROWER RATINGS**

(In Millions)	DECEMBER 31, 2016				DECEMBER 31, 2015			
	1 TO 3 CATEGORY	4 TO 5 CATEGORY	6 TO 9 CATEGORY (WATCH LIST)	TOTAL	1 TO 3 CATEGORY	4 TO 5 CATEGORY	6 TO 9 CATEGORY (WATCH LIST)	TOTAL
<b>Commercial</b>								
Commercial and Institutional	\$ 6,293.2	\$ 3,108.5	\$ 121.3	\$ 9,523.0	\$ 6,360.6	\$ 2,897.2	\$ 173.7	\$ 9,431.5
Commercial Real Estate	1,825.7	2,134.8	42.0	4,002.5	1,822.6	1,992.7	33.5	3,848.8
Lease Financing, net	214.3	79.6	—	293.9	377.0	133.1	34.3	544.4
Non-U.S.	602.8	1,273.5	1.5	1,877.8	313.8	823.3	0.6	1,137.7
Other	135.5	67.9	1.7	205.1	94.9	99.2	—	194.1
<b>Total Commercial</b>	<b>9,071.5</b>	<b>6,664.3</b>	<b>166.5</b>	<b>15,902.3</b>	<b>8,968.9</b>	<b>5,945.5</b>	<b>242.1</b>	<b>15,156.5</b>
<b>Personal</b>								
Residential Real Estate	2,617.8	4,913.9	310.2	7,841.9	3,014.9	5,516.7	319.1	8,850.7
Private Client	6,373.2	3,668.4	10.4	10,052.0	5,908.3	3,207.1	21.0	9,136.4
Other	17.1	8.5	0.3	25.9	18.3	19.0	—	37.3
<b>Total Personal</b>	<b>9,008.1</b>	<b>8,590.8</b>	<b>320.9</b>	<b>17,919.8</b>	<b>8,941.5</b>	<b>8,742.8</b>	<b>340.1</b>	<b>18,024.4</b>
<b>Total Loans and Leases</b>	<b>\$ 18,079.6</b>	<b>\$ 15,255.1</b>	<b>\$ 487.4</b>	<b>\$ 33,822.1</b>	<b>\$ 17,910.4</b>	<b>\$ 14,688.3</b>	<b>\$ 582.2</b>	<b>\$ 33,180.9</b>

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, 2016 and 2015.

**TABLE 63: 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
<b>December 31, 2016</b>							
Commercial							
Commercial and Institutional	\$ 9,470.0	\$ 5.3	\$ 2.3	\$ 11.7	\$ 9,489.3	\$ 33.7	\$ 9,523.0
Commercial Real Estate	3,974.4	10.9	1.0	4.6	3,990.9	11.6	4,002.5
Lease Financing, net	293.9	—	—	—	293.9	—	293.9
Non-U.S.	1,877.7	0.1	—	—	1,877.8	—	1,877.8
Other	205.1	—	—	—	205.1	—	205.1
<b>Total Commercial</b>	<b>15,821.1</b>	<b>16.3</b>	<b>3.3</b>	<b>16.3</b>	<b>15,857.0</b>	<b>45.3</b>	<b>15,902.3</b>
Personal							
Residential Real Estate	7,675.7	44.5	6.1	1.0	7,727.3	114.6	7,841.9
Private Client	9,988.7	40.8	8.5	13.7	10,051.7	0.3	10,052.0
Other	25.9	—	—	—	25.9	—	25.9
<b>Total Personal</b>	<b>17,690.3</b>	<b>85.3</b>	<b>14.6</b>	<b>14.7</b>	<b>17,804.9</b>	<b>114.9</b>	<b>17,919.8</b>
<b>Total Loans and Leases</b>	<b>\$ 33,511.4</b>	<b>\$ 101.6</b>	<b>\$ 17.9</b>	<b>\$ 31.0</b>	<b>\$ 33,661.9</b>	<b>\$ 160.2</b>	<b>\$ 33,822.1</b>
				Other Real Estate Owned	\$	5.2	
				Total Nonperforming Assets	\$	165.4	
<b>December 31, 2015</b>							
Commercial							
Commercial and Institutional	\$ 9,377.6	\$ 7.8	\$ 0.9	\$ 2.3	\$ 9,388.6	\$ 42.9	\$ 9,431.5
Commercial Real Estate	3,823.3	2.4	4.9	1.5	3,832.1	16.7	3,848.8
Lease Financing, net	544.4	—	—	—	544.4	—	544.4
Non-U.S.	1,137.7	—	—	—	1,137.7	—	1,137.7
Other	194.1	—	—	—	194.1	—	194.1
<b>Total Commercial</b>	<b>15,077.1</b>	<b>10.2</b>	<b>5.8</b>	<b>3.8</b>	<b>15,096.9</b>	<b>59.6</b>	<b>15,156.5</b>
Personal							
Residential Real Estate	8,679.3	35.2	14.5	1.6	8,730.6	120.1	8,850.7
Private Client	9,104.8	17.5	12.0	1.7	9,136.0	0.4	9,136.4
Other	37.3	—	—	—	37.3	—	37.3
<b>Total Personal</b>	<b>17,821.4</b>	<b>52.7</b>	<b>26.5</b>	<b>3.3</b>	<b>17,903.9</b>	<b>120.5</b>	<b>18,024.4</b>
<b>Total Loans and Leases</b>	<b>\$ 32,898.5</b>	<b>\$ 62.9</b>	<b>\$ 32.3</b>	<b>\$ 7.1</b>	<b>\$ 33,000.8</b>	<b>\$ 180.1</b>	<b>\$ 33,180.9</b>
				Other Real Estate Owned	\$	8.2	
				Total Nonperforming Assets	\$	188.3	

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

**TABLE 64: IMPAIRED LOANS**

(In Millions)	AS OF DECEMBER 31, 2016			AS OF DECEMBER 31, 2015		
	RECORDED INVESTMENT	UNPAID PRINCIPAL BALANCE	SPECIFIC ALLOWANCE	RECORDED INVESTMENT	UNPAID PRINCIPAL BALANCE	SPECIFIC ALLOWANCE
With no related specific allowance						
Commercial and Institutional	\$ 32.2	\$ 34.6	\$ —	\$ 27.1	\$ 30.7	\$ —
Commercial Real Estate	14.7	18.6	—	17.2	21.2	—
Lease Financing, net	—	—	—	—	—	—
Residential Real Estate	101.2	138.4	—	99.3	140.7	—
Private Client	0.3	0.3	—	0.2	0.2	—
With a related specific allowance						
Commercial and Institutional	—	—	—	9.3	11.4	1.6
Commercial Real Estate	—	—	—	—	1.4	—
Lease Financing, net	—	—	—	2.7	2.7	1.4
Residential Real Estate	7.7	7.9	2.1	1.5	1.5	0.1
Private Client	—	—	—	—	—	—
Total						
Commercial	46.9	53.2	—	56.3	67.4	3.0
Personal	109.2	146.6	2.1	101.0	142.4	0.1
Total	\$ 156.1	\$ 199.8	\$ 2.1	\$ 157.3	\$ 209.8	\$ 3.1

(In Millions)	YEAR ENDED DECEMBER 31, 2016		YEAR ENDED DECEMBER 31, 2015	
	AVERAGE RECORDED INVESTMENT	INTEREST INCOME RECOGNIZED	AVERAGE RECORDED INVESTMENT	INTEREST INCOME RECOGNIZED
With no related specific allowance				
Commercial and Institutional	\$ 33.1	\$ —	\$ 14.4	\$ —
Commercial Real Estate	17.0	0.3	31.9	0.5
Lease Financing, net	0.6	0.1	0.9	0.1
Residential Real Estate	96.9	1.9	142.9	1.7
Private Client	1.2	—	0.3	—
With a related specific allowance				
Commercial and Institutional	7.6	—	8.5	—
Commercial Real Estate	—	—	6.9	—
Lease Financing, net	1.2	—	2.2	—
Residential Real Estate	2.1	—	4.4	—
Private Client	—	—	0.4	—
Total				
Commercial	59.5	0.4	64.8	0.6
Personal	100.2	1.9	148.0	1.7
Total	\$ 159.7	\$ 2.3	\$ 212.8	\$ 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 \$8.5 million in 2016, \$8.1 million in 2015, and \$9.1 million in 2014.

There were \$2.3 million and \$3.1 million of aggregate undrawn loan commitments and standby letters of credit at December 31, 2016 and 2015, respectively, issued to borrowers whose loans were classified as nonperforming or impaired.

**Troubled Debt Restructurings (TDRs).** Included within impaired loans were \$85.2 million and \$79.2 million of nonperforming TDRs and \$42.4 million and \$37.9 million of performing TDRs as of December 31, 2016 and 2015, respectively.

The following tables provide, by segment and class, the number of loans and leases modified in TDRs during the years ended December 31, 2016, and 2015, and the recorded investments and unpaid principal balances as of December 31, 2016 and 2015.

**TABLE 65: TROUBLED DEBT RESTRUCTURINGS**

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

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
<b>December 31, 2015</b>			
Commercial			
Commercial and Institutional	3	\$ 24.6	\$ 26.1
Commercial Real Estate	4	1.8	2.0
<b>Total Commercial</b>	<b>7</b>	<b>26.4</b>	<b>28.1</b>
Personal			
Residential Real Estate	128	27.9	34.2
Private Client	1	0.6	0.6
<b>Total Personal</b>	<b>129</b>	<b>28.5</b>	<b>34.8</b>
<b>Total Loans and Leases</b>	<b>136</b>	<b>\$ 54.9</b>	<b>\$ 62.9</b>

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

TDR modifications primarily involve interest rate concessions, extensions of term, deferrals of principal, 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, 2016 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, 2016, the majority of TDR modifications of loans within commercial and institutional, commercial real estate, and private client classes were primarily extensions of term or other modification. During the year ended December 31, 2015, TDR modifications of loans within commercial and institutional, commercial real estate, lease financing, and private client classes were primarily deferrals of principal, extensions of term, and other modifications; modifications of residential real estate loans were primarily deferrals of principal, extensions of term, interest rate concessions and other modifications.

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. There were ten loans or leases modified in TDRs during the previous twelve-month periods which subsequently became nonperforming during the year ended December 31, 2015.

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, 2016 and 2015, Northern Trust held foreclosed residential real estate properties with a carrying value of \$4.6 million and \$7.9 million, respectively, as a result of obtaining physical possession. In addition, as of

December 31, 2016 and 2015, Northern Trust had consumer loans with a carrying value of \$25.9 million and \$24.5 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 66: CHANGES IN THE ALLOWANCE FOR CREDIT LOSSES**

(In Millions)	2016			2015			2014		
	COMMERCIAL	PERSONAL	TOTAL	COMMERCIAL	PERSONAL	TOTAL	COMMERCIAL	PERSONAL	TOTAL
Balance at Beginning of Year	\$ 114.8	\$ 118.5	\$ 233.3	\$ 169.7	\$ 126.2	\$ 295.9	\$ 168.0	\$ 139.9	\$ 307.9
Charge-Offs	(16.6)	(10.7)	(27.3)	(13.1)	(17.6)	(30.7)	(12.9)	(23.2)	(36.1)
Recoveries	4.8	7.3	12.1	5.5	5.7	11.2	11.1	7.0	18.1
Net (Charge-Offs) Recoveries	(11.8)	(3.4)	(15.2)	(7.6)	(11.9)	(19.5)	(1.8)	(16.2)	(18.0)
Provision for Credit Losses	2.0	(28.0)	(26.0)	(47.2)	4.2	(43.0)	3.5	2.5	6.0
Effects of Foreign Exchange Rates	(0.1)	—	(0.1)	(0.1)	—	(0.1)	—	—	—
Balance at End of Year	\$ 104.9	\$ 87.1	\$ 192.0	\$ 114.8	\$ 118.5	\$ 233.3	\$ 169.7	\$ 126.2	\$ 295.9
Allowance for Credit Losses Assigned to:									
Loans and Leases	\$ 83.7	\$ 77.3	\$ 161.0	\$ 86.3	\$ 107.5	\$ 193.8	\$ 143.8	\$ 123.2	\$ 267.0
Undrawn Commitments and Standby Letters of Credit	21.2	9.8	31.0	28.5	11.0	39.5	25.9	3.0	28.9
Total Allowance for Credit Losses	\$ 104.9	\$ 87.1	\$ 192.0	\$ 114.8	\$ 118.5	\$ 233.3	\$ 169.7	\$ 126.2	\$ 295.9

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, 2016 and 2015.

**TABLE 67: RECORDED INVESTMENTS IN LOANS AND LEASES**

(In Millions)	COMMERCIAL	PERSONAL	TOTAL
<b>December 31, 2016</b>			
Loans and Leases			
Specifically Evaluated for Impairment	\$ 46.9	\$ 109.2	\$ 156.1
Evaluated for Inherent Impairment	15,855.4	17,810.6	33,666.0
<b>Total Loans and Leases</b>	<b>15,902.3</b>	<b>17,919.8</b>	<b>33,822.1</b>
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
<b>Allowance Assigned to Loans and Leases</b>	<b>83.7</b>	<b>77.3</b>	<b>161.0</b>
Allowance for Undrawn Exposures			
Commitments and Standby Letters of Credit	21.2	9.8	31.0
<b>Total Allowance for Credit Losses</b>	<b>\$ 104.9</b>	<b>\$ 87.1</b>	<b>\$ 192.0</b>

(In Millions)	COMMERCIAL	PERSONAL	TOTAL
<b>December 31, 2015</b>			
Loans and Leases			
Specifically Evaluated for Impairment	\$ 56.3	\$ 101.0	\$ 157.3
Evaluated for Inherent Impairment	15,100.2	17,923.4	33,023.6
<b>Total Loans and Leases</b>	<b>15,156.5</b>	<b>18,024.4</b>	<b>33,180.9</b>
Allowance for Credit Losses on Credit Exposures			
Specifically Evaluated for Impairment	3.0	0.1	3.1
Evaluated for Inherent Impairment	83.3	107.4	190.7
<b>Allowance Assigned to Loans and Leases</b>	<b>86.3</b>	<b>107.5</b>	<b>193.8</b>
Allowance for Undrawn Exposures			
Commitments and Standby Letters of Credit	28.5	11.0	39.5
<b>Total Allowance for Credit Losses</b>	<b>\$ 114.8</b>	<b>\$ 118.5</b>	<b>\$ 233.3</b>

### 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 \$6.8 billion and \$8.5 billion at December 31, 2016 and 2015, respectively, and noninterest-bearing demand balances maintained at correspondent banks, which totaled \$1.9 billion and \$2.7 billion at December 31, 2016 and 2015, 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, 2016, residential real estate loans totaled \$7.8 billion, or 25% of total U.S. loans at December 31, 2016, compared with \$8.9 billion, or 28% of total U.S. loans at December 31, 2015. 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 \$7.8 billion in residential real estate loans, \$2.1 billion were in Florida, \$1.7 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 \$1.2 billion and \$1.4 billion at December 31, 2016 and 2015, 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, Florida, California, 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 68: COMMERCIAL REAL ESTATE LOANS**

(In Millions)	DECEMBER 31,	
	2016	2015
Commercial Mortgages		
Office	\$ 866.1	\$ 830.4
Apartment/ Multi-family	784.8	770.1
Retail	698.1	683.3
Industrial/ Warehouse	359.7	310.5
Other	457.6	442.3
Total Commercial Mortgages	3,166.3	3,036.6
Construction, Acquisition and Development Loans	445.0	392.8
Single Family Investment	179.6	147.4
Other Commercial Real Estate Related	211.6	272.0
Total Commercial Real Estate Loans	\$ 4,002.5	\$ 3,848.8

## Note 9 – Buildings and Equipment

A summary of buildings and equipment is presented below.

**TABLE 69: BUILDINGS AND EQUIPMENT**

(In Millions)	DECEMBER 31, 2016		
	ORIGINAL COST	ACCUMULATED DEPRECIATION	NET BOOK VALUE
Land and Improvements	\$ 26.5	\$ 0.8	\$ 25.7
Buildings	247.2	134.7	112.5
Equipment	524.8	344.4	180.4
Leasehold Improvements	357.9	236.1	121.8
Buildings Leased under Capital Leases	80.0	53.8	26.2
Total Buildings and Equipment	\$ 1,236.4	\$ 769.8	\$ 466.6

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 \$89.2 million in 2016, \$90.4 million in 2015, and \$90.6 million in 2014.



**Note 10 – Lease Commitments**

At December 31, 2016, 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, 2016, for all non-cancelable operating leases with a term of one year or more are as follows:

**TABLE 70: MINIMUM LEASE PAYMENTS**

(In Millions)	FUTURE MINIMUM LEASE PAYMENTS
2017	\$ 91.0
2018	85.5
2019	74.7
2020	72.3
2021	61.0
Later Years	201.4
Total Minimum Lease Payments	585.9
Less: Sublease Rentals	(22.9)
Net Minimum Lease Payments	\$ 563.0

Operating lease rental expense, net of rental income, is recorded in occupancy expense and amounted to \$76.1 million in 2016, \$71.6 million in 2015, and \$73.2 million in 2014.

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, 2016.

**TABLE 71: PRESENT VALUE UNDER CAPITAL LEASE OBLIGATIONS**

(In Millions)	FUTURE MINIMUM LEASE PAYMENTS, NET
2017	\$ 9.3
2018	9.5
2019	8.7
2020	(1.7)
2021	—
Later Years	—
Total Minimum Lease Payments, net	25.8
Less: Amount Representing Interest	(2.8)
Net Present Value under Capital Lease Obligations	\$ 23.0

**Note 11 – Goodwill and Other Intangibles**

**Goodwill.** Changes by reporting segment in the carrying amount of goodwill for the years ended December 31, 2016 and 2015, including the effect of foreign exchange rates on non-U.S.-dollar-denominated balances, were as follows:

**TABLE 72: GOODWILL**

(In Millions)	CORPORATE & INSTITUTIONAL SERVICES		WEALTH MANAGEMENT		TOTAL
Balance at December 31, 2014	\$	461.8	\$	71.4	\$ 533.2
Foreign Exchange Rates		(6.7)		(0.1)	(6.8)
Balance at December 31, 2015	\$	455.1	\$	71.3	\$ 526.4
Goodwill Acquired		<b>11.8</b>		—	<b>11.8</b>
Foreign Exchange Rates		<b>(18.5)</b>		<b>(0.3)</b>	<b>(18.8)</b>
Balance at December 31, 2016	<b>\$</b>	<b>448.4</b>	<b>\$</b>	<b>71.0</b>	<b>\$ 519.4</b>

**Other Intangible Assets Subject to Amortization.** The gross carrying amount and accumulated amortization of other intangible assets subject to amortization as of December 31, 2016 and 2015 were as follows:

**TABLE 73: OTHER INTANGIBLE ASSETS**

(In Millions)	DECEMBER 31,			
		2016		2015
Gross Carrying Amount	\$	<b>89.0</b>	\$	182.3
Accumulated Amortization		<b>47.2</b>		135.8
Net Book Value	<b>\$</b>	<b>41.8</b>	<b>\$</b>	46.5

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 \$8.8 million, \$10.9 million, and \$19.5 million for the years ended December 31, 2016, 2015, and 2014, respectively. Amortization for the years 2017, 2018, 2019, 2020, and 2021 is estimated to be \$8.8 million, \$8.1 million, \$8.0 million, \$7.9 million, and \$5.7 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 \$11.8 million and \$4.5 million, respectively.

**Note 12 – Senior Notes and Long-Term Debt**

**Senior Notes.** A summary of senior notes outstanding at December 31, 2016 and 2015 is presented below.

**TABLE 74: SENIOR NOTES**

(\$ In Millions)	RATE	DECEMBER 31,	
		2016	2015
Corporation-Senior Notes <sup>(1)(4)</sup>			
Fixed Rate Due Nov. 2020 <sup>(5)</sup>	3.45% \$	\$ 499.4	\$ 499.7
Fixed Rate Due Aug. 2021 <sup>(6)</sup>	3.38	498.5	498.7
Fixed Rate Due Aug. 2022 <sup>(7)</sup>	2.38	498.7	499.0
Total Senior Notes	\$	\$ 1,496.6	\$ 1,497.4

**Long-Term Debt.** A summary of long-term debt outstanding at December 31, 2016 and 2015 is presented below.

**TABLE 75: LONG-TERM DEBT**

(\$ In Millions)	DECEMBER 31,	
	2016	2015
Bank-Subordinated Debt <sup>(1)(4)</sup>		
5.85% Notes due Nov. 2017 <sup>(2)(10)</sup>	\$	\$ 207.6
6.50% Notes due Aug. 2018 <sup>(2)(8)(10)</sup>		315.3
Total Bank-Subordinated Debt		522.9
Corporation-Subordinated 3.95% Notes due Oct. 2025 <sup>(1)(4)(9)(10)</sup>		785.0
Capital Lease Obligations <sup>(3)</sup>		23.0
Total Long-Term Debt	\$	\$ 1,330.9
Long-Term Debt Qualifying as Risk-Based Capital	\$	\$ 809.3

(1) Not redeemable prior to maturity.

(2) 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.

(3) Refer to Note 10, "Lease Commitments."

(4) As of December 31, 2016, debt issue costs of \$1.1 million and \$1.0 million are included as a direct deduction from the carrying amount of Senior Notes and Long-Term Debt, respectively. As of December 31, 2015, debt issue costs of \$2.6 million were recorded as an asset. Debt issue costs are amortized on a straight-line basis over the life of the Note.

(5) Notes issued at a discount of 0.117%.

(6) Notes issued at a discount of 0.437%.

(7) Notes issued at a discount of 0.283%.

(8) Notes issued at a discount of 0.02%.

(9) Notes issued at a discount of 0.114%.

(10) 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, 2016, increases in the carrying values of subordinated notes outstanding of \$59.6 million were recorded. As of December 31, 2015, net adjustments in the carrying values of subordinated notes outstanding of \$92.4 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 2016, 60% 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, 2016 and 2015.

**TABLE 76: SUBORDINATED DEBENTURES**

(In Millions)	DECEMBER 31,	
	2016	2015
NTC Capital I Subordinated Debentures due January 15, 2027	\$ 154.1	\$ 154.1
NTC Capital II Subordinated Debentures due April 15, 2027	123.3	123.2
Total Subordinated Debentures	\$ 277.4	\$ 277.3

## 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.

On August 8, 2016, the Corporation issued and sold 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"). 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). The aggregate proceeds from the public offering of the depositary shares, net of underwriting discounts, commissions and offering expenses, were \$493.5 million.

Dividends on the Series D Preferred Stock, which are not mandatory, will accrue and be 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 will be payable in arrears on the 1st day of April and October of each year, commencing on April 1, 2017, to 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 may be redeemed at the Corporation's option in whole, or in part, on any dividend payment date on or after October 1, 2026 at a redemption price equal to \$100,000 per share (equivalent to \$1,000 per depositary share), plus any declared and unpaid dividends, without accumulation of any undeclared dividends. The Series D Preferred Stock may be redeemed 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, 2016, 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, 2016 and December 31, 2015 totaled \$388.5 million. Series C Preferred Stock has no par value and has a liquidation preference of \$25,000 (\$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, commencing on January 1, 2015, 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.** The Corporation's current common stock repurchase authorization was approved by the Board in April of 2015. The repurchased shares are used for general purposes of the Corporation, including management of the Corporation's capital level and the issuance of shares under stock option and other incentive plans of the Corporation.

Under the Corporation's 2016 Capital Plan, which was reviewed without objection by the Federal Reserve, the Corporation may repurchase up to \$145.0 million of common stock after December 31, 2016, through June 2017.

The average price paid per share for common stock repurchased in 2016, 2015, and 2014 was \$67.91, \$72.52, and \$64.20, respectively.

An analysis of changes in the number of shares of common stock outstanding follows:

**TABLE 77: SHARES OF COMMON STOCK**

	2016	2015	2014
Balance at January 1	229,293,783	233,390,705	237,322,035
Incentive Plan and Awards	1,209,124	1,033,664	1,040,015
Stock Options Exercised	4,156,728	1,721,282	2,515,769
Treasury Stock Purchased	(6,054,150)	(6,851,868)	(7,487,114)
Balance at December 31	228,605,485	229,293,783	233,390,705

**Note 15 – Accumulated Other Comprehensive Income (Loss)**

The following tables summarize the components of AOCI at December 31, 2016, 2015, and 2014, and changes during the years then ended.

**TABLE 78: SUMMARY OF CHANGES IN ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)**

(In Millions)	BALANCE AT DECEMBER 31, 2016	NET CHANGE	BALANCE AT DECEMBER 31, 2015	NET CHANGE	BALANCE AT DECEMBER 31, 2014	NET CHANGE	BALANCE AT DECEMBER 31, 2013
Net Unrealized (Losses) Gains on Securities Available for Sale	\$ (32.4)	\$ (1.4)	\$ (31.0)	\$ (58.6)	\$ 27.6	\$ 21.6	\$ 6.0
Net Unrealized Gains (Losses) on Cash Flow Hedges	6.1	9.1	(3.0)	1.7	(4.7)	(7.6)	2.9
Net Foreign Currency Adjustments	(18.5)	(0.9)	(17.6)	(15.9)	(1.7)	(8.8)	7.1
Net Pension and Other Postretirement Benefit Adjustments	(325.2)	(4.1)	(321.1)	19.8	(340.9)	(80.6)	(260.3)
Total	\$ (370.0)	\$ 2.7	\$ (372.7)	\$ (53.0)	\$ (319.7)	\$ (75.4)	\$ (244.3)

**TABLE 79: DETAILS OF CHANGES IN ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,								
	2016			2015			2014		
	BEFORE TAX	TAX EFFECT	AFTER TAX	BEFORE TAX	TAX EFFECT	AFTER TAX	BEFORE TAX	TAX EFFECT	AFTER TAX
<b>Unrealized Gains (Losses) on Securities Available for Sale</b>									
Noncredit-Related Unrealized Losses on Securities OTTI	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —	\$ 4.5	\$ (1.7)	\$ 2.8
Other Unrealized (Losses) Gains on Securities Available for Sale	(1.8)	0.7	(1.1)	(94.3)	35.5	(58.8)	30.1	(11.4)	18.7
Reclassification Adjustment for (Gains) Losses Included in Net Income	(0.5)	0.2	(0.3)	0.3	(0.1)	0.2	0.1	—	0.1
<b>Net Change</b>	<b>\$ (2.3)</b>	<b>\$ 0.9</b>	<b>\$ (1.4)</b>	<b>\$ (94.0)</b>	<b>\$ 35.4</b>	<b>\$ (58.6)</b>	<b>\$ 34.7</b>	<b>\$ (13.1)</b>	<b>\$ 21.6</b>
<b>Unrealized (Losses) Gains on Cash Flow Hedges</b>									
Unrealized (Losses) Gains on Cash Flow Hedges	\$ 4.4	\$ 5.9	\$ 10.3	\$ (1.2)	\$ 0.2	\$ (1.0)	\$ (8.7)	\$ 3.6	\$ (5.1)
Reclassification Adjustment for (Gains) Losses Included in Net Income	(1.9)	0.7	(1.2)	4.7	(2.0)	2.7	(4.0)	1.5	(2.5)
<b>Net Change</b>	<b>\$ 2.5</b>	<b>\$ 6.6</b>	<b>\$ 9.1</b>	<b>\$ 3.5</b>	<b>\$ (1.8)</b>	<b>\$ 1.7</b>	<b>\$ (12.7)</b>	<b>\$ 5.1</b>	<b>\$ (7.6)</b>
<b>Foreign Currency Adjustments</b>									
Foreign Currency Translation Adjustments	\$ (126.5)	\$ (3.1)	\$ (129.6)	\$ (101.5)	\$ 4.9	\$ (96.6)	\$ (107.8)	\$ 10.8	\$ (97.0)
Long-Term Intra-Entity Foreign Currency Transaction Losses	(5.3)	2.0	(3.3)	(18.7)	7.1	(11.6)	(1.0)	0.4	(0.6)
<b>Net Investment Hedge Gains (Losses)</b>	<b>212.4</b>	<b>(80.4)</b>	<b>132.0</b>	<b>148.6</b>	<b>(56.3)</b>	<b>92.3</b>	<b>142.6</b>	<b>(53.8)</b>	<b>88.8</b>
<b>Net Change</b>	<b>\$ 80.6</b>	<b>\$ (81.5)</b>	<b>\$ (0.9)</b>	<b>\$ 28.4</b>	<b>\$ (44.3)</b>	<b>\$ (15.9)</b>	<b>\$ 33.8</b>	<b>\$ (42.6)</b>	<b>\$ (8.8)</b>
<b>Pension and Other Postretirement Benefit Adjustments</b>									
Net Actuarial Gains (Losses)	\$ (31.1)	\$ 11.2	\$ (19.9)	\$ (12.2)	\$ 8.2	\$ (4.0)	\$ (137.8)	\$ 41.5	\$ (96.3)
Reclassification Adjustment for Losses Included in Net Income	25.4	(9.6)	15.8	38.3	(14.5)	23.8	25.2	(9.5)	15.7
<b>Net Change</b>	<b>\$ (5.7)</b>	<b>\$ 1.6</b>	<b>\$ (4.1)</b>	<b>\$ 26.1</b>	<b>\$ (6.3)</b>	<b>\$ 19.8</b>	<b>\$ (112.6)</b>	<b>\$ 32.0</b>	<b>\$ (80.6)</b>

The following table provides the location and before-tax amounts of reclassifications out of AOCI during the years ended December 31, 2016, 2015 and 2014.

**TABLE 80: RECLASSIFICATION ADJUSTMENT OUT OF ACCUMULATED OTHER COMPREHENSIVE INCOME**

(In Millions)	LOCATION OF RECLASSIFICATION ADJUSTMENTS RECOGNIZED IN INCOME	AMOUNT OF RECLASSIFICATION ADJUSTMENTS RECOGNIZED IN INCOME YEAR ENDED DECEMBER 31,		
		2016	2015	2014
<b>Securities Available for Sale</b>				
Realized Losses on Securities Available for Sale	Investment Security Losses, net	\$ (0.5)	\$ 0.3	\$ 0.1
<b>Realized (Gains) Losses on Cash Flow Hedges</b>				
Foreign Exchange Contracts	Other Operating Income/ Expense	(1.9)	4.7	(4.0)
<b>Pension and Other Postretirement Benefit Adjustments</b>				
Amortization of Net Actuarial Losses	Employee Benefits	25.6	38.5	25.1
Amortization of Prior Service Cost	Employee Benefits	(0.2)	(0.2)	0.1
<b>Gross Reclassification Adjustment</b>		<b>\$ 25.4</b>	<b>\$ 38.3</b>	<b>\$ 25.2</b>

**Note 16 – Net Income per Common Share**

The computations of net income per common share are presented below.

**TABLE 81: NET INCOME PER COMMON SHARE**

(\$ In Millions Except Per Common Share Information)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
<b>BASIC NET INCOME PER COMMON SHARE</b>			
Average Number of Common Shares Outstanding	227,580,584	232,279,849	235,829,790
Net Income	\$ 1,032.5	\$ 973.8	\$ 811.8
Less: Dividends on Preferred Stock	23.4	23.4	9.5
Net Income Applicable to Common Stock	\$ 1,009.1	\$ 950.4	\$ 802.3
Less: Earnings Allocated to Participating Securities	18.7	15.4	13.3
Earnings Allocated to Common Shares Outstanding	990.4	935.0	789.0
Basic Net Income Per Common Share	4.35	4.03	3.34
<b>DILUTED NET INCOME PER COMMON SHARE</b>			
Average Number of Common Shares Outstanding	227,580,584	232,279,849	235,829,790
Plus Dilutive Effect of Share-based Compensation	1,570,822	1,941,880	1,890,465
Average Common and Potential Common Shares	229,151,406	234,221,729	237,720,255
Earnings Allocated to Common and Potential Common Shares	\$ 990.4	\$ 935.0	\$ 789.0
Diluted Net Income Per Common Share	4.32	3.99	3.32

*Note: For the year ended December 31, 2016, there were no common stock equivalents excluded in the computation of diluted net income per common share. Common stock equivalents totaling 371,059, and 1,517,588 for the years ended December 31, 2015 and 2014, 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 82: NET INTEREST INCOME**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
<b>Interest Income</b>			
Loans and Leases	\$ 806.5	\$ 731.9	\$ 735.9
Securities – Taxable	428.8	332.2	274.9
– Non-Taxable	7.5	4.8	7.2
Interest-Bearing Due from and Deposits with Banks <sup>(1)</sup>	64.3	84.9	97.2
Federal Reserve and Other Central Bank Deposits and Other	109.8	70.2	71.7
<b>Total Interest Income</b>	<b>\$ 1,416.9</b>	<b>\$ 1,224.0</b>	<b>\$ 1,186.9</b>
<b>Interest Expense</b>			
Deposits	\$ 83.5	\$ 74.3	\$ 81.7
Federal Funds Purchased	1.5	0.7	1.3
Securities Sold under Agreements to Repurchase	2.3	0.3	0.4
Other Borrowings	18.0	5.0	3.4
Senior Notes	46.8	46.8	54.7
Long-Term Debt	26.4	24.4	37.7
Floating Rate Capital Debt	3.5	2.4	2.2
<b>Total Interest Expense</b>	<b>\$ 182.0</b>	<b>\$ 153.9</b>	<b>\$ 181.4</b>
<b>Net Interest Income</b>	<b>\$ 1,234.9</b>	<b>\$ 1,070.1</b>	<b>\$ 1,005.5</b>

(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 83: Other Operating Income**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
Loan Service Fees	\$ 56.6	\$ 59.1	\$ 62.7
Banking Service Fees	50.6	48.2	49.6
Other Income	134.0	139.8	41.2
<b>Total Other Operating Income</b>	<b>\$ 241.2</b>	<b>\$ 247.1</b>	<b>\$ 153.5</b>

Other income in 2016 includes a \$123.1 million net gain on the sale of 1.1 million Visa Class B common shares. Other income in 2015 includes 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 84: OTHER OPERATING EXPENSE**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
Business Promotion	\$ 83.6	\$ 85.1	\$ 79.7
FDIC Insurance Premiums	31.7	25.2	22.0
Staff Related	43.0	40.5	39.1
Other Intangibles Amortization	8.8	10.9	19.5
Other Expenses	197.3	166.3	111.8
Total Other Operating Expense	\$ 364.4	\$ 328.0	\$ 272.1

Other expenses in the second quarter of 2016 included a charge in connection with an agreement to settle certain securities lending litigation of \$46.5 million, and charges related to contractual modifications associated with existing C&IS clients of \$18.6 million. In the third quarter of 2016, there was a \$3.5 million charge to settle securities lending litigation that had not been part of the second quarter settlement. Other expenses in 2015 includes 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 85: INCOME TAXES**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
Tax at Statutory Rate	\$ 531.0	\$ 512.7	\$ 416.6
Tax Exempt Income	(7.2)	(4.8)	(4.9)
Leveraged Lease Adjustments	0.2	0.1	(3.4)
Foreign Tax Rate Differential	(50.9)	(44.2)	(44.1)
State Taxes, net	30.0	33.0	29.6
Other	(18.5)	(5.6)	(15.4)
Provision for Income Taxes	\$ 484.6	\$ 491.2	\$ 378.4

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, state or local tax authorities for years before 2011, or non-U.S. tax authorities for years before 2007.

Included in other liabilities within the consolidated balance sheets at December 31, 2016 and 2015 were \$17.2 million and \$12.3 million of unrecognized tax benefits, respectively. If recognized, 2016 and 2015 net income would have increased by \$11.9 million and \$8.7 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 86: UNRECOGNIZED TAX BENEFITS**

(In Millions)	2016	2015
Balance at January 1	\$ 12.3	\$ 11.9
Additions for Tax Positions Taken in Prior Years	6.6	3.9
Reductions for Tax Positions Taken in Prior Years	(1.2)	(2.7)
Reductions Resulting from Expiration of Statutes	(0.5)	(0.8)
Balance at December 31,	\$ 17.2	\$ 12.3

Unrecognized tax benefits had net increases of \$4.9 million, resulting in a remaining balance of \$17.2 million at December 31, 2016, compared to net increases of \$0.4 million resulting in a remaining balance of \$12.3 million at December 31, 2015. 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 benefit for interest and penalties of \$1.6 million, net of tax, was included in the provision for income taxes for the year ended December 31, 2016. This compares to a provision of interest and penalties of \$0.1 million, net of tax, for the year ended December 31, 2015. As of December 31, 2016 and 2015, the liability for the potential payment of interest and penalties totaled \$9.9 million and \$11.3 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 \$237.1 million, \$257.4 million, and \$177.4 million of 2016, 2015, and 2014 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, 2016, the cumulative amount of undistributed pre-tax earnings in these subsidiaries was approximately \$1.6 billion. Based on the current U.S. federal income tax rate, an additional deferred tax liability of approximately \$356.0 million would have been required as of December 31, 2016, if Northern Trust had not elected to indefinitely reinvest those earnings.

The components of the consolidated provision for income taxes for each of the three years ended December 31 are as follows:

**TABLE 87: PROVISION FOR INCOME TAXES**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
Current Tax Provision:			
Federal	\$ 495.8	\$ 489.8	\$ 291.5
State	65.3	64.5	47.2
Non-U.S.	99.3	83.1	76.1
Total	660.4	637.4	414.8
Deferred Tax Provision:			
Federal	(159.0)	(131.1)	(31.1)
State	(18.9)	(13.6)	(1.6)
Non-U.S.	2.1	(1.5)	(3.7)
Total	(175.8)	(146.2)	(36.4)
Provision for Income Taxes	\$ 484.6	\$ 491.2	\$ 378.4

In addition to the amounts shown above, tax charges and benefits have been recorded directly to stockholders' equity for the following:

**TABLE 88: TAX CHARGES AND BENEFITS RECORDED DIRECTLY TO STOCKHOLDERS' EQUITY**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
Current Tax Benefit (Charge) for Employee Stock Options and Other Stock-Based Plans	\$ (7.6)	\$ 17.7	\$ 8.8
Tax Effect of Other Comprehensive Income	72.4	17.0	18.6

Deferred taxes result from temporary differences between the amounts reported in the consolidated financial statements and the tax bases of assets and liabilities. Deferred tax liabilities and assets have been computed as follows:

**TABLE 89: NET DEFERRED TAX LIABILITIES**

(In Millions)	DECEMBER 31,		
	2016	2015	2014
Deferred Tax Liabilities:			
Lease Financing	\$ 148.7	\$ 272.6	\$ 388.6
Software Development	352.0	339.9	316.1
Accumulated Depreciation	26.0	20.6	24.1
Compensation and Benefits	50.2	70.7	63.5
State Taxes, net	33.3	48.8	62.3
Other Liabilities	243.1	169.1	157.5
Gross Deferred Tax Liabilities	853.3	921.7	1,012.1
Deferred Tax Assets:			
Allowance for Credit Losses	67.2	81.7	103.5
Other Assets	233.8	185.0	126.7
Gross Deferred Tax Assets	301.0	266.7	230.2
Valuation Reserve	(0.9)	(1.6)	(3.9)
Deferred Tax Assets, net of Valuation Reserve	300.1	265.1	226.3
Net Deferred Tax Liabilities	\$ 553.2	\$ 656.6	\$ 785.8

Northern Trust had various state net operating loss carryforwards as of December 31, 2016, 2015, and 2014. The income tax benefits associated with these loss carryforwards were approximately \$0.9 million as of December 31, 2016, \$1.6 million as of December 31, 2015, and \$3.9 million as of December 31, 2014. A valuation allowance of \$0.9 million was recorded at December 31, 2016, \$1.6 million as of December 31, 2015, and \$3.9 million as of December 31, 2014, 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, 2016, 2015, and 2014, 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 various European subsidiaries retain benefits in local defined benefit plans, although those plans are closed to new participants and to future benefit accruals.

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, 2016 and 2015 amounted to \$106.9 million and \$106.1 million, respectively. Contributions of \$8.5 million and \$16.5 million were made to the “Rabbi” Trust in 2016 and 2015, 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 2016, 2015, and 2014. Prior service costs are being amortized on a straight-line basis over 11 years for the U.S. plan and 10 years for the supplemental plan.

**TABLE 90: EMPLOYEE BENEFIT PLAN STATUS**

(\$ In Millions)	U.S. PLAN			NON-U.S. PLANS		SUPPLEMENTAL PLAN	
	2016	2015		2016	2015	2016	2015
Accumulated Benefit Obligation	\$ 953.2	\$ 903.4	\$ 158.3	\$ 156.5	\$ 108.9	\$ 102.1	
Projected Benefit Obligation	1,062.7	1,006.5	155.9	156.5	121.1	113.9	
Plan Assets at Fair Value	1,393.5	1,342.0	139.3	144.3	—	—	
Funded Status at December 31	\$ 330.8	\$ 335.5	\$ (16.6)	\$ (12.2)	\$ (121.1)	\$ (113.9)	
Weighted-Average Assumptions:							
Discount Rates	4.46%	4.71%	2.39%	3.39%	4.46%	4.71%	
Rate of Increase in Compensation Level	4.39	4.25	N/A	N/A	4.39	4.25	
Expected Long-Term Rate of Return on Assets	6.75	7.00	3.22	3.73	N/A	N/A	

**TABLE 91: AMOUNTS INCLUDED IN ACCUMULATED OTHER COMPREHENSIVE INCOME**

(In Millions)	U.S. PLAN			NON-U.S. PLANS		SUPPLEMENTAL PLAN	
	2016	2015		2016	2015	2016	2015
Net Actuarial Loss	\$ 378.1	\$ 381.0	\$ 55.8	\$ 51.6	\$ 67.4	\$ 66.1	
Prior Service Cost	(2.3)	(2.7)	—	—	0.8	1.0	
Gross Amount in Accumulated Other Comprehensive Income	375.8	378.3	55.8	51.6	68.2	67.1	
Income Tax Effect	142.3	143.1	6.7	5.9	25.8	25.3	
Net Amount in Accumulated Other Comprehensive Income	\$ 233.5	\$ 235.2	\$ 49.1	\$ 45.7	\$ 42.4	\$ 41.8	

**TABLE 92: NET PERIODIC PENSION EXPENSE**

(\$ In Millions)	U.S. PLAN			NON-U.S. PLANS			SUPPLEMENTAL PLAN		
	2016	2015	2014	2016	2015	2014	2016	2015	2014
Service Cost	\$ 37.4	\$ 37.8	\$ 32.7	\$ —	\$ —	\$ —	\$ 3.5	\$ 3.6	\$ 3.1
Interest Cost	45.8	44.7	44.4	4.7	5.7	6.9	5.1	5.0	4.8
Expected Return on Plan Assets	(94.4)	(96.5)	(97.7)	(4.6)	(5.9)	(7.0)	N/A	N/A	N/A
Settlement Expense	—	—	—	3.7	—	—	—	—	—
Amortization:									
Net Loss (Gain)	18.8	29.7	21.5	1.0	1.5	(1.6)	5.8	7.3	5.8
Prior Service Cost	(0.4)	(0.4)	(0.4)	—	—	—	0.2	0.2	0.5
Net Periodic Pension Expense (Benefit)	\$ 7.2	\$ 15.3	\$ 0.5	\$ 4.8	\$ 1.3	\$ (1.7)	\$ 14.6	\$ 16.1	\$ 14.2
Weighted-Average Assumptions:									
Discount Rates	4.71%	4.25%	5.00%	3.39%	3.20%	4.31%	4.71%	4.25%	5.00%
Rate of Increase in Compensation Level	4.25	4.25	4.25	N/A	N/A	N/A	4.25	4.25	4.25
Expected Long-Term Rate of Return on Assets	7.00	7.25	7.75	3.73	4.00	4.84	N/A	N/A	N/A

Pension expense for 2017 is expected to include approximately \$25.9 million and \$(0.3) million related to the amortization of net loss and prior service cost balances, respectively, from AOCI.

**TABLE 93: CHANGE IN PROJECTED BENEFIT OBLIGATION**

(In Millions)	U.S. PLAN		NON-U.S. PLANS		SUPPLEMENTAL PLAN	
	2016	2015	2016	2015	2016	2015
Beginning Balance	\$ 1,006.5	\$ 1,091.5	\$ 156.5	\$ 184.6	\$ 113.9	\$ 123.0
Service Cost	37.4	37.8	—	—	3.5	3.6
Interest Cost	45.8	44.7	4.7	5.7	5.1	5.0
Actuarial (Gain) Loss	31.5	(93.7)	26.0	(12.0)	7.4	(8.1)
Settlement	—	—	(7.3)	—	—	—
Benefits Paid	(58.5)	(73.8)	(2.4)	(9.4)	(8.8)	(9.6)
Foreign Exchange Rate Changes	—	—	(21.6)	(12.4)	—	—
Ending Balance	\$ 1,062.7	\$ 1,006.5	\$ 155.9	\$ 156.5	\$ 121.1	\$ 113.9

**TABLE 94: ESTIMATED FUTURE BENEFIT PAYMENTS**

(In Millions)	U.S. PLAN	NON-U.S. PLANS	SUPPLEMENTAL PLAN
2017	\$ 69.0	\$ 2.1	\$ 9.0
2018	69.1	2.5	11.3
2019	69.8	2.2	12.6
2020	68.6	2.8	12.3
2021	69.0	3.0	11.9
2022-2026	344.4	19.3	56.2

**TABLE 95: CHANGE IN PLAN ASSETS**

(In Millions)	U.S. PLAN		NON-U.S. PLANS	
	2016	2015	2016	2015
Fair Value of Assets at Beginning of Period	\$ 1,342.0	\$ 1,440.8	\$ 144.3	\$ 157.6
Actual Return on Assets	110.0	(25.0)	21.9	1.3
Employer Contributions	—	—	4.3	4.6
Settlement	—	—	(7.3)	—
Benefits Paid	(58.5)	(73.8)	(2.4)	(9.4)
Foreign Exchange Rate Changes	—	—	(21.5)	(9.8)
Fair Value of Assets at End of Period	\$ 1,393.5	\$ 1,342.0	\$ 139.3	\$ 144.3

The minimum required and maximum deductible contributions for the U.S. qualified plan in 2016 are estimated to be zero and \$225.0 million, respectively.

A total return investment strategy approach is employed for Northern Trust's U.S. pension plan whereby a mix of U.S. and non-U.S. equities, fixed income and alternative asset investments are used to maximize the long-term return of plan assets for a prudent level of risk. This is accomplished by diversifying the portfolio across various asset classes, with the goal of reducing volatility of return, and among various issuers of securities to reduce principal risk. 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 2014, by major asset category, is 20% U.S. equities, 15% non-U.S. equities, 45% long duration fixed income securities, and 20% alternative investments, split among private equity funds (5%), hedge funds (5%), real estate (5%) and global listed infrastructure (5%). 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. 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 20% of the total limited partnership and the maximum allowable loss cannot exceed the commitment amount. The plan holds two investments in a hedge fund of funds, which invests, either directly or indirectly, in a diversified portfolio of funds or other pooled investment vehicles.

Investment in real estate is designed to provide stable income returns and added diversification based upon the historical low correlation between real estate and equity or fixed income investments. The plan's real estate assets consist of one collective index fund that invests in a diversified portfolio of global real estate investments, primarily equity securities.

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 no derivatives held by the plan at December 31, 2016 or 2015.

Investment risk is measured and monitored on an ongoing basis through quarterly 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, 2016 and 2015.

**TABLE 96: FAIR VALUE OF U.S. PENSION PLAN ASSETS**

(In Millions)	December 31, 2016				TOTAL
	LEVEL 1	LEVEL 2	LEVEL 3		
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
<b>Total Assets at Fair Value</b>	<b>128.5</b>	<b>1,164.5</b>	<b>100.5</b>	<b>—</b>	<b>1,393.5</b>

(In Millions)	December 31, 2015				TOTAL
	LEVEL 1	LEVEL 2	LEVEL 3		
Domestic Common Stock	\$ 45.4	\$ —	\$ —	\$ —	45.4
Foreign Common Stock	0.3	—	—	—	0.3
U.S. Government Obligations	—	135.7	—	—	135.7
Northern Trust Mutual Fund	64.3	—	—	—	64.3
Exchange Traded Fund	0.5	—	—	—	0.5
Northern Trust Collective Trust Funds	—	984.9	—	—	984.9
Northern Trust Private Equity Funds	—	—	47.5	—	47.5
Northern Trust Hedge Funds	—	—	63.4	—	63.4
<b>Total Assets at Fair Value</b>	<b>110.5</b>	<b>1,120.6</b>	<b>110.9</b>	<b>—</b>	<b>1,342.0</b>

The following table presents the changes in Level 3 assets for the years ended December 31, 2016 and 2015.

**TABLE 97: CHANGE IN LEVEL 3 ASSETS**

(In Millions)	PRIVATE EQUITY FUNDS		HEDGE FUNDS	
	2016	2015	2016	2015
Fair Value at January 1	\$ 47.5	\$ 49.0	\$ 63.4	\$ 68.6
Actual Return on Plan Assets	(5.6)	6.6	1.5	(0.2)
Realized Gain	—	—	—	2.6
Purchases	2.0	2.4	—	10.0
Sales	(8.2)	(10.5)	(0.1)	(17.6)
<b>Fair Value at December 31</b>	<b>\$ 35.7</b>	<b>\$ 47.5</b>	<b>\$ 64.8</b>	<b>\$ 63.4</b>

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, 2016, measurement date was set at 6.75%.

**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 2016 and 2015, and the change in the accumulated postretirement benefit obligation during 2016 and 2015.

**TABLE 98: POSTRETIREMENT HEALTH CARE PLAN STATUS**

(In Millions)	DECEMBER 31,	
	2016	2015
Accumulated Postretirement Benefit Obligation at Measurement Date:		
Retirees and Dependents	\$ 26.4	\$ 24.9
Actives Eligible for Benefits	7.7	7.3
Net Postretirement Benefit Obligation	\$ 34.1	\$ 32.2

**TABLE 99: AMOUNTS INCLUDED IN ACCUMULATED OTHER COMPREHENSIVE INCOME**

(In Millions)	DECEMBER 31,	
	2016	2015
Net Actuarial Loss / (Gain)	\$ 0.3	\$ (2.6)
Prior Service Cost	—	—
Gross Amount in Accumulated Other Comprehensive Income	0.3	(2.6)
Income Tax Effect	0.1	(1.0)
Net Amount in Accumulated Other Comprehensive Income	\$ 0.2	\$ (1.6)

**TABLE 100: NET PERIODIC POSTRETIREMENT (BENEFIT) EXPENSE**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
Service Cost	\$ 0.1	\$ 0.1	\$ 0.1
Interest Cost	1.5	1.4	1.5
Expected Return on Plan Assets	—	—	—
Amortization			
Net Gain	—	—	(0.6)
Prior Service Benefit	—	—	—
Net Periodic Postretirement Expense	\$ 1.6	\$ 1.5	\$ 1.0

**TABLE 101: CHANGE IN ACCUMULATED POSTRETIREMENT BENEFIT OBLIGATION**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,	
	2016	2015
Beginning Balance	\$ 32.2	\$ 33.4
Service Cost	0.1	0.1
Interest Cost	1.5	1.4
Actuarial Loss / (Gain)	2.7	(0.2)
Net Claims Paid	(2.4)	(2.5)
Medicare Subsidy	—	—
Ending Balance	\$ 34.1	\$ 32.2

Northern Trust uses the aggregate RP-2014 mortality table with adjustment from 2014 to 2006. Northern Trust reflects proposed future improvement under scale MP-2016, released by the Society of Actuaries in October 2016. This assumption was updated at December 31, 2016 from improvement scale MP-2015.



**TABLE 102: ESTIMATED FUTURE BENEFIT PAYMENTS**

(In Millions)	TOTAL POSTRETIREMENT MEDICAL BENEFITS
2017	\$ 2.6
2018	2.7
2019	2.7
2020	2.7
2021	2.6
2022-2026	11.8

Net periodic postretirement (benefit) expense for 2017 is not expected to include any amortization from AOCI of the net actuarial gain. The weighted average discount rate used in determining the accumulated postretirement benefit obligation was 4.46% at December 31, 2016, and 4.71% at December 31, 2015. For measurement purposes, a 7.0% annual increase in the cost of pre-age 65 medical and drug benefits and a 7.0% annual increase in the cost of post-age 65 medical and drug benefits were assumed for 2016. These rates are both assumed to gradually decrease until they reach 5.0% in 2026. 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 103: 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 \$50.0 million in 2016, and \$46.8 million in each of 2015 and 2014.

## 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 104: TOTAL COMPENSATION EXPENSE FOR SHARE-BASED PAYMENT ARRANGEMENTS TO EMPLOYEES**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
Restricted Stock Unit Awards	\$ 60.2	\$ 51.5	\$ 52.9
Stock Options	9.0	10.0	12.8
Performance Stock Units	17.6	14.9	12.0
Total Share-Based Compensation Expense	\$ 86.8	\$ 76.4	\$ 77.7
Tax Benefits Recognized	\$ 32.8	\$ 28.8	\$ 29.1

As of December 31, 2016, there was \$138.6 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 2012 Stock Plan (2012 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 2012 Plan. The 2012 Plan provides for the grant of nonqualified stock options, incentive stock options, stock appreciation rights, stock awards, stock units and performance stock units. Grants are outstanding under the 2012 Plan and the Amended and Restated Northern Trust Corporation 2002 Stock Plan

(2002 Plan), a predecessor plan. The total number of shares of the Corporation's common stock authorized for issuance under the 2012 Plan is 30,000,000 plus shares forfeited under the 2002 Plan. As of December 31, 2016, shares available for future grant under the 2012 Plan, including shares forfeited under the 2002 Plan, totaled 20,022,297.

The following describes Northern Trust's share-based payment arrangements and applies to awards under the 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, 2016, 2015, and 2014 are as follows:

**TABLE 105: WEIGHTED-AVERAGE ASSUMPTIONS USED FOR OPTIONS GRANTED**

	2016	2015	2014
Expected Term (in Years)	7.0	7.1	7.3
Dividend Yield	2.57%	2.07%	2.16%
Expected Volatility	32.3	30.4	30.1
Risk-Free Interest Rate	1.45	1.83	2.02

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, 2016, 2015, and 2014.

**TABLE 106: STOCK OPTIONS GRANTED, VESTED, AND EXERCISED**

(In Millions, Except Per Share Information)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
Weighted Average Grant-Date Per Share Fair Value of Stock Options Granted	\$ 14.84	\$ 18.72	\$ 16.22
Grant-Date Fair Value of Stock Options Vested	9.6	16.0	21.9
Stock Options Exercised			
Intrinsic Value as of Exercise Date	83.9	32.1	35.3
Cash Received	233.8	94.0	127.5
Tax Deduction Benefits Realized	80.0	30.1	12.9

The following is a summary of changes in nonvested stock options for the year ended December 31, 2016.

**TABLE 107: CHANGES IN NONVESTED STOCK OPTIONS**

NONVESTED OPTIONS	SHARES	WEIGHTED-AVERAGE GRANT-DATE FAIR VALUE PER SHARE
Nonvested at December 31, 2015	1,340,886	\$ 15.12
Granted	633,224	14.84
Vested	(709,652)	13.48
Forfeited or Cancelled	(5,298)	16.30
Nonvested at December 31, 2016	1,259,160	\$ 15.89

A summary of the status of stock options under the 2012 Plan and the 2002 Plan at December 31, 2016, and changes during the year then ended, are presented in the table below.

**TABLE 108: 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, 2015	8,271,270	\$ 55.51		
Granted	633,224	58.25		
Exercised	(4,156,728)	56.24		
Forfeited, Expired or Cancelled	(43,997)	59.99		
Options Outstanding, December 31, 2016	4,703,769	\$ 55.20	5.3	\$ 158.2
Options Exercisable, December 31, 2016	3,444,609	\$ 52.96	4.1	\$ 123.5

**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 under the terms of the 2012 Plan 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 2016 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 1,301,693, 970,317, and 1,086,241, with weighted average grant-date fair values of \$59.17, \$70.79, and \$61.17 per share, for the years ended December 31, 2016, 2015, and 2014, respectively. The total fair value of restricted stock units vested during the years ended December 31, 2016, 2015, and 2014, was \$52.3 million, \$58.1 million, and \$63.9 million, respectively.

A summary of the status of outstanding restricted stock unit awards under the 2012 Plan and the 2002 Plan at December 31, 2016, and changes during the year then ended, is presented in the table below.

**TABLE 109: OUTSTANDING RESTRICTED STOCK UNIT AWARDS**

(\$ In Millions)	NUMBER	AGGREGATE INTRINSIC VALUE
Restricted Stock Unit Awards Outstanding, December 31, 2015	3,402,970	\$ 245.3
Granted	1,301,693	
Distributed	(923,776)	
Forfeited	(85,230)	
Restricted Stock Unit Awards Outstanding, December 31, 2016	3,695,657	\$ 329.1
Units Convertible at December 31, 2016	180,025	\$ 16.0

The following is a summary of nonvested restricted stock unit awards at December 31, 2016, and changes during the year then ended.

**TABLE 110: 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, 2015	3,222,219	\$ 59.50	1.9
Granted	1,301,693	59.17	
Vested	(923,050)	50.02	
Forfeited	(85,230)	62.30	
Nonvested at December 31, 2016	3,515,632	\$ 61.80	2.0

**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 all performance stock units outstanding as of December 31, 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. Distribution of the shares is then made after vesting.

Performance stock unit grants totaled 354,606, 272,319, and 249,618 for the years ended December 31, 2016, 2015, and 2014, respectively, with weighted average grant-date fair values of \$62.67, \$61.14, and \$53.08. Performance stock units outstanding at target level performance totaled 859,502, 787,140, and 724,450 at December 31, 2016, 2015, and 2014, respectively. Performance stock units had aggregate intrinsic values of \$76.5 million, \$56.7 million, and \$48.8 million, and weighted average remaining vesting terms of 1.5 years, 1.8 years, and 2.2 years, at December 31, 2016, 2015, and 2014, respectively.

**Non-employee Director Stock Awards.** Stock units with total values of \$1.3 million (18,001 units), \$1.2 million (16,449 units), and \$1.0 million (16,770 units) were granted to non-employee directors in 2016, 2015, and 2014, 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, \$1.1 million, and \$1.0 million in 2016, 2015, and 2014, 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 \$250.7 million in 2016, \$233.0 million in 2015, and \$212.4 million in 2014.

### Note 24 – Contingent Liabilities

**Legal Proceedings.** In the normal course of business, the Corporation and its subsidiaries are routinely defendants in or parties to a number of pending and threatened legal actions, including, but not limited to, actions brought on behalf of various claimants or classes of claimants, regulatory matters, employment matters and challenges from tax authorities regarding the amount of taxes due. In certain of these actions and proceedings, claims for substantial monetary damages or adjustments to recorded tax liabilities are asserted.

Based on current knowledge, after consultation with legal counsel and after taking into account current accruals, management does not believe that losses, if any, arising from pending litigation or threatened legal actions or regulatory matters 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."

For the reasons set out in this paragraph, the outcome of some matters is inherently difficult to predict and/or the range of loss cannot be reasonably estimated. This may be the case in 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, 2016, the Corporation has estimated the range of reasonably possible loss for these matters to be from zero to approximately \$35 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.

A number of participants in Northern Trust's securities lending program, which is associated with its asset servicing business, commenced either individual lawsuits or purported class actions in which they claimed, among other things, that Northern Trust failed to exercise prudence in the investment management of the collateral received from the borrowers of the securities, resulting in losses associated with the 2008 financial crisis that they sought to recover. The cases asserted various contractual, statutory and common law claims, including claims for breach of fiduciary duty under common law and under the Employee Retirement Income Security Act (ERISA). In 2013, Northern Trust recorded a \$19.2 million charge in connection with a settlement to resolve certain claims related to two of these lawsuits. In the three months ended June 30, 2016, Northern Trust recorded a \$46.5 million charge in connection with a settlement to resolve all but one of the remaining claims. All but \$4.3 million of this settlement became final in the three months ended September 30, 2016. The remaining \$4.3 million received final court approval in January 2017. In the three months ended September 30, 2016, Northern Trust recorded a \$3.5 million charge in connection with the settlement of the one claim that had not been part of the previous settlement. Accordingly, these matters are fully resolved.

In April 2014, Northern Trust became subject to an investigation by the U.S. Securities and Exchange Commission (SEC) related to Northern Trust's securities lending activities. In November 2016, Northern Trust was informed by the SEC that it does not intend to recommend an enforcement action with respect to this matter. Accordingly, Northern Trust considers this investigation closed.

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 have not yet been scheduled. 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. 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 and 5.2 million Visa Class B common shares, which are recorded at their original cost basis of zero as of December 31, 2016 and 2015, respectively.

## 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, respectively, on these instruments, net of any cash 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 \$1.7 billion and \$1.3 billion as of December 31, 2016 and 2015, respectively, as a result of master netting arrangements and similar agreements in place. Derivative assets and liabilities recorded at December 31, 2016 also reflect reductions of \$461.3 million and \$722.1 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 \$322.8 million and \$440.3 million, respectively, at December 31, 2015. Additional cash collateral received from and deposited with derivative counterparties totaling \$70.8 million and \$324.5 million, respectively, as of December 31, 2016, and \$31.1 million and \$27.3 million, respectively, as of December 31, 2015, were 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. Securities posted as collateral for these transactions totaled \$70.7 million and \$15.4 million at December 31, 2016 and 2015, respectively, are not offset against derivative assets and liabilities on the consolidated balance sheets, and the counterparty receiving the securities as collateral does not have the right to repledge or sell the securities.

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 \$358.2 million and \$553.2 million at December 31, 2016 and 2015, respectively. Cash collateral amounts deposited with derivative counterparties on those dates included \$317.5 million and \$163.0 million, respectively, posted against these liabilities, resulting in a net maximum amount of termination payments that could have been required at December 31, 2016 and 2015 of \$40.7 million and \$390.2 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, 2016 and 2015, 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 111: NOTIONAL AND FAIR VALUES OF CLIENT-RELATED AND TRADING DERIVATIVE FINANCIAL INSTRUMENTS**

(In Millions)	DECEMBER 31, 2016			DECEMBER 31, 2015		
	NOTIONAL VALUE	FAIR VALUE		NOTIONAL VALUE	FAIR VALUE	
		ASSET	LIABILITY		ASSET	LIABILITY
Foreign Exchange Contracts	\$ 273,213.1	\$ 3,274.2	\$ 3,221.7	\$ 246,628.5	\$ 2,541.8	\$ 2,500.4
Interest Rate Contracts	6,968.3	87.0	85.2	6,209.5	111.1	108.5
Total	\$ 280,181.4	\$ 3,361.2	\$ 3,306.9	\$ 252,838.0	\$ 2,652.9	\$ 2,608.9

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, 2016, 2015, and 2014.

**TABLE 112: LOCATION AND AMOUNT OF CLIENT-RELATED AND TRADING DERIVATIVE GAINS AND LOSSES RECORDED IN INCOME**

(In Millions)	LOCATION OF DERIVATIVE GAIN/(LOSS) RECOGNIZED IN INCOME	AMOUNT OF DERIVATIVE GAIN/ (LOSS) RECOGNIZED IN INCOME DECEMBER 31,		
		2016	2015	2014
Foreign Exchange Contracts	Foreign Exchange Trading Income	\$ 236.6	\$ 261.8	\$ 210.1
Interest Rate Contracts	Security Commissions and Trading Income	11.4	17.5	9.3
Total		\$ 248.0	\$ 279.3	\$ 219.4

**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 113: NOTIONAL AND FAIR VALUES OF DESIGNATED RISK MANAGEMENT DERIVATIVE FINANCIAL INSTRUMENTS**

(In Millions)	DERIVATIVE INSTRUMENT	RISK CLASSIFICATION	December 31, 2016			December 31, 2015		
			NOTIONAL VALUE	FAIR VALUE		NOTIONAL VALUE	FAIR VALUE	
				ASSET	LIABILITY		ASSET	LIABILITY
<b>FAIR VALUE HEDGES</b>								
Available for Sale Investment Securities	Interest Rate Swap Contracts	Interest Rate	\$ 3,873.4	\$ 88.3	\$ 16.8	\$ 3,042.1	\$ 10.8	\$ 19.8
Senior Notes and Long-Term Subordinated Debt	Interest Rate Swap Contracts	Interest Rate	1,250.0	71.8	3.3	1,250.0	104.6	2.2
<b>CASH FLOW HEDGES</b>								
Forecasted Foreign Currency Denominated Transactions	Foreign Exchange Contracts	Foreign Currency	329.3	8.5	7.8	367.4	8.5	13.8
Foreign Currency Denominated Investment Securities	Foreign Exchange Contracts	Foreign Currency	1,431.6	151.5	0.8	—	—	—
Available for Sale Investment Securities	Interest Rate Contracts	Interest Rate	\$ 975.0	\$ 0.1	\$ 2.7	\$ 935.0	\$ 2.0	\$ 0.7
<b>NET INVESTMENT HEDGES</b>								
Net Investments in Non-U.S. Affiliates	Foreign Exchange Contracts	Foreign Currency	2,083.6	174.6	10.8	1,961.5	72.9	1.5
<b>Total</b>			<b>9,942.9</b>	<b>494.8</b>	<b>42.2</b>	<b>7,556.0</b>	<b>198.8</b>	<b>38.0</b>

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 recorded in the consolidated statements of income related to fair value hedges for the years ended December 31, 2016, 2015, and 2014.

**TABLE 114: 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,		
			2016	2015	2014
Available for Sale Investment Securities	Interest Rate Swap Contracts	Interest Income	\$ 63.4	\$ (21.1)	\$ (36.4)
Senior Notes and Long-Term Subordinated Debt	Interest Rate Swap Contracts	Interest Expense	5.0	34.7	104.0
<b>Total</b>			<b>\$ 68.4</b>	<b>\$ 13.6</b>	<b>\$ 67.6</b>

There was no ineffectiveness or change in the fair value of hedged items recognized in earnings for fair value long-haul hedges during the years ended December 31, 2016, 2015 and 2014.

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, 2016, 2015, or 2014. As of December 31, 2016, 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, 2016, 2015 and 2014.

**TABLE 115: CASH FLOW HEDGE DERIVATIVE GAINS AND LOSSES RECOGNIZED IN AOCI AND RECLASSIFIED TO INCOME**

(In Millions)	FOREIGN EXCHANGE CONTRACTS (BEFORE TAX)			INTEREST RATE CONTRACTS (BEFORE TAX)		
	2016	2015	2014	2016	2015	2014
Net Gain/(Loss) Recognized in AOCI	\$ 7.9	\$ (1.2)	\$ (9.4)	\$ (3.4)	\$ —	\$ 0.7
Net Gain/(Loss) Reclassified from AOCI to Earnings						
Other Operating Income	(6.4)	(8.0)	3.3	—	—	—
Interest Income	6.4	—	—	2.8	5.2	1.2
Other Operating Expense	(0.9)	(1.9)	(0.5)	—	—	—
Total	\$ (0.9)	\$ (9.9)	\$ 2.8	\$ 2.8	\$ 5.2	\$ 1.2

There were no gains or losses reclassified during the years ended December 31, 2016, 2015, and 2014 as a result of the discontinuance of forecasted transactions that were no longer probable of occurring. It is estimated that a net gain of \$0.1 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. It is estimated that a net gain of \$0.5 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, 2016, 2015, and 2014.

The following table provides net investment hedge gains and losses recognized in AOCI during the years ended December 31, 2016 and 2015.

**TABLE 116: NET INVESTMENT HEDGE GAINS AND LOSSES RECOGNIZED IN AOCI**

(In Millions)	AMOUNT OF HEDGING INSTRUMENT GAIN/(LOSS) RECOGNIZED IN AOCI (BEFORE TAX)	
	2016	2015
Foreign Exchange Contracts	\$ 212.4	\$ 143.6
Sterling Denominated Subordinated Debt	—	5.0
Total	\$ 212.4	\$ 148.6

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 117: NOTIONAL AND FAIR VALUES OF NON-DESIGNATED RISK MANAGEMENT DERIVATIVE INSTRUMENTS**

(In Millions)	DECEMBER 31, 2016			DECEMBER 31, 2015		
	NOTIONAL VALUE	FAIR VALUE		NOTIONAL VALUE	FAIR VALUE	
		ASSET	LIABILITY		ASSET	LIABILITY
Foreign Exchange Contracts	\$ 289.6	\$ 0.8	\$ 1.8	\$ 244.6	\$ 0.2	\$ 3.7
Other Financial Derivatives <sup>(1)</sup>	\$ 270.0	\$ —	\$ 25.2	\$ 152.8	\$ —	\$ 10.9
Total	\$ 559.6	\$ 0.8	\$ 27.0	\$ 397.4	\$ 0.2	\$ 14.6

(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, 2016, 2015, and 2014 for derivative instruments not formally designated as hedges under GAAP.

**TABLE 118: 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		
		2016	2015	2014
Foreign Exchange Contracts	Other Operating Income	(6.7)	(10.9)	(14.3)
Other Financial Derivatives <sup>(1)</sup>	Other Operating Income	(6.1)	(1.0)	—
Total		\$ (12.8)	\$ (11.9)	\$ (14.3)

(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, 2016 and 2015.

**TABLE 119: OFFSETTING OF DERIVATIVE ASSETS AND SECURITIES PURCHASED UNDER AGREEMENTS TO RESELL**

December 31, 2016					
(In Millions)	GROSS RECOGNIZED ASSETS	GROSS AMOUNTS OFFSET	NET AMOUNTS PRESENTED	GROSS AMOUNTS NOT OFFSET	NET AMOUNT <sup>(3)</sup>
Derivative Assets <sup>(1)</sup>					
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	—	—	—
<b>Total Derivatives Subject to a Master Netting Arrangement</b>	<b>3,047.6</b>	<b>2,170.4</b>	<b>877.2</b>	<b>—</b>	<b>877.2</b>
<b>Total Derivatives Not Subject to a Master Netting Arrangement</b>	<b>809.2</b>	<b>—</b>	<b>809.2</b>	<b>—</b>	<b>809.2</b>
<b>Total Derivatives</b>	<b>3,856.8</b>	<b>2,170.4</b>	<b>1,686.4</b>	<b>—</b>	<b>1,686.4</b>
Securities Purchased under Agreements to Resell <sup>(2)</sup>	\$ 1,967.5	\$ —	\$ 1,967.5	\$ 1,967.5	\$ —
December 31, 2015					
(In Millions)	GROSS RECOGNIZED ASSETS	GROSS AMOUNTS OFFSET	NET AMOUNTS PRESENTED	GROSS AMOUNTS NOT OFFSET	NET AMOUNT <sup>(3)</sup>
Derivative Assets <sup>(1)</sup>					
Foreign Exchange Contracts Over the Counter (OTC)	\$ 1,636.0	\$ 1,194.3	\$ 441.7	\$ —	\$ 441.7
Interest Rate Swaps OTC	170.3	21.5	148.8	—	148.8
Interest Rate Swaps Exchange Cleared	58.2	38.1	20.1	—	20.1
Cross Product Netting Adjustment	—	23.5	—	—	—
Cross Product Collateral Adjustment	—	322.8	—	—	—
<b>Total Derivatives Subject to a Master Netting Arrangement</b>	<b>1,864.5</b>	<b>1,600.2</b>	<b>264.3</b>	<b>—</b>	<b>264.3</b>
<b>Total Derivatives Not Subject to a Master Netting Arrangement</b>	<b>987.4</b>	<b>—</b>	<b>987.4</b>	<b>—</b>	<b>987.4</b>
<b>Total Derivatives</b>	<b>2,851.9</b>	<b>1,600.2</b>	<b>1,251.7</b>	<b>—</b>	<b>1,251.7</b>
Securities Purchased under Agreements to Resell <sup>(2)</sup>	\$ 1,600.0	\$ —	\$ 1,600.0	\$ 1,600.0	\$ —

(1) Derivative assets are reported in other assets in the consolidated balance sheets. Other assets (excluding derivative assets) totaled \$3.3 billion and \$3.2 billion as of December 31, 2016 and 2015, 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 \$6.8 million and \$14.2 million as of December 31, 2016 and 2015, 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, 2016 and 2015.

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, 2016 and 2015.

**TABLE 120: OFFSETTING OF DERIVATIVE LIABILITIES AND SECURITIES SOLD UNDER AGREEMENTS TO REPURCHASE**

December 31, 2016					
(In Millions)	GROSS RECOGNIZED LIABILITIES	GROSS AMOUNTS OFFSET	NET AMOUNTS PRESENTED	GROSS AMOUNTS NOT OFFSET	NET AMOUNT <sup>(2)</sup>
Derivative Liabilities <sup>(1)</sup>					
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	—	—	—
<b>Total Derivatives Subject to a Master Netting Arrangement</b>	<b>2,767.6</b>	<b>2,431.2</b>	<b>336.4</b>	<b>—</b>	<b>336.4</b>
<b>Total Derivatives Not Subject to a Master Netting Arrangement</b>	<b>608.5</b>	<b>—</b>	<b>608.5</b>	<b>—</b>	<b>608.5</b>
<b>Total Derivatives</b>	<b>3,376.1</b>	<b>2,431.2</b>	<b>944.9</b>	<b>—</b>	<b>944.9</b>
Securities Sold under Agreements to Repurchase	\$ 473.7	\$ —	\$ 473.7	\$ 473.7	\$ —
December 31, 2015					
(In Millions)	GROSS RECOGNIZED LIABILITIES	GROSS AMOUNTS OFFSET	NET AMOUNTS PRESENTED	GROSS AMOUNTS NOT OFFSET	NET AMOUNT <sup>(2)</sup>
Derivative Liabilities <sup>(1)</sup>					
Foreign Exchange Contracts OTC	\$ 2,119.7	\$ 1,194.3	\$ 925.4	\$ —	\$ 925.4
Interest Rate Swaps OTC	93.1	21.5	71.6	—	71.6
Interest Rate Swaps Exchange Cleared	38.1	38.1	—	—	—
Other Financial Derivatives	10.9	—	10.9	—	10.9
Cross Product Netting Adjustment	—	23.5	—	—	—
Cross Product Collateral Adjustment	—	440.2	—	—	—
<b>Total Derivatives Subject to a Master Netting Arrangement</b>	<b>2,261.8</b>	<b>1,717.6</b>	<b>544.2</b>	<b>—</b>	<b>544.2</b>
<b>Total Derivatives Not Subject to a Master Netting Arrangement</b>	<b>399.7</b>	<b>—</b>	<b>399.7</b>	<b>—</b>	<b>399.7</b>
<b>Total Derivatives</b>	<b>2,661.5</b>	<b>1,717.6</b>	<b>943.9</b>	<b>—</b>	<b>943.9</b>
Securities Sold under Agreements to Repurchase	\$ 546.6	\$ —	\$ 546.6	\$ 546.6	\$ —

(1) Derivative liabilities are reported in other liabilities in the consolidated balance sheets. Other liabilities (excluding derivative liabilities) totaled \$2.7 billion and \$2.1 billion as of December 31, 2016 and 2015, 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, 2016 and 2015.

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. Effective in the second quarter of 2013, 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 121: COMMITMENTS AND LETTERS OF CREDIT**

(In Millions)	DECEMBER 31,	
	2016	2015
Legally Binding Commitments to Extend Credit <sup>(1)</sup>	\$ 32,768.1	\$ 37,247.0
Standby Letters of Credit <sup>(2)</sup>	3,846.1	4,305.4
Commercial Letters of Credit	24.0	17.2

*(1) These amounts exclude \$377.2 million and \$398.1 million of commitments participated to others at December 31, 2016 and 2015, respectively.*

*(2) These amounts include \$134.2 million and \$147.1 million of standby letters of credit secured by cash deposits or participated to others as of December 31, 2016 and 2015, respectively. The weighted average maturity of standby letters of credit was 24 months at December 31, 2016 and 2015.*

**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, 2016 and 2015 subject to indemnification was \$102.3 billion and \$94.5 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, 2016 and 2015 was approximately \$59 million and \$58 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, 2016 and 2015, the carrying amounts of these investments, which are included in loans and leases in the consolidated balance sheets, were \$183.5 million and \$389.4 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, 2016 and 2015, the carrying amounts of these investments in community development projects that generate tax credits, included in other assets in the consolidated balance sheets, were \$186.5 million and \$173.5 million, respectively. As of December 31, 2016 and 2015, liabilities related to unfunded commitments on investments in tax credit community development projects, included in other liabilities in the consolidated balance sheets, were \$56.7 million and \$10.5 million, 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.

Affordable housing tax credits and other tax benefits attributable to community development projects totaled \$48.8 million and \$52.5 million, respectively, as of December 31, 2016 and 2015.

**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 ASU 2015-02. Northern Trust voluntarily waived \$8.1 million of money market mutual fund fees for the year ended December 31, 2016. 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, 2016 Northern Trust had no seed capital investments and no unfunded commitments related to seed capital investments. As of December 31, 2015, Northern Trust had a \$25.3 million investment, valued using net asset value per share and included in other assets, and a \$25.0 million unfunded commitment 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; Federal Home Loan Bank borrowings; and for other purposes, including support for securities settlement, primarily related to client activities, and for potential Federal Reserve Bank discount window borrowings. On December 31, 2016, securities and loans totaling \$40.3 billion (\$29.7 billion of government sponsored agency and other securities, \$939.8 million of obligations of states and political subdivisions, and \$9.6 billion of loans), were pledged. Collateral required for these purposes totaled \$9.7 billion. Included in the total pledged assets are available for sale securities with a total fair value of \$1.4 billion which were pledged as collateral for agreements to repurchase securities sold transactions. 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 collateral from agreements to resell securities purchased transactions. The total fair value of accepted collateral as of December 31, 2016 was \$1.8 billion. There was no repledged or sold collateral as of December 31, 2016.

Deposits maintained to meet Federal Reserve Bank reserve requirements averaged \$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, 2016, 2015, and 2014.

**TABLE 122: CORPORATE AND INSTITUTIONAL SERVICES RESULTS OF OPERATIONS**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
<b>NONINTEREST INCOME</b>			
Trust, Investment and Other Servicing Fees	\$ 1,787.8	\$ 1,696.9	\$ 1,584.0
Foreign Exchange Trading Income	224.4	249.4	200.4
Other Noninterest Income	147.0	170.5	177.9
Net Interest Income (Note)	565.0	414.4	310.0
Revenue (Note)	2,724.2	2,531.2	2,272.3
Provision for Credit Losses	1.9	(22.6)	5.8
Noninterest Expense	2,012.2	1,856.4	1,732.8
Income before Income Taxes (Note)	710.1	697.4	533.7
Provision for Income Taxes (Note)	212.9	212.8	149.4
Net Income	\$ 497.2	\$ 484.6	\$ 384.3
Percentage of Consolidated Net Income	48%	50%	47%
Average Assets	\$ 76,194.7	\$ 73,598.4	\$ 59,462.9

Note: Stated on an FTE basis.

**TABLE 123: WEALTH MANAGEMENT RESULTS OF OPERATIONS**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
<b>NONINTEREST INCOME</b>			
Trust, Investment and Other Servicing Fees	\$ 1,320.3	\$ 1,283.6	\$ 1,248.8
Foreign Exchange Trading Income	8.6	12.4	9.7
Other Noninterest Income	105.7	111.8	98.3
Net Interest Income (Note)	651.4	568.1	536.1
Revenue (Note)	2,086.0	1,975.9	1,892.9
Provision for Credit Losses	(27.9)	(20.4)	0.2
Noninterest Expense	1,315.3	1,291.9	1,268.7
Income before Income Taxes (Note)	798.6	704.4	624.0
Provision for Income Taxes (Note)	301.1	264.7	234.8
Net Income	\$ 497.5	\$ 439.7	\$ 389.2
Percentage of Consolidated Net Income	48%	45%	48%
Average Assets	\$ 26,525.0	\$ 25,048.7	\$ 23,629.3

Note: Stated on an FTE basis.

**TABLE 124: TREASURY AND OTHER RESULTS OF OPERATIONS**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
Noninterest Income	\$ 133.1	\$ 107.9	\$ 6.6
Net Interest Income (Note)	43.6	112.9	188.8
Revenue (Note)	176.7	220.8	195.4
Noninterest Expense	143.2	132.3	133.5
Income before Income Taxes (Note)	33.5	88.5	61.9
Provision for Income Taxes (Note)	(4.3)	39.0	23.6
Net Income	\$ 37.8	\$ 49.5	\$ 38.3
Percentage of Consolidated Net Income	4%	5%	5%
Average Assets	\$ 12,850.6	\$ 12,068.0	\$ 20,991.3

Note: Stated on an FTE basis.

**TABLE 125: CONSOLIDATED FINANCIAL INFORMATION**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
<b>NONINTEREST INCOME</b>			
Trust, Investment and Other Servicing Fees	\$ 3,108.1	\$ 2,980.5	\$ 2,832.8
Foreign Exchange Trading Income	236.6	261.8	210.1
Other Noninterest Income	382.2	390.2	282.8
Net Interest Income (Note)	1,260.0	1,095.4	1,034.9
Revenue (Note)	4,986.9	4,727.9	4,360.6
Provision for Credit Losses	(26.0)	(43.0)	6.0
Noninterest Expense	3,470.7	3,280.6	3,135.0
Income before Income Taxes (Note)	1,542.2	1,490.3	1,219.6
Provision for Income Taxes (Note)	509.7	516.5	407.8
Net Income	\$ 1,032.5	\$ 973.8	\$ 811.8
Average Assets	\$ 115,570.3	\$ 110,715.1	\$ 104,083.5

Note: Stated on an FTE basis. The consolidated figures include \$25.1 million, \$25.3 million, and \$29.4 million, of FTE adjustments for 2016, 2015, and 2014, respectively.

In 2016, the presentation of average assets was changed to reflect a modification to the methodology by which assets are allocated among our reporting segments. The change in presentation resulted in an increase in average assets and a reduction in net interest margin for C&IS and a reduction in average assets and an increase in net interest margin for Treasury and Other. Presentation of 2015 average assets was updated to reflect the methodology modification. 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 126: DISTRIBUTION OF TOTAL ASSETS AND OPERATING PERFORMANCE**

(In Millions)	TOTAL ASSETS	TOTAL REVENUE	INCOME BEFORE INCOME TAXES	NET INCOME
<b>2016</b>				
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
<b>2015</b>				
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
<b>2014</b>				
Non-U.S.	\$ 28,326.1	\$ 1,341.8	\$ 446.5	\$ 322.7
U.S.	81,620.4	2,989.4	743.7	489.1
Total	\$ 109,946.5	\$ 4,331.2	\$ 1,190.2	\$ 811.8

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, 2016 and 2015, 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, 2016 and 2015, 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, 2016, 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 127: RISK-BASED CAPITAL AMOUNTS AND RATIOS**

(\$ In Millions)	December 31, 2016				December 31, 2015			
	ADVANCED APPROACH		STANDARDIZED APPROACH <sup>(1)</sup>		ADVANCED APPROACH		STANDARDIZED APPROACH <sup>(1)</sup>	
	BALANCE	RATIO	BALANCE	RATIO	BALANCE	RATIO	BALANCE	RATIO
<b>Common Equity Tier 1</b>								
Northern Trust Corporation	\$ 8,480.4	12.4%	\$ 8,480.4	11.8%	\$ 8,012.6	11.9%	\$ 8,012.6	10.8%
The Northern Trust Company	8,201.4	12.4	8,201.4	11.5	7,591.7	11.6	7,591.7	10.4
Minimum to qualify as well-capitalized:								
Northern Trust Corporation	4,436.7	6.5	4,681.4	6.5	4,376.7	6.5	4,807.6	6.5
The Northern Trust Company	4,296.2	6.5	4,624.8	6.5	4,245.5	6.5	4,755.9	6.5
<b>Tier 1</b>								
Northern Trust Corporation	9,319.9	13.7	9,319.9	12.9	8,431.3	12.5	8,431.3	11.4
The Northern Trust Company	8,201.4	12.4	8,201.4	11.5	7,591.7	11.6	7,591.7	10.4
Minimum to qualify as well-capitalized:								
Northern Trust Corporation	5,460.6	8.0	5,761.7	8.0	5,386.8	8.0	5,917.0	8.0
The Northern Trust Company	5,287.6	8.0	5,692.1	8.0	5,225.2	8.0	5,853.4	8.0
<b>Total</b>								
Northern Trust Corporation	10,281.6	15.1	10,475.0	14.5	9,529.7	14.2	9,767.7	13.2
The Northern Trust Company	9,271.4	14.0	9,463.4	13.3	8,538.1	13.1	8,771.4	12.0
Minimum to qualify as well-capitalized:								
Northern Trust Corporation	6,825.8	10.0	7,202.1	10.0	6,733.5	10.0	7,396.3	10.0
The Northern Trust Company	6,609.5	10.0	7,115.1	10.0	6,531.5	10.0	7,316.8	10.0
<b>Tier 1 Leverage</b>								
Northern Trust Corporation	9,319.9	8.0	9,319.9	8.0	8,431.3	7.5	8,431.3	7.5
The Northern Trust Company	8,201.4	7.0	8,201.4	7.0	7,591.7	6.7	7,591.7	6.7
Minimum to qualify as well-capitalized:								
Northern Trust Corporation	5,847.9	5.0	5,847.9	5.0	5,655.0	5.0	5,655.0	5.0
The Northern Trust Company	5,831.0	5.0	5,831.0	5.0	5,639.0	5.0	5,639.0	5.0
<b>Supplementary Leverage<sup>(2)</sup></b>								
Northern Trust Corporation	9,319.9	6.8	N/A	N/A	8,431.3	6.2	N/A	N/A
The Northern Trust Company	8,201.4	6.0	N/A	N/A	7,591.7	5.6	N/A	N/A
Minimum to qualify as well-capitalized:								
Northern Trust Corporation	4,129.9	N/A	N/A	N/A	4,085.0	N/A	N/A	N/A
The Northern Trust Company	4,120.0	N/A	N/A	N/A	4,075.3	N/A	N/A	N/A

(1) Effective with the first quarter of 2015, risk-weighted assets are calculated in accordance with the Basel III Standardized Approach final rules.

(2) 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.

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 128: CONDENSED BALANCE SHEETS**

(In Millions)	DECEMBER 31,	
	2016	2015
<b>ASSETS</b>		
Cash on Deposit with Subsidiary Bank	\$ 757.0	\$ 757.5
Securities	0.9	1.2
Advances to Wholly-Owned Subsidiaries – Banks	2,560.0	2,260.0
– Nonbank	13.5	18.5
Investments in Wholly-Owned Subsidiaries – Banks	8,635.0	7,927.8
– Nonbank	184.8	153.4
Other Assets	599.1	682.3
<b>Total Assets</b>	<b>\$ 12,750.3</b>	<b>\$ 11,800.7</b>
<b>LIABILITIES</b>		
Senior Notes	\$ 1,496.6	\$ 1,497.4
Long Term Debt	785.0	800.4
Floating Rate Capital Debt	277.4	277.3
Other Liabilities	420.9	519.7
<b>Total Liabilities</b>	<b>2,979.9</b>	<b>3,094.8</b>
<b>STOCKHOLDERS' EQUITY</b>		
Preferred Stock	882.0	388.5
Common Stock	408.6	408.6
Additional Paid-in Capital	1,035.8	1,072.3
Retained Earnings	8,908.4	8,242.8
Accumulated Other Comprehensive Income (Loss)	(370.0)	(372.7)
Treasury Stock	(1,094.4)	(1,033.6)
<b>Total Stockholders' Equity</b>	<b>9,770.4</b>	<b>8,705.9</b>
<b>Total Liabilities and Stockholders' Equity</b>	<b>\$ 12,750.3</b>	<b>\$ 11,800.7</b>

**TABLE 129: CONDENSED STATEMENTS OF INCOME**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
<b>OPERATING INCOME</b>			
Dividends – Bank Subsidiaries	\$ 300.0	\$ 600.0	\$ 300.0
– Nonbank Subsidiaries	3.4	8.7	3.8
Intercompany Interest and Other Charges	39.8	38.5	42.9
Interest and Other Income	7.5	5.4	(0.3)
Total Operating Income	350.7	652.6	346.4
<b>OPERATING EXPENSES</b>			
Interest Expense	63.5	59.3	66.6
Other Operating Expenses	19.9	56.8	17.0
Total Operating Expenses	83.4	116.1	83.6
Income before Income Taxes and Equity in Undistributed Net Income of Subsidiaries	267.3	536.5	262.8
Benefit for Income Taxes	28.3	29.0	16.6
Income before Equity in Undistributed Net Income of Subsidiaries	295.6	565.5	279.4
Equity in Undistributed Net Income of Subsidiaries – Banks	708.3	392.8	522.1
– Nonbank	28.6	15.5	10.3
Net Income	\$ 1,032.5	\$ 973.8	\$ 811.8
Preferred Stock Dividends	23.4	23.4	9.5
Net Income Applicable to Common Stock	\$ 1,009.1	\$ 950.4	\$ 802.3

**TABLE 130: CONDENSED STATEMENTS OF CASH FLOWS**

(In Millions)	FOR THE YEAR ENDED DECEMBER 31,		
	2016	2015	2014
<b>OPERATING ACTIVITIES:</b>			
Net Income	\$ 1,032.5	\$ 973.8	\$ 811.8
Adjustments to Reconcile Net Income to Net Cash Provided by (Used in) Operating Activities:			
Equity in Undistributed Net Income of Subsidiaries	(736.9)	(408.3)	(532.4)
Change in Prepaid Expenses	3.0	1.2	0.2
Change in Accrued Income Taxes	(17.9)	22.8	(30.7)
Other, net	55.7	58.4	56.1
Net Cash Provided by Operating Activities	336.4	647.9	305.0
<b>INVESTING ACTIVITIES:</b>			
Proceeds from Sale, Maturity and Redemption of Securities – Available for Sale	0.2	1.3	2.9
Change in Capital Investments in Subsidiaries	(3.0)	(10.0)	—
Advances to Wholly-Owned Subsidiaries	(295.0)	—	(238.5)
Other, net	1.2	0.2	1.1
Net Cash Used in Investing Activities	(296.6)	(8.5)	(234.5)
<b>FINANCING ACTIVITIES:</b>			
Change in Senior Notes and Long-Term Debt	—	—	(500.0)
Proceeds from Issuance of Preferred Stock – Series C and Series D	493.5	—	388.5
Treasury Stock Purchased	(411.1)	(496.9)	(480.7)
Net Proceeds from Stock Options	233.8	94.0	127.5
Cash Dividends Paid on Common Stock	(333.0)	(321.4)	(302.9)
Cash Dividends Paid on Preferred Stock	(23.4)	(27.0)	—
Other, net	(0.1)	—	0.1
Net Cash Used in Financing Activities	(40.3)	(751.3)	(767.5)
Net Change in Cash on Deposit with Subsidiary Bank	(0.5)	(111.9)	(697.0)
Cash on Deposit with Subsidiary Bank at Beginning of Year	757.5	869.4	1,566.4
Cash on Deposit with Subsidiary Bank at End of Year	\$ 757.0	\$ 757.5	\$ 869.4

**Note 34 – Subsequent Events**

On February 19, 2017, the Corporation entered into a definitive agreement with UBS AG to acquire UBS Asset Management’s fund administration servicing business in Luxembourg and Switzerland, for an initial purchase price of approximately \$175 million in cash, subject to adjustment. The transaction is expected to close in the second half of 2017, subject to applicable regulatory and fund board approvals and other customary closing conditions.



## SUPPLEMENTAL ITEM – SELECTED STATISTICAL AND SUPPLEMENTAL FINANCIAL DATA

**TABLE 131: QUARTERLY FINANCIAL DATA (UNAUDITED)**

STATEMENTS OF INCOME ( \$ In Millions Except Per Share Information )	2016				2015			
	FOURTH QUARTER	THIRD QUARTER	SECOND QUARTER	FIRST QUARTER	FOURTH QUARTER	THIRD QUARTER	SECOND QUARTER	FIRST QUARTER
Trust, Investment and Other Servicing Fees	\$ 794.4	\$ 788.3	\$ 777.2	\$ 748.2	\$ 747.1	\$ 749.1	\$ 756.8	\$ 727.5
Other Noninterest Income	122.7	122.3	239.8	134.0	120.2	137.5	247.9	146.4
Net Interest Income								
Interest Income	371.0	349.2	344.7	352.0	330.7	305.7	288.8	298.8
Interest Expense	46.7	46.1	45.0	44.2	41.3	36.8	37.6	38.2
Net Interest Income	324.3	303.1	299.7	307.8	289.4	268.9	251.2	260.6
Provision for Credit Losses	(22.0)	(3.0)	(3.0)	2.0	(18.5)	(10.0)	(10.0)	(4.5)
Noninterest Expense	873.9	843.0	925.0	828.8	824.8	812.3	854.5	789.0
Provision for Income Taxes	123.0	116.1	131.7	113.8	111.1	118.6	142.2	119.3
Net Income	\$ 266.5	\$ 257.6	\$ 263.0	\$ 245.4	\$ 239.3	\$ 234.6	\$ 269.2	\$ 230.7
Preferred Stock Dividends	5.8	5.9	5.8	5.9	5.9	5.8	5.8	5.9
Net Income Applicable to Common Stock	\$ 260.7	\$ 251.7	\$ 257.2	\$ 239.5	\$ 233.4	\$ 228.8	\$ 263.4	\$ 224.8
<b>PER COMMON SHARE</b>								
Net Income – Basic	\$ 1.12	\$ 1.09	\$ 1.11	\$ 1.03	\$ 1.00	\$ 0.97	\$ 1.11	\$ 0.95
– Diluted	1.11	1.08	1.10	1.03	0.99	0.96	1.10	0.94
<b>AVERAGE BALANCE SHEET ASSETS</b>								
Cash and Due from Banks	\$ 1,923.6	\$ 1,933.8	\$ 2,093.9	\$ 2,192.4	\$ 2,142.7	\$ 2,683.5	\$ 2,142.9	\$ 1,573.4
Federal Reserve and Other Central Bank Deposits	20,079.6	20,829.6	19,657.8	21,170.2	22,725.2	17,319.7	19,900.3	19,851.1
Interest-Bearing Due from and Deposits with Banks <sup>(1)</sup>	7,869.1	8,232.2	9,827.9	9,056.8	9,692.5	11,229.7	12,012.4	9,916.0
Federal Funds Sold and Securities Purchased under Agreements to Resell	1,980.1	1,613.2	1,915.2	1,593.7	1,490.3	1,080.4	1,041.9	1,033.7
Securities <sup>(2)</sup>	45,297.6	43,258.7	40,756.5	38,803.3	37,838.5	38,041.1	37,930.0	35,792.5
Loans and Leases	33,818.5	33,910.1	34,456.1	33,993.4	33,884.0	33,138.3	32,921.4	32,099.8
Allowance for Credit Losses Assigned to Loans and Leases	(189.7)	(192.9)	(195.4)	(193.5)	(242.0)	(256.0)	(260.0)	(265.9)
Other Assets	6,758.5	6,797.8	6,401.8	6,800.8	6,141.9	6,687.4	6,002.2	7,512.6
Total Assets	\$ 117,537.3	\$ 116,382.5	\$ 114,913.8	\$ 113,417.1	\$ 113,673.1	\$ 109,924.1	\$ 111,691.1	\$ 107,513.2
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>								
Deposits								
Demand and Other Noninterest-Bearing	\$ 26,168.4	\$ 25,829.3	\$ 26,718.0	\$ 26,214.5	\$ 26,009.2	\$ 24,263.7	\$ 25,558.4	\$ 22,023.6
Savings and Money Market	15,136.8	15,025.7	15,041.3	15,367.3	14,998.5	15,168.4	15,705.4	15,361.0
Savings Certificates and Other Time	1,413.2	1,450.3	1,405.0	1,459.6	1,436.2	1,487.0	1,779.5	1,741.7
Non-U.S. Offices – Interest-Bearing	51,866.5	51,468.6	50,443.8	49,434.9	50,664.5	50,107.9	49,291.8	47,399.8
Total Deposits	94,584.9	93,773.9	93,608.1	92,476.3	93,108.4	91,027.0	92,335.1	86,526.1
Short-Term Borrowings	6,598.0	6,961.0	6,195.0	5,584.1	5,566.3	3,878.5	4,404.8	5,187.4
Senior Notes	1,496.5	1,496.3	1,496.1	1,497.4	1,497.3	1,497.2	1,497.1	1,497.0
Long-Term Debt	1,360.5	1,406.9	1,403.2	1,399.3	1,382.0	1,374.3	1,380.2	1,571.9
Floating Rate Capital Debt	277.4	277.4	277.4	277.3	277.3	277.3	277.3	277.2
Other Liabilities	3,600.7	3,236.4	3,141.3	3,491.5	3,138.3	3,159.3	3,188.7	3,980.9
Stockholders' Equity	9,619.3	9,230.6	8,792.7	8,691.2	8,703.5	8,710.5	8,607.9	8,472.7
Total Liabilities and Stockholders' Equity	\$ 117,537.3	\$ 116,382.5	\$ 114,913.8	\$ 113,417.1	\$ 113,673.1	\$ 109,924.1	\$ 111,691.1	\$ 107,513.2
<b>ANALYSIS OF NET INTEREST INCOME</b>								
Earning Assets	\$ 109,044.9	\$ 107,843.8	\$ 106,613.5	\$ 104,617.4	\$ 105,630.5	\$ 100,809.2	\$ 103,806.0	\$ 98,693.1
Interest-Related Funds	78,148.9	78,086.2	76,261.8	75,019.9	75,822.1	73,790.6	74,336.1	73,036.0
Noninterest-Related Funds	\$ 30,896.0	\$ 29,757.6	\$ 30,351.7	\$ 29,597.5	\$ 29,808.4	\$ 27,018.6	\$ 29,469.9	\$ 25,657.1
Net Interest Income (Fully Taxable Equivalent)	329.3	310.1	306.6	314.0	296.0	275.0	257.6	266.8
Net Interest Margin (Fully Taxable Equivalent)	1.20%	1.14%	1.16%	1.21%	1.11%	1.08%	1.00%	1.10%
<b>COMMON STOCK DIVIDEND AND MARKET PRICE</b>								
Dividends-Common Stock	\$ 0.38	\$ 0.38	\$ 0.36	\$ 0.36	\$ 0.36	\$ 0.36	\$ 0.36	\$ 0.33
Market Price Range – High	90.96	71.66	74.86	71.13	76.11	79.25	78.88	72.72
– Low	66.83	61.86	61.32	54.38	64.77	65.17	68.88	61.10

(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, 2016, and December 31, 2015.

Note: The common stock of the Corporation is traded on The NASDAQ Stock Market LLC under the symbol "NTRS".

**TABLE 132: AVERAGE CONSOLIDATED BALANCE SHEETS WITH ANALYSIS OF NET INTEREST INCOME  
(INTEREST AND RATE ON A FULLY TAXABLE EQUIVALENT BASIS)**

(\$ In Millions)	2016			2015			2014		
	INTEREST	AVERAGE BALANCE	RATE <sup>(5)</sup>	INTEREST	AVERAGE BALANCE	RATE <sup>(5)</sup>	INTEREST	AVERAGE BALANCE	RATE <sup>(5)</sup>
<b>AVERAGE EARNING ASSETS</b>									
Federal Reserve and Other Central Bank Deposits <sup>(1)</sup>	\$ 91.4	\$ 20,434.4	0.45%	\$ 63.9	\$ 19,949.8	0.32%	\$ 68.2	\$ 21,494.0	0.32%
Interest-Bearing Due from and Deposits with Banks <sup>(1)(2)</sup>	64.3	8,742.7	0.73	84.9	10,713.4	0.79	97.2	10,026.8	0.97
Federal Funds Sold and Securities Purchased under Agreements to Resell	18.4	1,775.7	1.04	6.3	1,162.6	0.54	3.5	765.2	0.45
<b>Securities</b>									
U.S. Government	87.6	7,073.1	1.24	56.0	4,985.5	1.12	31.2	2,892.7	1.08
Obligations of States and Political Subdivisions	11.3	585.8	1.94	7.4	113.2	6.58	11.1	165.8	6.69
Government Sponsored Agency	177.0	17,421.0	1.02	154.8	16,458.8	0.94	148.9	17,514.8	0.85
Other <sup>(3)</sup>	180.6	16,961.4	1.06	137.9	15,850.4	0.87	114.3	12,872.6	0.89
<b>Total Securities</b>	<b>456.5</b>	<b>42,041.3</b>	<b>1.09</b>	<b>356.1</b>	<b>37,407.9</b>	<b>0.95</b>	<b>305.5</b>	<b>33,445.9</b>	<b>0.91</b>
<b>Loans and Leases<sup>(4)</sup></b>	<b>811.4</b>	<b>34,043.5</b>	<b>2.38</b>	<b>738.1</b>	<b>33,016.1</b>	<b>2.24</b>	<b>741.9</b>	<b>30,215.6</b>	<b>2.46</b>
<b>Total Earning Assets</b>	<b>1,442.0</b>	<b>107,037.6</b>	<b>1.35</b>	<b>1,249.3</b>	<b>102,249.8</b>	<b>1.22</b>	<b>1,216.3</b>	<b>95,947.5</b>	<b>1.27</b>
Allowance for Credit Losses Assigned to Loans and Leases	—	(192.9)	—	—	(255.9)	—	—	(273.7)	—
Cash and Due from Banks	—	2,035.3	—	—	2,138.7	—	—	2,401.4	—
Buildings and Equipment	—	445.5	—	—	442.5	—	—	448.7	—
Client Security Settlement Receivables	—	1,136.6	—	—	1,002.2	—	—	865.2	—
Goodwill	—	524.9	—	—	530.8	—	—	540.2	—
Other Assets	—	4,583.3	—	—	4,607.0	—	—	4,154.2	—
<b>Total Assets</b>	<b>\$ —</b>	<b>\$115,570.3</b>	<b>—%</b>	<b>\$ —</b>	<b>\$110,715.1</b>	<b>—%</b>	<b>\$ —</b>	<b>\$104,083.5</b>	<b>—%</b>
<b>AVERAGE SOURCE OF FUNDS</b>									
<b>Deposits</b>									
Savings and Money Market	\$ 11.9	\$ 15,142.4	0.08%	\$ 9.7	\$ 15,306.9	0.06%	\$ 9.9	\$ 14,904.4	0.07%
Savings Certificates and Other Time	8.3	1,432.0	0.58	7.5	1,609.9	0.47	6.1	1,888.5	0.32
Non-U.S. Offices – Interest-Bearing	63.3	50,808.2	0.12	57.1	49,377.1	0.12	65.7	48,281.9	0.14
<b>Total Interest-Bearing Deposits</b>	<b>83.5</b>	<b>67,382.6</b>	<b>0.12</b>	<b>74.3</b>	<b>66,293.9</b>	<b>0.11</b>	<b>81.7</b>	<b>65,074.8</b>	<b>0.13</b>
Short-Term Borrowings	21.8	6,337.0	0.34	6.0	4,757.9	0.13	5.1	4,499.1	0.11
Senior Notes	46.8	1,496.6	3.13	46.8	1,497.2	3.13	54.7	1,661.2	3.29
Long-Term Debt	26.4	1,392.4	1.90	24.4	1,426.4	1.71	37.7	1,654.9	2.28
Floating Rate Capital Debt	3.5	277.4	1.25	2.4	277.3	0.86	2.2	277.2	0.81
<b>Total Interest-Related Funds</b>	<b>182.0</b>	<b>76,886.0</b>	<b>0.24</b>	<b>153.9</b>	<b>74,252.7</b>	<b>0.21</b>	<b>181.4</b>	<b>73,167.2</b>	<b>0.25</b>
Interest Rate Spread	—	—	1.11	—	—	1.01	—	—	1.02
Demand and Other Noninterest-Bearing Deposits	—	26,231.3	—	—	24,474.1	—	—	19,581.8	—
Other Liabilities	—	3,367.7	—	—	3,363.8	—	—	3,168.0	—
Stockholders' Equity	—	9,085.3	—	—	8,624.5	—	—	8,166.5	—
<b>Total Liabilities and Stockholders' Equity</b>	<b>\$ —</b>	<b>\$115,570.3</b>	<b>—%</b>	<b>\$ —</b>	<b>\$110,715.1</b>	<b>—%</b>	<b>\$ —</b>	<b>\$104,083.5</b>	<b>—%</b>
<b>Net Interest Income/Margin (FTE Adjusted)</b>	<b>\$ 1,260.0</b>	<b>\$ —</b>	<b>1.18%</b>	<b>\$ 1,095.4</b>	<b>\$ —</b>	<b>1.07%</b>	<b>\$ 1,034.9</b>	<b>\$ —</b>	<b>1.08%</b>
<b>Net Interest Income/Margin (Unadjusted)</b>	<b>\$ 1,234.9</b>	<b>\$ —</b>	<b>1.15%</b>	<b>\$ 1,070.1</b>	<b>\$ —</b>	<b>1.05%</b>	<b>\$ 1,005.5</b>	<b>\$ —</b>	<b>1.05%</b>
<b>Net Interest Income/Margin Components (FTE Adjusted)</b>									
U.S.	\$ 959.5	\$ 88,514.4	1.08%	\$ 842.5	\$ 78,136.5	1.08%	\$ 843.1	\$ 71,803.1	1.17%
Non-U.S.	300.5	18,523.2	1.62	252.9	24,113.3	1.05%	191.8	24,144.4	0.79
<b>Consolidated</b>	<b>\$ 1,260.0</b>	<b>\$107,037.6</b>	<b>1.18%</b>	<b>\$ 1,095.4</b>	<b>\$102,249.8</b>	<b>1.07%</b>	<b>\$ 1,034.9</b>	<b>\$ 95,947.5</b>	<b>1.08%</b>

(1) To be consistent with the change in presentation made to the consolidated balance sheets, Northern Trust revised 2015 and 2014 presentation above and combined non-US central bank deposits, which were previously included in Interest-Bearing Due From and Deposits with Banks, with Federal Reserve deposits.

(2) 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 in our periodic filings with the SEC.

(3) 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 in our periodic filings with the SEC.

(4) Average balances include nonaccrual loans. Lease financing receivable balances are reduced by deferred income.

(5) 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 37.8%.

Total taxable equivalent interest adjustments amounted to \$25.1 million in 2016, \$25.3 million in 2015 and \$29.4 million in 2014. Interest revenue on cash collateral positions is reported above within interest-bearing 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 133: CHANGES IN NET INTEREST INCOME**

(INTEREST AND RATE ON A FULLY TAXABLE EQUIVALENT BASIS)

(In Millions)	2016/2015 CHANGE DUE TO			2015/2014 CHANGE DUE TO		
	AVERAGE BALANCE	RATE	TOTAL	AVERAGE BALANCE	RATE	TOTAL
<b>Increase (Decrease) in Interest Income</b>						
Money Market Assets						
Federal Reserve and Other Central Bank Deposits	\$ 1.6	\$ 25.9	\$ 27.5	\$ (4.3)	\$ —	\$ (4.3)
Interest-Bearing Due from and Deposits with Banks	(14.6)	(6.0)	(20.6)	7.3	(19.6)	(12.3)
Federal Funds Sold and Securities Purchased under Agreements to Resell	4.4	7.7	12.1	2.0	0.8	2.8
Securities						
U.S. Government	25.2	6.4	31.6	23.5	1.3	24.8
Obligations of States and Political Subdivisions	4.7	(0.8)	3.9	(3.5)	(0.2)	(3.7)
Government Sponsored Agency	9.0	13.2	22.2	(7.8)	13.7	5.9
Other	10.4	32.3	42.7	26.2	(2.6)	23.6
Loans and Leases	(5.1)	78.4	73.3	29.7	(33.5)	(3.8)
<b>Total</b>	<b>\$ 35.6</b>	<b>\$ 157.1</b>	<b>\$ 192.7</b>	<b>\$ 73.1</b>	<b>\$ (40.1)</b>	<b>\$ 33.0</b>
<b>Increase (Decrease) in Interest Expense</b>						
Deposits						
Savings and Money Market	\$ (0.1)	\$ 2.3	\$ 2.2	\$ 0.1	\$ (0.3)	\$ (0.2)
Savings Certificates and Other Time	(0.6)	1.4	0.8	(0.7)	2.1	1.4
Non-U.S. Offices Time	6.2	—	6.2	1.6	(10.2)	(8.6)
Short-Term Borrowings	2.7	13.1	15.8	0.2	0.7	0.9
Senior Notes	—	—	—	(5.3)	(2.6)	(7.9)
Subordinated Notes						
Long-Term Debt	0.6	1.4	2.0	7.5	(20.8)	(13.3)
Floating Rate Capital Debt	—	1.1	1.1	—	0.2	0.2
<b>Total</b>	<b>\$ 8.8</b>	<b>\$ 19.3</b>	<b>\$ 28.1</b>	<b>\$ 3.4</b>	<b>\$ (30.9)</b>	<b>\$ (27.5)</b>
<b>Increase (Decrease) in Net Interest Income</b>	<b>\$ 26.8</b>	<b>\$ 137.8</b>	<b>\$ 164.6</b>	<b>\$ 69.7</b>	<b>\$ (9.2)</b>	<b>\$ 60.5</b>

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 134: REMAINING MATURITY AND AVERAGE YIELD OF SECURITIES HELD TO MATURITY AND AVAILABLE FOR SALE**

(\$ in Millions)	December 31, 2016									
	ONE YEAR OR LESS		ONE TO FIVE YEARS		FIVE TO TEN YEARS		OVER TEN YEARS		AVERAGE MATURITY	
	BOOK	YIELD	BOOK	YIELD	BOOK	YIELD	BOOK	YIELD		
<b>Securities Held to Maturity</b>										
U.S. Government	\$ 15.0	0.40%	\$ —	—%	\$ —	—%	\$ —	—%	1 mo.	
Obligations of States and Political Subdivisions	30.5	4.68	32.6	4.86	0.5	5.64	—	—	18 mos.	
Government Sponsored Agency	1.6	3.26	1.4	3.90	1.2	4.94	3.2	4.89	104 mos.	
Other – Fixed	3,325.2	0.49	3,994.1	0.52	72.9	2.46	54.9	2.42	28 mos.	
– Floating	259.3	0.58	1,044.6	2.15	84.1	2.43	—	—	26 mos.	
<b>Total Securities Held to Maturity</b>	<b>\$ 3,631.6</b>	<b>0.54%</b>	<b>\$ 5,072.7</b>	<b>0.89%</b>	<b>\$ 158.7</b>	<b>2.47%</b>	<b>\$ 58.1</b>	<b>2.56%</b>	<b>27 mos.</b>	
<b>Securities Available for Sale</b>										
U.S. Government	\$ 1,200.7	0.91%	\$ 4,891.8	1.42%	\$ 1,430.1	1.58%	\$ —	—%	39 mos.	
Obligations of States and Political Subdivisions	183.1	0.68	702.1	0.93	—	—	—	—	19 mos.	
Government Sponsored Agency	3,383.6	1.19	9,734.1	1.17	3,892.9	1.18	882.2	1.52	47 mos.	
Asset-Backed – Fixed	696.0	1.30	809.0	1.48	—	—	—	—	17 mos.	
Asset-Backed – Floating	380.0	1.15	671.7	1.09	—	—	—	—	15 mos.	
Auction Rate Securities	—	—	0.5	1.49	0.7	1.26	3.5	1.43	85 mos.	
Other – Fixed	1,467.0	1.31	3,398.5	1.53	331.6	1.81	—	—	25 mos.	
– Floating	566.2	1.40	851.0	1.10	98.3	1.23	5.2	1.14	27 mos.	
<b>Total Securities Available for Sale</b>	<b>\$ 7,876.6</b>	<b>1.18%</b>	<b>\$ 21,058.7</b>	<b>1.28%</b>	<b>\$ 5,753.6</b>	<b>1.32%</b>	<b>\$ 890.9</b>	<b>1.52%</b>	<b>38 mos.</b>	

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, 2016, 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 135: REMAINING MATURITY OF SELECTED LOANS AND LEASES**

(In Millions)	TOTAL	December 31, 2016		
		ONE YEAR OR LESS	ONE TO FIVE YEARS	OVER FIVE YEARS
U.S. (Excluding Residential Real Estate and Private Client Loans):				
Commercial and Institutional	\$ 9,523.0	\$ 6,059.2	\$ 1,776.2	\$ 1,687.6
Commercial Real Estate	4,002.5	757.6	2,161.3	1,083.6
Lease Financing, net	293.9	54.4	122.4	117.1
Other-Commercial	205.1	130.5	38.3	36.3
Other-Personal	25.9	1.0	2.3	22.6
Total U.S.	\$ 14,050.4	\$ 7,002.7	\$ 4,100.5	\$ 2,947.2
Non-U.S.	\$ 1,877.8	\$ 1,696.6	\$ 155.4	\$ 25.8
Total Selected Loans and Leases	\$ 15,928.2	\$ 8,699.3	\$ 4,255.9	\$ 2,973.0
Interest Rate Sensitivity of Loans and Leases:				
Fixed Rate	\$ 10,014.3	\$ 7,004.9	\$ 1,611.5	\$ 1,397.9
Variable Rate	5,913.9	1,731.7	2,638.2	1,544.0
Total	\$ 15,928.2	\$ 8,736.6	\$ 4,249.7	\$ 2,941.9

**TABLE 136: DISTRIBUTION OF NON-U.S. LOANS BY TYPE**

(In Millions)	DECEMBER 31,				
	2016	2015	2014	2013	2012
Commercial	\$ 318.0	\$ 335.2	\$ 154.0	\$ 497.0	\$ 498.0
Non-U.S. Governments and Official Institutions	—	—	—	250.1	252.4
Banks	26.2	8.5	—	10.4	9.9
Other	1,533.6	794.0	1,376.6	197.2	432.0
Total	\$ 1,877.8	\$ 1,137.7	\$ 1,530.6	\$ 954.7	\$ 1,192.3

Note: Non-U.S. loans primarily include short duration advances related to the processing of custodied client investments.

**TABLE 137: 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)	2016	2015	2014	2013	2012
Balance at Beginning of Year	\$ —	\$ 3.3	\$ 2.1	\$ 3.4	\$ 4.7
Charge-Offs	—	—	—	—	—
Recoveries	—	—	—	—	—
Provision for Credit Losses	—	(3.3)	1.2	(1.3)	(1.3)
Balance at End of Year	\$ —	\$ —	\$ 3.3	\$ 2.1	\$ 3.4

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 138: 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)	2016	2015	2014	2013	2012
Balance at Beginning of Year	\$ 233.3	\$ 295.9	\$ 307.9	\$ 327.6	\$ 328.9
Charge-Offs					
Commercial					
Commercial and Institutional	15.8	9.2	5.4	5.0	5.5
Commercial Real Estate	0.8	3.9	7.5	11.7	14.4
<b>Total Commercial</b>	<b>16.6</b>	<b>13.1</b>	<b>12.9</b>	<b>16.7</b>	<b>19.9</b>
Personal					
Residential Real Estate	10.4	16.7	21.2	37.0	40.3
Private Client	0.3	0.9	2.0	5.5	2.8
Other	—	—	—	0.1	—
<b>Total Personal</b>	<b>10.7</b>	<b>17.6</b>	<b>23.2</b>	<b>42.6</b>	<b>43.1</b>
<b>Total Charge-Offs</b>	<b>27.3</b>	<b>30.7</b>	<b>36.1</b>	<b>59.3</b>	<b>63.0</b>
Recoveries					
Commercial					
Commercial and Institutional	3.3	1.7	1.3	3.6	3.1
Commercial Real Estate	1.5	3.8	9.8	5.0	14.5
Lease Financing, net	—	—	—	—	2.7
<b>Total Commercial</b>	<b>4.8</b>	<b>5.5</b>	<b>11.1</b>	<b>8.6</b>	<b>20.3</b>
Personal					
Residential Real Estate	6.6	4.5	5.6	9.4	9.8
Private Client	0.7	1.2	1.4	1.6	6.6
<b>Total Personal</b>	<b>7.3</b>	<b>5.7</b>	<b>7.0</b>	<b>11.0</b>	<b>16.4</b>
<b>Total Recoveries</b>	<b>12.1</b>	<b>11.2</b>	<b>18.1</b>	<b>19.6</b>	<b>36.7</b>
Net Charge-Offs	15.2	19.5	18.0	39.7	26.3
Provision for Credit Losses	(26.0)	(43.0)	6.0	20.0	25.0
Effect of Foreign Exchange Rates	(0.1)	(0.1)	—	—	—
Net Change in Allowance	(41.3)	(62.6)	(12.0)	(19.7)	(1.3)
<b>Balance at End of Year</b>	<b>192.0</b>	<b>233.3</b>	<b>295.9</b>	<b>307.9</b>	<b>327.6</b>
Allowance Assigned To:					
Loans and Leases	\$ 161.0	\$ 193.8	\$ 267.0	\$ 278.1	\$ 297.9
Undrawn Commitments and Standby Letters of Credit	31.0	39.5	28.9	29.8	29.7
<b>Total Allowance for Credit Losses</b>	<b>\$ 192.0</b>	<b>\$ 233.3</b>	<b>\$ 295.9</b>	<b>\$ 307.9</b>	<b>\$ 327.6</b>
Loans and Leases at Year-End	\$ 33,822.1	\$ 33,180.9	\$ 31,640.2	\$ 29,385.5	\$ 29,504.5
Average Total Loans and Leases	\$ 34,043.5	\$ 33,016.1	\$ 30,215.6	\$ 28,696.5	\$ 28,975.7
As a Percent of Year-End Loans and Leases					
Net Loan Charge-Offs	0.04%	0.06%	0.06%	0.14%	0.09%
Provision for Credit Losses	(0.08)	(0.13)	0.02	0.07	0.08
Allowance at Year-End Assigned to Loans and Leases	0.48	0.58	0.84	0.95	1.01
As a Percent of Average Loans and Leases					
Net Loan Charge-Offs	0.04%	0.06%	0.06%	0.14%	0.09%
Allowance at Year-End Assigned to Loans and Leases	0.47	0.59	0.88	0.97	1.03

## Deposits

**TABLE 139: AVERAGE DEPOSITS BY TYPE**

(In Millions)	DECEMBER 31,		
	2016	2015	2014
<b>U.S. Offices</b>			
Demand and Noninterest-Bearing			
Individuals, Partnerships and Corporations	\$ 20,764.8	\$ 20,684.9	\$ 17,816.4
Correspondent Banks	58.0	59.8	78.9
Other Noninterest-Bearing	76.3	124.6	111.6
<b>Total Demand and Noninterest-Bearing</b>	<b>20,899.1</b>	<b>20,869.3</b>	<b>18,006.9</b>
Interest-Bearing			
Savings and Money Market	15,142.4	15,306.9	14,904.4
Savings Certificates less than \$100,000	150.9	175.9	209.1
Savings Certificates \$100,000 and more	672.0	669.9	767.6
Other	609.1	764.1	911.8
<b>Total Interest-Bearing</b>	<b>16,574.4</b>	<b>16,916.8</b>	<b>16,792.9</b>
<b>Total U.S. Offices</b>	<b>37,473.5</b>	<b>37,786.1</b>	<b>34,799.8</b>
<b>Non-U.S. Offices</b>			
Noninterest-Bearing	5,332.2	3,604.8	1,574.9
Interest-Bearing	50,808.2	49,377.1	48,281.9
<b>Total Non-U.S. Offices</b>	<b>56,140.4</b>	<b>52,981.9</b>	<b>49,856.8</b>
<b>Total Deposits</b>	<b>\$ 93,613.9</b>	<b>\$ 90,768.0</b>	<b>\$ 84,656.6</b>

**TABLE 140: DISTRIBUTION OF NON-U.S. DEPOSITS BY TYPE**

(In Millions)	DECEMBER 31,		
	2016	2015	2014
Commercial	\$ 57,354.0	\$ 50,965.8	\$ 43,466.6
Non-U.S. Governments and Official Institutions	3,971.8	5,464.3	6,094.6
Banks	276.6	489.5	678.5
Other Time	9.4	18.2	21.9
Other Demand	8.8	3.9	6.6
<b>Total</b>	<b>\$ 61,620.6</b>	<b>\$ 56,941.7</b>	<b>\$ 50,268.2</b>

**TABLE 141: REMAINING MATURITY OF TIME DEPOSITS \$100,000 OR MORE**

(In Millions)	DECEMBER 31, 2016			
	U.S. OFFICES		NON-U.S. OFFICES	
	CERTIFICATES OF DEPOSIT	OTHER TIME		
3 Months or Less	\$ 365.1	\$ —	\$ —	\$ 8,984.5
Over 3 through 6 Months	209.7	—	—	13.5
Over 6 through 12 Months	418.7	—	—	4.6
Over 12 Months	186.3	—	—	0.6
<b>Total</b>	<b>\$ 1,179.8</b>	<b>\$ —</b>	<b>\$ —</b>	<b>\$ 9,003.2</b>

**TABLE 142: AVERAGE RATES PAID ON INTEREST-RELATED DEPOSITS BY TYPE**

Interest-Related Deposits – U.S. Offices	DECEMBER 31,		
	2016	2015	2014
Savings and Money Market	<b>0.08%</b>	0.06%	0.07%
Savings Certificates less than \$100,000	<b>0.15</b>	0.19	0.28
Savings Certificates \$100,000 and more	<b>0.35</b>	0.38	0.46
Other Time	<b>0.94</b>	0.63	0.25
Total U.S. Offices Interest-Related Deposits	<b>0.12</b>	0.10	0.10
Total Non-U.S. Offices Interest-Related Deposits	<b>0.12</b>	0.12	0.14
Total Interest-Related Deposits	<b>0.12%</b>	0.11%	0.13%

**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 143: SELECTED AVERAGE ASSETS AND LIABILITIES ATTRIBUTABLE TO NON-U.S. OPERATIONS**

(In Millions)	2016	2015	2014	2013	2012
Total Assets	\$ <b>24,031.0</b>	\$ 29,411.2	\$ 28,072.8	\$ 29,315.6	\$ 29,237.4
Time Deposits with Banks	<b>6,331.3</b>	13,712.9	16,106.9	17,785.5	18,580.4
Loans	<b>1,894.3</b>	1,759.4	1,490.2	1,164.0	1,091.1
Customers’ Acceptance Liability	—	—	—	0.5	0.7
Non-U.S. Investments	<b>10,255.7</b>	8,590.8	6,446.5	5,334.1	4,470.4
Total Liabilities	<b>57,270.0</b>	54,521.0	52,123.3	48,144.4	43,436.7
Deposits	<b>56,139.8</b>	52,981.2	49,854.7	45,865.7	41,160.9
Liability on Acceptances	—	—	—	0.5	0.7

**TABLE 144: PERCENT OF NON-U.S.-RELATED AVERAGE ASSETS AND LIABILITIES TO TOTAL CONSOLIDATED AVERAGE ASSETS**

	2016	2015	2014	2013	2012
Assets	<b>21%</b>	27%	27%	31%	31%
Liabilities	<b>50%</b>	49%	50%	51%	47%

**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 deteriorating 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.



The following table provides information on non-U.S. outstandings by country that exceed 1.00% of Northern Trust's assets.

**TABLE 145: NON-U.S. OUTSTANDINGS**

(In Millions)	BANKS	COMMERCIAL AND OTHER	TOTAL
<b>AT DECEMBER 31, 2016</b>			
Japan	\$ 900	\$ 1,608	\$ 2,508
Canada	2,114	309	2,423
France	1,311	233	1,544
Sweden	1,112	217	1,329
<b>AT DECEMBER 31, 2015</b>			
Canada	\$ 2,293	\$ 277	\$ 2,570
Japan	2,290	—	2,290
United Kingdom	428	764	1,192
<b>AT DECEMBER 31, 2014</b>			
Canada	\$ 2,209	\$ 304	\$ 2,513
Australia	878	1,076	1,954
Singapore	1,180	59	1,239
Netherlands	575	658	1,233
Germany	950	165	1,115

Countries whose aggregate outstandings totaled between 0.75% and 1.00% of total assets were as follows: 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; and Switzerland with aggregate outstandings of \$879 million and Japan with aggregate outstandings of \$859 million at December 31, 2014.

**TABLE 146: PURCHASED FUNDS**

**Federal Funds Purchased  
(Overnight Borrowings)**

(In Millions)	DECEMBER 31,		
	2016	2015	2014
Balance on December 31	\$ 204.8	\$ 351.5	\$ 932.9
Highest Month-End Balance	378.5	982.2	3,371.7
Year – Average Balance	617.7	823.6	1,892.2
– Average Rate	0.25%	0.08%	0.07%
Average Rate at Year-End	0.07%	0.05%	0.01%

**Securities Sold under Agreements to Repurchase**

(In Millions)	DECEMBER 31,		
	2016	2015	2014
Balance on December 31	\$ 473.7	\$ 546.6	\$ 885.1
Highest Month-End Balance	565.5	802.4	1,038.1
Year – Average Balance	847.1	649.5	989.6
– Average Rate	0.27%	0.05%	0.04%
Average Rate at Year-End	0.64%	0.36%	0.13%

**Other Borrowings****(Includes Treasury Investment Program Balances, Term Federal Funds Purchased and Other Short-Term Borrowings)**

(In Millions)	DECEMBER 31,		
	2016	2015	2014
Balance on December 31	\$ 5,109.5	\$ 4,055.1	\$ 1,685.2
Highest Month-End Balance	6,037.6	4,123.2	2,307.8
Year – Average Balance	4,872.1	3,284.9	1,617.3
– Average Rate	0.37%	0.15%	0.21%
Average Rate at Year-End	0.57%	0.16%	0.07%

**Total Purchased Funds**

(In Millions)	DECEMBER 31,		
	2016	2015	2014
Balance on December 31	\$ 5,788.0	\$ 4,953.2	\$ 3,503.2
Year – Average Balance	6,337.0	4,757.9	4,499.1
– Average Rate	0.34%	0.13%	0.11%

## **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, 2016, 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, 2016, 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, 2016, 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, 2016, 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, 2016, 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, 2016.

### **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

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

We have audited Northern Trust Corporation's internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Northern Trust 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 Northern Trust Corporation's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, 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.

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.

In our opinion, Northern Trust Corporation maintained, in all material respects, effective internal control over financial reporting as of December 31, 2016, 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), the consolidated balance sheets of Northern Trust Corporation and subsidiaries as of December 31, 2016 and 2015, 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, 2016, and our report dated February 27, 2017 expressed an unqualified opinion on those consolidated financial statements.

**KPMG LLP**

CHICAGO, ILLINOIS  
FEBRUARY 27, 2017

## **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 2017 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 2017 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 2017 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 2017 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 2017 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:

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Consolidated Balance Sheets - December 31, 2016 and 2015

Consolidated Statements of Income - Years Ended December 31, 2016, 2015, and 2014

Consolidated Statements of Comprehensive Income - Years Ended December 31, 2016, 2015, and 2014

Consolidated Statements of Changes in Stockholders' Equity - Years Ended December 31, 2016, 2015, and 2014

Consolidated Statements of Cash Flows - Years Ended December 31, 2016, 2015, and 2014

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.



<u>/s/ Jose Luis Prado</u> <i>Jose Luis Prado</i>	Director
<u>/s/ Thomas E. Richards</u> <i>Thomas E. Richards</i>	Director
<u>/s/ John W. Rowe</u> <i>John W. Rowe</i>	Director
<u>/s/ Martin P. Slark</u> <i>Martin P. Slark</i>	Director
<u>/s/ David H.B. Smith, Jr.</u> <i>David H.B. Smith, Jr.</i>	Director
<u>/s/ Donald Thompson</u> <i>Donald Thompson</i>	Director
<u>/s/ Charles A. Tribbett, III</u> <i>Charles A. Tribbett, III</i>	Director

Date: February 27, 2017



## 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 November 20, 2015).
4.1	Deposit Agreement, dated August 5, 2014, among Northern Trust Corporation, Wells Fargo Bank, N.A., as depositary, 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, 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. and effective June 1, 2009, was succeeded by Evercore Trust Company, N.A.) 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).
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).

Exhibit Number	Description
(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 January 1, 2008 (incorporated herein by reference to Exhibit 10(ix) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2008).
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).
(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).

Exhibit Number	Description
(vi)**	Form of 2013 Stock Unit Award Terms and Conditions (incorporated herein by reference to Exhibit 10.7 (xviii) to the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2012).
(vii)**	Form of 2013 Stock Unit Award Terms and Conditions (Alternate Vesting) (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, 2012).
(viii)**	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).
(ix)**	Form of 2014 Performance Stock Unit Award 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, 2013).
(x)**	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).
(xi)**	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).
(xii)**	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).
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**	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).
10.12**	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).
10.13**	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).
10.14**	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).

Exhibit Number	Description
10.15**	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).
10.16**	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).
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.
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, 2016, formatted in Extensible Business Reporting Language (XBRL): (i) the Consolidated Balance Sheets as of December 31, 2016 and 2015, (ii) the Consolidated Statements of Income for the twelve months ended December 31, 2016, 2015 and 2014, (iii) the Consolidated Statements of Comprehensive Income for the twelve months ended December 31, 2016, 2015 and 2014, (iv) the Consolidated Statements of Changes in Stockholders' Equity for the twelve months ended December 31, 2016, 2015 and 2014, (v) the Consolidated Statements of Cash Flows for the twelve months ended December 31, 2016, 2015 and 2014, and (vi) Notes to Consolidated Financial Statements.

\*\* Indicates a management contract or a compensatory plan or agreement.

**Certification of CEO Pursuant to  
Section 302 of the Sarbanes-Oxley Act of 2002**

I, Frederick H. Waddell, certify that:

1. I have reviewed this report on Form 10-K for the year ended December 31, 2016 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, 2017

/s/ Frederick H. Waddell

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*Frederick H. Waddell*  
Chief Executive Officer  
(Principal Executive Officer)

**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, 2016 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, 2017

/s/ S. Biff Bowman  
\_\_\_\_\_  
*S. Biff Bowman*  
Chief Financial Officer  
(Principal Financial Officer)

**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, 2016 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), Frederick H. Waddell, 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/ Frederick H. Waddell

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*Frederick H. Waddell*

Chief Executive Officer

(Principal Executive Officer)

February 27, 2017

/s/ S. Biff Bowman

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*S. Biff Bowman*

Chief Financial Officer

(Principal Financial Officer)

February 27, 2017

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.

**NORTHERN TRUST CORPORATION**

***Board of Directors***

Frederick H. Waddell  
Chairman and Chief Executive Officer  
Northern Trust Corporation

Linda Walker Bynoe  
President and Chief Executive Officer  
Telemat Ltd.  
Project management and consulting firm

Susan Crown  
Chairman and Chief Executive Officer  
Owl Creek Partners, LLC  
Private equity firm  
Chairman and Founder  
Susan Crown Exchange Inc.  
Social investment organization

Dean M. Harrison  
President and Chief Executive Officer  
Northwestern Memorial HealthCare  
Primary teaching affiliate of Northwestern University  
Feinberg School of Medicine and parent corporation of  
Northwestern Memorial Hospital

Jay L. Henderson  
Retired Vice Chairman, Client Service  
PricewaterhouseCoopers LLP  
Professional services firm

Dipak C. Jain  
Director  
Sasin Graduate Institute of Business Administration  
International graduate business school

Michael G. O'Grady  
President  
Northern Trust Corporation

Jose Luis Prado  
Chairman and Chief Executive Officer  
Evans Food Group, Ltd.  
Global food company

Thomas E. Richards  
Chairman, President and Chief Executive Officer  
CDW Corporation  
Provider of integrated information technology solutions  
in the United States, Canada and the United Kingdom

John W. Rowe  
Chairman Emeritus  
Exelon Corporation  
Producer and wholesale marketer of energy

Martin P. Slark  
Chief Executive Officer  
Molex LLC  
Manufacturer of electronic, electrical, and fiber optic  
interconnection products and systems

David H. B. Smith Jr.  
Executive Vice President – Policy & Legal Affairs  
and General Counsel  
Mutual Fund Directors Forum  
Nonprofit membership organization for investment  
company directors

Donald Thompson  
Founder and Chief Executive Officer  
Cleveland Avenue, LLC  
Food and beverage incubator and accelerator  
Retired President and Chief Executive Officer  
McDonald's Corporation  
Global foodservice retailer

Charles A. Tribbett III  
Managing Director  
Russell Reynolds Associates  
Global executive recruiting firm

***Advisory Director***

Lord Charles D. Powell of Bayswater KCMG  
Former private secretary and advisor on foreign affairs  
and defense to Prime Ministers Margaret Thatcher and  
John Major



SENIOR OFFICERS

**NORTHERN TRUST CORPORATION**

*Management Group*

Frederick H. Waddell  
Chairman and Chief Executive Officer

S. Biff Bowman  
Executive Vice President  
Chief Financial Officer

Robert P. Browne  
Executive Vice President  
Chief Investment Officer

Peter B. Cherecwich  
President –  
Corporate & Institutional Services

Jeffrey D. Cohodes  
Executive Vice President  
Corporate & Institutional Services  
(Americas)

Steven L. Fradkin  
President – Wealth Management

Wilson Leech  
Executive Vice President  
Chief Risk Officer

Susan C. Levy  
Executive Vice President  
General Counsel

Michael G. O'Grady  
President

S. Gillian Pembleton  
Executive Vice President  
Human Resources

Stephen N. Potter  
President – Asset Management

Jana R. Schreuder  
Executive Vice President  
Chief Operating Officer

Joyce M. St. Clair  
Executive Vice President  
Chief Capital Management Officer

**THE NORTHERN TRUST COMPANY**

*Operating Group*

Steven R. Bell  
President – Wealth Management (West)

David C. Blowers  
President – Wealth Management (East)

Wayne G. Bowers  
Executive Vice President  
Asset Management (Europe,  
Middle East, Africa, and  
Asia Pacific)

Christopher W. Carlson  
Executive Vice President  
Chief Operating Officer –  
Asset Management

David W. Fox, Jr.  
Executive Vice President  
Wealth Management –  
Global Family Office

Mac MacLellan  
President –  
Wealth Management (Central)

William Mak  
Executive Vice President  
Corporate & Institutional Services  
(Asia Pacific)

K. Kelly Mannard  
Executive Vice President  
Chief Strategy & Marketing Officer

William L. Morrison  
Vice Chairman

Scott S. Murray  
Executive Vice President  
Chief Technology Officer

Katherine E. Nixon  
Executive Vice President  
Chief Investment Officer –  
Wealth Management

Brian P. Ovaert  
Executive Vice President  
Enterprise Operations

Teresa A. Parker  
Executive Vice President  
Chief Operating Officer –  
Corporate & Institutional Services

Jacobo Schatz  
Senior Vice President  
Chief Operating Officer –  
Wealth Management

Shundrawn A. Thomas  
Executive Vice President  
Asset Management –  
Funds and Managed Accounts

Jason J. Tyler  
Executive Vice President  
Asset Management – Institutional

David C. Wicks  
Executive Vice President  
Enterprise Operations  
(Europe, Middle East and Africa)

**CORPORATE INFORMATION**

**ANNUAL MEETING**

The 2017 Annual Meeting of Stockholders will be held on Tuesday, April 25, 2017, at 10:30 A.M. (Central Time) at 50 South La Salle Street, Chicago, Illinois. If you plan to attend the Annual Meeting, please review the information regarding attendance contained in the proxy statement relating to the Annual Meeting.

**STOCK LISTING**

The common stock of Northern Trust Corporation is traded on the NASDAQ Global Select Market under the symbol "NTRS".

**STOCK TRANSFER AGENT, REGISTRAR,  
AND DIVIDEND DISBURSING AGENT**

Wells Fargo Bank, N.A.  
Shareowner Services  
1110 Centre Pointe Curve, Suite 101  
Mendota Heights, MN 55120  
General Phone Number: 1-800-468-9716  
Internet Site: [shareowneronline.com](http://shareowneronline.com)

**AVAILABLE INFORMATION**

Through our website at [northerntrust.com](http://northerntrust.com), we make available free of charge our 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, as soon as reasonably practicable after we file such material with, or furnish such material to, the SEC. The contents of our website, the website of the SEC or any other website referenced herein are not a part of this document.

**INVESTOR RELATIONS**

Please direct Investor Relations inquiries to: Mark M. Bette, Senior Vice President, at 312-444-2301 or [mark\\_bette@ntrs.com](mailto:mark_bette@ntrs.com); or Kelly K. Moen, Second Vice President, at 312-444-7214 or [kelly\\_moen@ntrs.com](mailto:kelly_moen@ntrs.com).

**NORTHERNTRUST.COM**

Information about the Corporation, including financial performance and products and services, is available on Northern Trust's website at [northerntrust.com](http://northerntrust.com).



**NORTHERN  
TRUST**



The 2016 Northern Trust Corporation Annual Report is printed on 20% recycled paper made from fiber sourced from well-managed forests and is independently certified to the Forest Stewardship Council® (FSC®) standards.



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